POPULISM, PROTECTIONISM, AND POLITICAL INSTABILITY

Tyler Daun
Sebastian Galiani
Gustavo Torrens

Populism, Protectionism, and Political Instability
Tyler Daun, Sebastian Galiani, and Gustavo Torrens
NBER Working Paper No. 28359
January 2021
JEL No. F13

ABSTRACT

Most populist regimes in Latin American countries used trade policy to redistribute income, despite being less efficient than other redistribution schemes such as transfers financed with an income tax. Often, this outcome is attributed to the lack of fiscal capacity in Latin American countries. Instead, we develop a simple political economy game where the populist government may use trade policy to encourage capitalists to invest in the more labor-intensive industry. Since moving capital is costly, those capitalists will support the continuation of the protectionist trade policy even after the populist government falls from power. The populist government may therefore choose to implement the less efficient but politically-sustainable policy instead of the more efficient policy that will be easily overturned after a regime change. Building fiscal capacity does not change the equilibrium. Only a long run commitment to a minimum level of redistribution restores efficiency.

Tyler Daun
U.S. International Trade Commission
500 E Street,SW
Washington DC, DC 20436
tyler.daun@usitc.gov

Sebastian Galiani
Department of Economics
University of Maryland
3105 Tydings Hall
College Park, MD 20742
and NBER
galiani@econ.umd.edu

Gustavo Torrens
Department of Economics
Indiana University
Wylie Hall, 100 S Woodland Ave
Bloomington, IN 47405-7104
gtorrens@indiana.edu

1   Introduction

Why did so many Latin American countries resort to protectionism during the second half of the 20th century? The standard explanation is that they employed trade policy to redistribute income from the owners of natural resources (usually, traditional elites) to workers in manufacturing urban centers. A potential problem with this explanation is that other methods of redistribution, such us income-tax-funded transfers, are much less distortive than trade policy. However, income-tax-funded transfers were rarely considered. One possibility is that Latin-American countries lacked the required fiscal capacity to collect, enforce, and manage a less distortionary redistribution scheme. Imposing and collecting tariffs at ports was simply the only available policy to ameliorate inequality. We propose and formally model an alternative explanation based on two key elements: unstable political regimes and costly capital mobility across industrial sectors.

The mechanism behind our explanation is as follows. Pro-labor Latin-American governments did not only care about the level of redistribution and its costs for the economy in the present, but also about the persistence of redistribution in the future.[2] Would redistribution survive if traditional elites regain control over the government? Given the political history of many Latin-American countries this was a real and serious concern. Moreover, dismantling a redistributive system based on income-tax-funded transfers was perceived as a relatively easy task. All the elites had to do was to cut transfers or de-fund the system with a tax reform. This was not the case with trade policy. Once capital has been invested and sunk in the import-competing sectors, it was much more complicated to reduce tariffs without incurring large loses (at least in the short run). Thus, pro-labor Latin-American governments faced a choice between distortive but persistent redistribution (trade policy) and efficient but easy to reverse redistribution (i.e., income-tax-funded transfers). We argue that they opted for trade policy, fearing that elites would soon return to power and trusting that sunk investments would make trade opening extremely costly.

We develop a simple model that formally captures this trade-off. In the model, there are two players (workers and investors) and two industries (a labor-intensive, import-competing sector and a land-intensive export sector). At the beginning of the game, a pro-labor coalition is in control of the government and must choose a redistribution policy. Specifically, suppose that the pro-labor coalition can select income-tax-funded transfers or import tariffs. In period 2, with some positive probability, investors regain control over the government and, if they choose to do so, they can dismantle any redistributive policy. Ex-ante, i.e., before investors allocate their capital to the two sectors in the economy, both workers and investors prefer income-tax-funded transfers rather than import tariffs. That is, a priori, nobody is interested in using tariffs as a redistributive policy. However, if tariffs induce enough capital to allocate in the labor-intensive sector, investors may prefer to keep tariffs in place rather than opening the economy. The reason is that moving capital is costly and, hence, capital owners who have moved to the labor-intensive industry are better off supporting protectionist policies. For the pro-labor coalition this is crucial because a redistribution scheme based on tariffs will persist even if in the future investors regain

---

[2] See, for example, Acemoglu, D., S. Johnson, and J. Robinson (2005).

control over the government. Thus, tariffs could be the more politically stable option for the pro-labor coalition.

Fiscal capacity plays only a marginal role in our explanation. We can imagine that improving fiscal capacity makes the income-tax-funded transfers more attractive for workers. But, even if fiscal capacity is not a binding constraint, the combination of costly capital mobility across industrial sectors and the chance that investors regain control over the government and completely dismantle redistribution policies, makes trade policy a more politically-sustainable option than income-tax-funded transfers. Moreover, in some sense, fiscal capacity is the opposite of what workers need to be persuaded of not using trade policy as a redistributive mechanism. The reason is that improvements in fiscal capacity will only make workers better off when the pro-labor coalition controls the government; while the key problem of the pro-labor coalition is to maintain redistribution when they do not control the government. This motivates an important extension of our model. An implicit assumption in our baseline model is that workers and investors cannot credibly commit to implement some policies in the future. In an extension of the model, we show that if workers and investors can commit to a minimum level of redistribution, then workers prefer income-tax-funded transfers to tariffs.

The rest of the paper is organized as follows. Section 2 briefly reviews related literature. Section 3 develops the baseline model and characterizes the equilibrium. Section 4 extends the model to the case in which workers and investors can commit to a minimum level of redistribution. Section 5 applies the model to the case of Argentina in the twentieth century. Section 6 concludes.

2 Related Literature

There are three bodies of literature connected with this paper. First, several papers have explored the political economy of protectionism in the context of developing countries and the connections between economic structure, political institutions and trade policy. Some of these papers have been applied to the history of protectionism in Latin American countries during the 20th century. Second, there is a literature on inefficient redistribution and populism. Finally, there is an extensive literature on costly factor mobility and capital reallocation.

2.1 Economic Structure, Political Institutions and Protectionism

Several papers have explored the relation between factor endowments, political institutions and trade policy. The closest to this paper are Galiani, Schofield and Torrens (2014), Galiani and Torrens (2014), and Galiani and Somaini (2018).

Galiani, Schofield and Torrens (2014) combine a factor specific economy with a probabilistic voting model to study trade policy divergence between countries as well as trade policy instability within countries. They show that some economic structures (natural resource abundant economies with an important domestic industry that competes with the imports) are more prone to induce divergence in political platforms along the trade policy dimension as well as relatively more protectionist platforms. Thus, in these countries trade

policy is likely to be more protectionist and unstable.

Galiani and Torrens (2014) develop a dynamic model in which the political regime, trade policy and a redistribution scheme based on income taxation are simultaneously determined. In their model, income taxation induces a rich-poor/elite-workers political cleavage, but trade policy opens the door to intra-elite conflict and, hence, the possibility that workers and part of the elite support protectionism. Under such circumstances, changes in the political regime (e.g., a military coup) tend to maintain the trade policy to avoid losing the support of one of the elite groups. Our paper complements these studies. While Galiani, Schofield and Torrens (2014) and Galiani and Torrens (2014) stress how dysfunctional the political economy of protectionism could be once the import-substitution sector is relatively important, in this paper we provide a political economy explanation of the emergence and persistence of the import-substitution sector.

Galiani and Somaini (2018) provide an explanation of why Argentina switched to protectionism in the postwar period based on shocks to international trade. The idea is that the two World Wars and the Great Depression severely impacted Argentina's economic structure, inducing the formation of a domestic manufacturing sector that replaced imports. When international trade flows recovered in the post WWII period, Argentina had an economic structure that makes trade opening very unpopular. Our paper offers a second complementary channel to explain Argentina's switch to protectionism. In a context of severe political instability (from 1930 to 1983 the country experienced 6 military coups), populists governments resorted to trade policy to make redistribution more sustainable over time. Indeed, in Section 5 we argue that, most likely, the initial change in the Argentinean economic structure was triggered by the economic shocks stressed by Galiani and Somaini (2018), but fears of reversals and an attempt to weaken the economic power of the traditional rural elite also played an important role in consolidating import substitution policies in the Peronist years.

2.2 Inefficient Redistribution and Populism

There is a vast literature that documents the use of highly distortive redistributive policies, even when less distortive alternatives are available. In particular, for Latin American countries, see Fergusson and Suárez (2010). Several papers have also developed different mechanisms to explain the use of distortive policy instruments (e.g., Acemoglu and Robinson 2001, Acemoglu 2003) and why less distortive instruments are not developed (Besley and Persson 2009). Perhaps, the closest to this paper is Acemoglu and Robinson (2001), who develop a political economy model to explain inefficient redistribution policies. In their model, a group with political power chooses economic policies that provide modest transfers to the members of the group at a cost for the overall economy, but the policies maintain the political power of that group. One important difference between our paper and theirs is that we focus on a group that is unable to hold on to power. Instead, the group can try to influence the decisions of the future government by incentivizing current-period actions with persistent consequences.

Our paper is also related to models of populism. For example, Acemoglu, Egorov and

Sonin (2013) develop a signaling theory of populism, in which government officials intentionally choose non-optimal leftist polices to demonstrate that they are not corrupt. In this case, even honest politicians might implement populist policies to hide their true type. Our model does not have any hidden information, so this signaling mechanism does not show up. We argue, however, that our political-sustainability mechanism better captures one of the two key features present in all populist programs in Latin America: the use of very distortionary policies to redistribute income.[3]

2.3   Costly Factor Mobility

One of the key features in our model is a cost to reallocating capital between industries. The model is agnostic on exactly where these costs are coming from, but two potential interpretations would be a literal cost to altering equipment to fit the other sector, or a time and investment cost of letting one sector's capital depreciate and putting resources into the other sector. Regardless of the specific interpretation, this assumption is aligned with an extensive literature in international trade that studies costly factor reallocations. For example, many papers have extended the Heckscher-Ohlin-Samuelson model to incorporate barriers to the reallocation of factors across sectors (see Mayer 1974, Neary 1978, Grossman 1983, and Mussa 1984, among others). There is also empirical evidence that supports the idea of costly factor reallocation. For example, Magee (1980) evaluates the competing hypotheses of mobile versus immobile factors by comparing the lobbying behavior of capital owners and laborers across industries. He finds that lobbying is determined more by current industry than by type of factor, suggesting significant reallocation costs, at least in the short-run.

3.   A Model of Redistribution under Political Instability

This section develops a simple political economy model for the determination of redistributive policy in a politically unstable environment.

3.1   The Economy

Consider a society with two socioeconomic groups: workers and investors, denoted by L and K, respectively. There are two sectors: the import-competing manufacturing sector (m) and the exporting agricultural sector (a). Time is discrete and indexed by $t = 1,2$ and all agents have the same discount factor $\beta \in (0,1)$. Initially, capital is invested in sector a, but in periods $t = 1,2$, investors can choose where to put their capital. To simplify things, assume that this is a binary choice with $k_t \in \{a, m\}$ indicating the allocation of capital in period t. More importantly, moving capital from one sector to the other incurs an instantaneous utility cost c for investors. Formally, $C(k_{t-1}, k_t) = c$ if $k_{t-1} \neq k_t$ and $C(k_{t-1}, k_t) = 0$ if $k_{t-1} = k_t$, where $k_0 = a$.

The utility received by socioeconomic groups L and K in period t are given by $U_L(g_t, k_t)$ and $U_K(g_t, k_t) - C(k_{t-1}, k_t)$, respectively, where g_t is the government policy

---

[3] The other key distinguishing feature of Latin-America populist governments, which we do not consider in this paper, is the use of highly inconsistent fiscal and monetary policies that frequently led to macroeconomic crisis.

in period t. To simplify things, assume that the government can only choose one of the following three policies: redistribute income using an income tax (x), redistribute income through an import tariff (r), or do not redistribute income at all (n). With this simple policy space, we capture three alternative public policies in relation to income distributions: no explicit government intervention (n), a redistributive program with a serious concern for minimizing distortions and deadweight loses (x); and, finally, a populist redistributive program highly based on very inefficient distortions such as protectionist tariffs (r).

Worker and Investor utility $U_L(g_t, k_t)$ and $U_K(g_t, k_t)$ satisfy the following assumption.

Assumption 1 *Per-period payoffs for satisfy the following preference order:*
1. *Workers:* $U_L(x, m) > U_L(x, a) > U_L(r, m) > U_L(r, a) > U_L(n, m) > U_L(n, a)$.
2. *Investors:* $U_K(n, a) > U_K(x, a) > U_K(r, m) > U_K(n, m) > U_K(r, a) > U_K(x, m)$.

Thus, workers' utility is strictly greater with the income tax (x) than with the tariff (r), and strictly greater with the tariff than with no redistribution (n). Moreover, the allocation of capital does not affect how workers rank government policies. Finally, for a given government policy, they prefer capital to be allocated into sector m. The intuition is that sector m is labor intensive. Investors have a more complex ordering. When capital is allocated in the exporting sector a, they prefer no redistribution to the income tax and the income tax to the tariff. On the other hand, when capital is allocated to sector m, investors prefer the tariff to no redistribution and no redistribution to the income tax. That is, when investors have their capital in the import-competing sector, they support protectionism.

3.2 Politics

In each period the government can be controlled by workers or investors. Whichever group controls the government selects g_t to maximize the discounted expected payoff of the group. In period 1, the government is controlled by workers. At the beginning of period 2, with probability $\pi \in (0,1)$, there is a switch to an investor controlled government, while with probability $1 - \pi$, the government remains under the control of workers. More precisely, the timing of events is as follows:

1. Period 1: L selects $g_1 \in \{x, r, n\}$. Then, K observes g_1 and chooses $k_1 \in \{a, m\}$.

2. Period 2: Nature determines whether the government remains under the control of workers or not.

   a. If there is a switch to an investor controlled government, then K selects $g_2 \in \{x, r, n\}$ and $k_2 \in \{a, m\}$.

   b. If the government remains under the control of workers, then $g_2 = g_1$ and $k_2 = k_1$.

Three important remarks apply to this timing. First, we assume that initially the government is under the control of workers. With this assumption we capture the moment in which workers begin to massively participate in elections and their interests are seriously considered by the political institutions. Second, this does not mean that elites quietly accept the new distribution of political power. With probability π, elites will regain control of the government (for example, through military coups or recapturing key institutions). Thus, π measures political instability, the likelihood that workers lose control of the government. Third, if workers retain the control of the government, we assume that neither workers nor investors alter their decisions[4].

3.3   Subgame Perfect Nash Equilibrium

For the notion of equilibrium we employ subgame perfect Nash equilibrium (SPNE). A strategy for workers is a policy $g_1^L \in \{x, r, n\}$ that L selects and implement whenever the government is controlled by L (i.e., in period 1 and in period 2 if the government remains under the control of L). A strategy for investors is a tuple (k_1^K, g_2^K, k_2^K). $k_1^K : \{x, r, n\} \to \{a, m\}$ assigns a capital allocation whenever the government is controlled by L to any policy selected by workers. $(g_2^K, k_2^K) : \{a, m\} \to \{x, r, n\} \times \{a, m\}$ assigns a policy and a capital allocation in period 2 for any capital allocation in period 1, when in period 2 there is a switch to an investor controlled government. A profile of strategies $(g_1^L, k_1^K, g_2^K, k_2^K)$ is a SPNE if and only if:

1. For any $k_1 \in \{a, m\}$, if in period 2 there is a switch to an investor controlled government, K selects (g_2, k_2) to maximize K's payoff in period 2. Formally:
$$\left(g_2^K(k_1), k_2^K(k_1)\right) = \operatorname*{argmax}_{g_2, k_2}\{U_K(g_2, k_2) - C(k_1, k_2)\}$$

2. In period 1, L selects g_1 to maximize L's expected discounted payoff taking into account that for any g_1, K will select k_1 to maximize K's expected discounted payoff. Formally:
$$k_1^K(g_1) = \operatorname*{argmax}_{k_1} \left\{ \begin{matrix} U_K(g_1, k_1) - C(a, k_1) \\ +\beta\pi\left[U_K\left(g_2^K(k_1), k_2^K(k_1)\right) - C\left(k_1, k_2^K(k_1)\right)\right] \\ +\beta(1 - \pi)[U_K(g_1, k_1) - C(k_1, k_1)] \end{matrix} \right\}$$
$$g_1^L = \operatorname*{argmax}_{g_1} \left\{ \begin{matrix} U_L\left(g_1, k_1^L(g_1)\right) + \beta\pi U_L\left(g_2^K\left(k_1^L(g_1)\right), k_2^K\left(k_1^L(g_1)\right)\right) \\ +\beta(1 - \pi)U_L\left(g_1, k_1^L(g_1)\right) \end{matrix} \right\}$$

Finally, a profile of strategies $(g_1^L, k_1^K, g_2^K, k_2^K)$ will induce the following contingent outcome $O = \left(g_1, k_1, (g_1, k_1, 1 - \pi), (g_2, k_2, \pi)\right)$, where $(g_1, k_1) = \left(g_1^L, k_1^K(g_1^L)\right)$ is the policy and capital allocation whenever L controls the government (i.e., in period 1 and in

---

[4] We feel that this assumption is justified, as it improves the intuition of expanding this two-period model to an infinite-horizon understanding. With an infinite horizon, there are still two distinct "periods", before and after the regime change. The uncertainty is about how long it takes before investors take control. In other words, the infinite horizon model has the first period for a stochastic amount of time before changing to the second period with Investors in power – there is no outcome where Workers behave as if they are permanently in control. In the true two-period model, allowing players to change their actions after revealing no regime change does not translate well into this infinite horizon understanding.

period 2 with probability $(1 - \pi)$) and $g_2 = g_2\big(k_1^K(g_1^L)\big)$, $k_2 = g_2^K\big(k_1^K(g_1^L)\big)$ is the policy and capital allocation whenever K controls the government (i.e., in period 2 with probability π). If $(g_1^L, k_1^K, g_2^K, k_2^K)$ is a SPNE, then the induced contingent outcome is denoted a SPNE outcome.

3.4 Equilibrium Analysis

To characterize the SPNE we proceed through backward induction. Throughout the section we assume that Assumption 1 holds.

Lemma 1 *Suppose that at the beginning of period 2 there is a switch to an investor controlled government. Let*

$$\bar{c}_1 = U_K(n, a) - U_K(r, m) \tag{1}$$

Then:

1. *If* $[k_1 = a]$ *or* $[k_1 = m$ *and* $c < \bar{c}_1]$, *then* $\big(g_2^K(k_1), k_2^K(k_1)\big) = (n, a)$.
2. *If* $k_1 = m$ *and* $c \geq \bar{c}_1$, *then* $\big(g_2^K(m), k_2^K(m)\big) = (r, m)$.

Proof: *see Appendix.* ∎

Lemma 1 states that the reallocation cost must be sufficiently high for investors to stay in sector m after there is a switch to an investor controlled government. More precisely, when in period 1 capital is allocated to sector a ($k_1 = a$), investors keep their capital in sector a if in period 2 they gain control of the government. The reason is that in such situation, they can implement their most preferred outcome (n, a). When in period 1 capital is allocated to sector m, investor's best course of action in period 2 depend on the cost of reallocation. If the reallocation cost is lower than $\bar{c}_1$, investors prefer to move their capital back to sector a. On the other hand, if the reallocation cost is greater than or equal to $\bar{c}_1$, investors keep their capital in sector m.

Lemma 2 $k_1^K(n) = k_1^K(x) = a$.
Proof: *see Appendix.* ∎

Lemma 2 states that, in period 1, investors will not reallocate their capital to sector m if workers do not incentivize them with a tariff. Intuitively, investors prefer (a, x) to (m, x) in the present and (a, n) to any other outcome in the future, so they will definitely not reallocate their capital to sector m if labor does not provide the incentive to do so.

Lemma 3 *If* $c < \bar{c}_1$, *then* $g_1^L = x$.
Proof: *see Appendix.* ∎

Lemma 3 states that if capital will not remain in sector m when in period 2 there is a switch to an investor controlled government, then workers will prefer to use the income tax rather than the tariff. Intuitively, when workers cannot induce investors to keep their capital in sector m, the best alternative for them is to maximize their present payoff using the income tax x.

Combining Lemmas 1-3, it is clear that when $c < \bar{c}_1$, the unique SPNE outcome is

$O^x = \left(x, a, (x, a, 1-\pi), (n, a, \pi)\right)$. That is, when the cost of reallocation is low enough, workers have no incentive to employ tariffs to redistribute income because tariffs are not capable of inducing investors keep their capital in sector m. On the contrary, when $c \geq \bar{c}_1$, investors are willing stay in sector m if in period 2 there is a switch to an investor controlled government. Lemma 4 explores the conditions under which investors are willing to move their capital to sector m in the first place, i.e., in period 1.

Lemma 4 *Let*
$$\bar{c}_2 = (1+\beta)[U_K(r,m) - U_K(r,a)] - \beta\pi[U_K(n,a) - U_K(r,a)] \tag{2}$$
If $\bar{c}_1 \leq c < \bar{c}_2$, then $k_1^K(r) = m$, while if $c \geq \bar{c}_2$, then $k_1^K(r) = a$.
Proof: *see Appendix.* ∎

Lemma 4 states that investors reallocate their capital to sector m in period 1 only when workers select the tariff r and the reallocation cost is sufficiently low (formally, $c < \bar{c}_2$).

The following proposition combines Lemmas 1-4 to fully characterized the SPNE outcome for each value of c.

Proposition 1 *Equilibrium. Suppose that the following conditions hold:*
$$\bar{c}_1 \leq c < \bar{c}_2 \tag{3}$$
$$U_L(r,m) > \frac{\beta\pi U_L(n,a) + (1+\beta-\beta\pi)U_L(x,a)}{1+\beta} \tag{4}$$
Then, the unique SPNE outcome is $O^r = (r, m, r, m)$. In any other case, the unique SPNE outcome is $O^x = \left(x, a, (x, a, 1-\pi), (n, a, \pi)\right)$.
Proof: *see Appendix.* ∎

For intermediate values of c (formally, $\bar{c}_1 \leq c < \bar{c}_2$), the reallocation cost is high enough for investors to keep their capital in sector m if in period 2 they gain control of the government, but it is low enough for investors to move their capital from a to m in period 1. In such circumstances, workers can guarantee a payoff equal to $U_L(r,m)$ in each period, provided that they use a tariff. Moreover, if condition (4) holds, this payoff is higher than the expected payoff workers will obtain if they use taxation to redistribute income. Finally, for high values of c (formally, $c \geq \bar{c}_2$), the reallocation cost is simply too high for investors to move their capital from a to m in period 1. In such a case, workers have no reason to use a tariff. Thus, when $\bar{c}_1 \leq c < \bar{c}_2$ and (4) does not hold or when $c \notin [\bar{c}_1, \bar{c}_2]$, the unique SPNE is $O^x = \left(x, a, (x, a, 1-\pi), (n, a, \pi)\right)$.

3.4 Comparative Statics
$O^r = (r, m, r, m)$ is the SPNE outcome if and only if (3) and (4) hold. The following proposition explores when these conditions are more likely to hold.

Proposition 2 *Comparative Statics.*
1. *An increase in π makes (3) less likely to hold, but (4) more likely to hold.*
2. *An increase in β makes (3) more likely if and only if*

$$U_K(r,m) \geq \frac{U_K(n,a) + U_K(r,a)}{2} \; and \pi < \frac{1}{2}$$

or

$$U_K(r,m) < \frac{U_K(n,a) + U_K(r,a)}{2} \; and \; \pi < \frac{U_K(r,m) - U_K(r,a)}{U_K(n,a) - U_K(r,a)}$$

and (4) more likely to hold if and only if $U_L(r,m) > \pi U_L(n,a) + (1-\pi)U_L(x,a)$.

3. An increase in $U_K(r,m)$ and a decrease in $U_K(r,a)$ or $U_K(n,a)$ make (3) more likely to hold.

4. An increase in $U_L(r,m)$ and a decrease in $U_L(n,a)$ or $U_L(x,a)$ make (4) more likely to hold.

Proof*: see Appendix.* ∎

It is clear why the condition is more restrictive as π increases – if Investors are highly likely to take power in the second period, it is harder to encourage them to make the move. This effect is magnified when β is large since the second period is more important, as seen in figure 0.
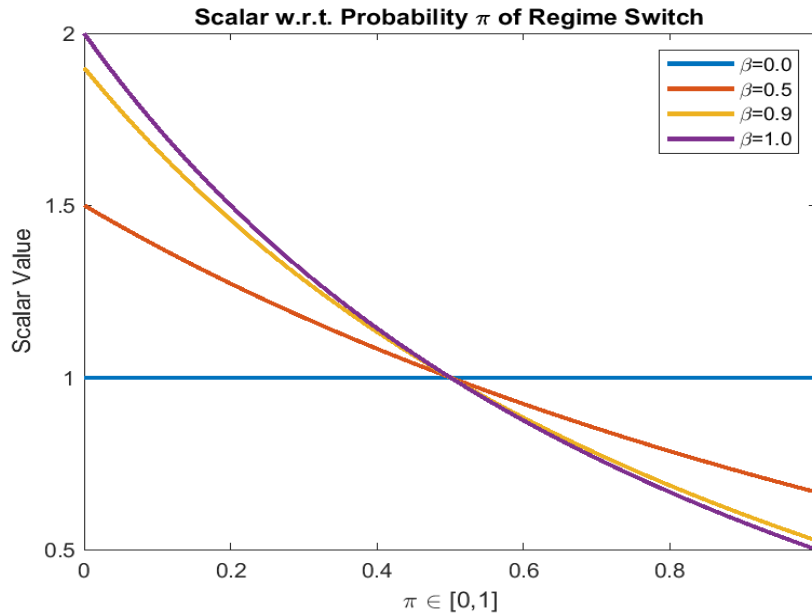

Figure 1: The scalar is decreasing in π, meaning the restriction is tightened as the regime change becomes more likely.

The impact of β is more complicated. If π is very high (so Investors are likely to take power in period 2) then raising β means Investors are more willing to wait for that future power – it will be harder to incentivize them to move. However, the opposite is true when π is very small – the added patience from a higher β puts added weight on the likely future of permanent populism, so the Investors are more willing to move capital to sector-m. This relationship be seen in figure 2 for several values of π.
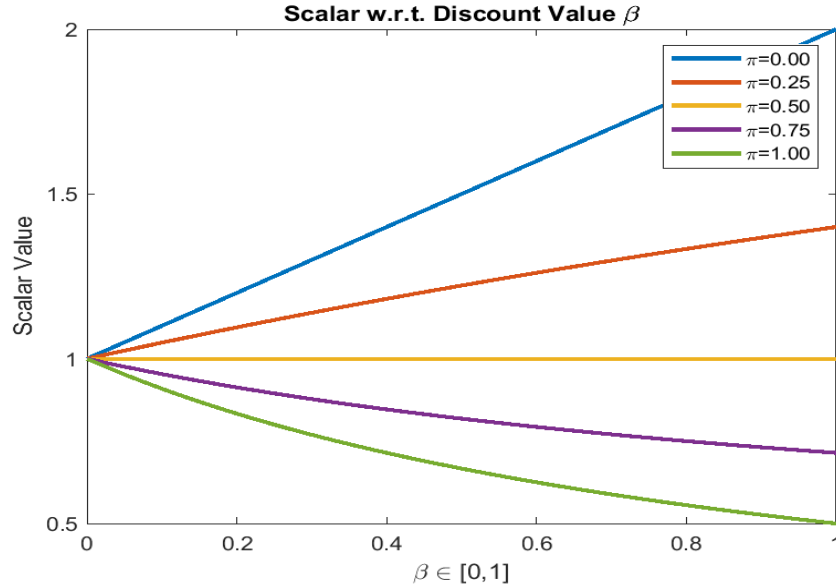
Figure 2: The effect of patience β on the scalar depends on the likelihood π of a regime change.

4 The Model Under Commitment

It is clear from the preferences in Assumption 1 that both agents prefer (a, x) to (m, r). However, (a, x) is never an equilibrium outcome in the model without commitment since Investors prefer (a, n) to (a, x), so they cannot credibly commit to keeping the income tax x. What if they could?

The environment is identical to the the model under no commitment, but with an ultimatum game in stage 0. In that preliminary stage, Workers can offer a policy to Investors. If Investors accept the policy, both agents are bound to that policy for all periods. If Investors reject the policy, the game plays out normally. Again, an equilibrium to this model should be sub-game perfect. A subgame perfect equilibrium for this model satisfies the following conditions:

1. All of the conditions from the SPNE under no commitment must hold.

2. Investors accept an offer in stage 0 if the outcome is better than the model without commitment and reject otherwise.

3. Workers offer the policy that maximizes their payoff given the future policies of themselves and Investors.

   The following proposition characterized the equilibrium outcome for the model with commitment.

   Proposition 3 *Suppose that Assumption 1 holds and $c_1 \leq c \leq c_2$. Then, in the model with commitment, Workers and Investors will agree to implement policy x.*

Proof: *see Appendix.* ∎

The intuition for this outcome is fairly straightforward: Investors prefer both policies n and x (where they will not change sectors) over r, so they will accept any of the three policies, being indifferent with the last one. Of those options, Workers prefer x to r but r to n, so Workers will offer x and Investors will accept. This outcome is far better than the result under no commitment. Not only do both players prefer the instantaneous payoff of x over r, but Investors also avoid paying the capital reallocation cost c.

5   Case Study: Argentina in the Twentieth Century

The drastic fall in the commodity prices during the Great Depression severely hit the Argentinean economy, which heavily depended on the export of agricultural products. Indeed, in 1933 Argentina's capacity to import fell almost to half of its 1928 peak (CEPAL 1949). This shock in Argentina's terms of trade did not go unnoticed to the country's authorities. Import tariffs were initially raised in 1931, but mainly driven by fiscal necessity. In 1933 a double exchange rate system was implemented to promote domestic manufacturing. However, at the same time the government assured minimum prices to rural producers through the newly created agricultural regulatory boards that monopolized foreign trade. The main boards created were the National Grain Board, the National Meats Board and the National Cotton Board. The last one intended also to promote the growing of cotton in the North-eastern province of Chaco to provide the basic input for the rapidly developing textile industry.

World War II blocked Argentina's imports, which promoted domestic manufacturing to substitute imported goods. However, it was not until the end of World War II that the state began playing the leading role in the country's industrial development. Shortly before Perón's access to power in 1946, the government created IAPI –The Argentine Institute for the Promotion of Exchange, which held the monopoly over the country's foreign trade. In its initial times, it was clearly anti-agricultural: IAPI withheld a percentage of the high prices the agricultural production was being paid in the world market at the end of the war.[5] This allowed IAPI to finance imports as well as lending money to newly created public companies or even private industrial companies, mainly at a negative real interest rate. Together with this, a set of typical protectionist measures were carried out: import tariffs were raised, the multiple exchange rate system was maintained, and a scheme of import permits was created to manage the flows of foreign currency. The State also became an active agent in the economy as a result of the large wave of nationalizations the country witnessed in the early Peronist years: railways, telephones, electricity, public transport and other utilities and services became public companies between 1945 and 1950.[6] The nationalization of utilities provided also an indirect subsidy to the industrial sector. Finally, Perón also promoted the creation and consolidation of trade unions and extended several social rights to workers.[7]

---

[5] The prices paid to the producers were around 50% of those IAPI was being paid in the world market (Gerchunoff and Antunez, 2002).

[6] Together with this, a group of German owned companies were nationalized after the war ended – many of them would later become part of the State owned "Fabricaciones Militares" industrial conglomeration.

[7] See Galiani and Gerchunoff (2003) for a detailed account of the changes introduced in the labor market

Overall, Peronist policies sought to redistribute income from the rural sector toward urban workers, a point very well argued by Díaz Alejandro in his famous study of the Argentinean economy and Smithies (1965):

> "*Peronists policies present a picture of a government interested not so much in industrialization as in a nationalistic and populist policy of increasing the real consumption, employment, and economic security of the masses -and of the new entrepreneurs. It chose these goals even at the expense of capital formation and the economy's capacity to transform*". Díaz Alejandro (1970, chapter 2, page 126).

> "*Perón's policy was designed to increase the size of the urban masses and win their political support.*" (Smithies 1965).

The political economy puzzle is why did Argentinean workers massively support protectionism and the promotion of domestic manufacturing at the end of World War II? Galiani and Somaini (2018) develop a small open economy model in which workers are pro-free-trade when capital is only allocated in the rural-exporting sector, but they switch to protectionism when enough capital move to the import-competing manufacturing sector. In the case of Argentina, the model suggests that the shocks to the terms of trade in the interwar period were severely enough to induce such switch. That is, before the interwar period, the country was specialized in the production of rural products for international markets and manufactures were imported. In such a context, most of the labour force was employed in the non-tradeable service sector and, hence, workers favoured free trade. From 1930 to 1945, however, Argentina transitioned to a more diversified economic structure and many workers began to find good employment opportunities in the growing manufacturing sector. As a consequence, when Perón came to power, workers were ready to embrace a protectionist trade policy.

There is no doubt that the mechanism stressed by Galiani and Somaini (2018) played an important role in changing workers' stance on trade policy. However, their model does not explain why alternative redistributive mechanisms were not chosen. In other words, why did Perón resort to protectionism and other highly distortive policies rather employing more efficient instruments to redistribute income? Cortés Conde (2005) suggests that Peronist policies helped amalgamating a very succesful political coalition.

> "*These policies formed one of the longest and most successful coalitions ever known, but they also generated one of the longest and most difficult conflicts*". Cortés Conde (2005, chapter 3, page 145, our own translation from Spanish).

Following this line of reasoning, a plausible explanation is that Perón faced a trade-off between more efficient but easier to reverse instruments versus less efficient but more complicated to reverse redistributive policies. In fact, in 1952 there was a failed military coup against the Peronist government and in 1955 a military coup deposed Perón. However,

institutions under Perón.

the protectionist trade policy was not abandoned until 1976. In fact, from 1955 to 1976 there were several transitions back and forth from military governments to democracy without any substantial change in import substitution policies. Between 1958 and 1962, a democratic government promoted the development of the metallurgical, oil extraction and automobile sectors. A military coup overthrew the government in 1966, but the economic policy did not radically change. The currency was devaluated, and some import tariffs reduced, but the same time agricultural export taxes were raised.

The key to understand this persistence is that, to some extent, protectionism created its own supporters among the elites. As a new industrial elite consolidated, it was more complicated for traditional rural elites to open the economy even under autocratic governments. From a political perspective, as Galiani and Torrens (2014) show, only military governments willing to maintain protectionist policies were backed by the new industrial elite. From an economic perspective, dismantling protectionism was very costly. Too much capital was sunk in the manufacturing sector, which was really complicated to relocate to other sectors, specially in the short run. Cortés Conde et al. (2020) reach a similar conclusion in the epilogue of their recent volume on the Peronist Economy.

> [Despite the negative economic consequences that Peronist policies had on the performance of the economy, they] "*lasted over time [due] to the formation of a coalition of corporate interests that resisted any modification that would imply the reconversion of that industry, when the interests of a business community depended on its continuity, whose profits were assured by protection and association with the State. It operated, too, because any change would have had a considerable impact on the workforce. With an institutional structure designed by Peronism of a single recognized official union, a union leadership was formed alongside that protected business community that was the most solid factor of power in Argentine political life in the last seven decades*." Cortés Conde et al. (2020, Epilogue, page 403, our own translation from Spanish).

Summing up, the new economic structure born in the interwar period and raised in the Peronist years created an elite invested in the import competing sector and, hence, interested in keeping tariffs high. Workers benefited from industrial protectionism, but they could have been much better off reaching a long-term credible agreement with the elites to keep redistribution in place and financed it using more efficient instruments than trade policy. Traditional elites should have also had more imagination to envision the required institutional changes to implement such agreement. They could have avoided decades of economic isolation and decline.

6   Conclusion

We have provided a theoretical environment under which an inefficient reallocation scheme, such as protectionist trade policy, can be politically optimal in some circumstances. In particular, a pro-worker government in the present can incentivize capital investment in the labor-intensive, import-competing sector. This aligns the interests of the future pro-capital government more closely with the interests of workers, resulting in persistent

protectionist policies. The story in the model is supported by the case of Argentina, which saw protectionism continue from Perón's pro-worker regime and into the regimes that followed the coups that deposed him. Other Latin American countries, including Brazil, Chile, Colombia, and Mexico, saw similar protectionist spells that could be explained, at least in part, by this political instability mechanism.

Our theory indicates that even in the presence of multiple regimes, allowing for commitment can avoid the persistent populism and protectionism. Neither workers nor capital owners are terribly happy with the inefficient outcome, and allowing a constitution or other similarly-binding contract lets the two groups implement a better policy – in this case, a non-distorionary income tax-funded redistribution scheme. This is no surprise, as strong institutions are expected to produce better economic outcomes.

Why were other countries able to avoid this populism and protectionism trap? Countries with similar political and economic characteristics, both in Latin America and elsewhere, can help shed more light on this situation, and can potentially provide a path to better outcomes for currently developing countries. It is also useful to study how the countries that did fall into persistent protectionism eventually got out, and how countries still in the trap can follow suit.

References

1. Acemoglu, D. 2003. Why Not a Political Coase Theorem? Social Conflict, Commitment, and Politics. *Journal of Comparative Economics*, 31(4).

2. Acemoglu, D., G. Egorov and K. Sonin. 2013. A Political Theory of Populism. *Quarterly Journal of Economics*, 128(2): 771-805.

3. Acemoglu, D., S. Johnson, and J. Robinson. 2005. Institutions as a Fundamental Cause of Long-Run Growth. in P. Aghion and S. Durlauf (eds.), *Handbook of Economic Growth*, North-Holland.

4. Acemoglu, D., and J. Robinson. 2001. Inefficient Redistribution. *American Political Science Review*, 95: 649-61.

5. Besley, T., and T. Persson. 2009. The Origins of State Capacity: Property Rights, Taxation, and Politics. *American Economic Review*, 99 (4): 1218-44.

6. Cortés Conde, R. 2005. *La Economía Política de la Argentina en el Siglo XX*, Edhasa.

7. Cortés Conde, R., J. Ortiz Batall, L. D'amato, and G. Della Paolera. 2020. Epilogo in R. Cortes Conde, J. Ortiz Batall, L. D'amato y G. Della Paolera (eds.) *La Economía de Perón: Una Historia Económica (1946-1955)*, Edhasa.

8. Economic Commission for Latin America and the Carribean (CEPAL). 1949. Economic Survey of Latin America 1949. Estudio Económico de América Latina, United Nations, Department of Economic Affairs, New York.

9. Díaz Alejandro, C. F. 1970. *Essays on the economic history of the Argentine Republic*. New Haven: Yale University Press.

10. Fergusson, L., and G. Suárez. 2010. Política Fiscal: Un Enfoque de Tributación Óptima. *Ediciones Uniandes.*

11. Galiani, S., and P. Gerchunoff. 2003. The Labor Market, in G. Della Paolera and A. Taylor (eds.), *A New Economic History of Argentina*, Cambridge University Press.

12. Galiani, S., N. Schofield, and G. Torrens. 2014. Factor Endowments, Democracy and Trade Policy Divergence. *Journal of Public Economic Theory*, 16(1): 119.156.

13. Galiani, S., and G. Torrens. 2014. Autocracy, Democracy and Trade Policy. *Journal of International Economics*, 93(1): 173-193.

14. Galiani, S., and P. Somaini. 2018. Path Dependent Import Substitution Policies: The case of Argentina in the XX Century. *Latin American Economic Review*, 27 (Special Issue).

15. Gerchunoff, P., and D. Antunez. 2002. *De la Bonanza Peronista a la Crisis de Desarrollo. Nueva Historia Argentina. Los años peronistas* (1943-1955).

16. Grossman, G. 1983. Partially Mobile Capital: A General Approach to Two-sector Trade Theory. *Journal of International Economics*, 15(1-2):1-17.

17. Magee, S. 1980. Three Simple Tests of the Stolper-Samuelson Theorem. In Alan V. Deardor, Robert Mitchell Stern, and Sundari R. Baru, editors, *The Stolper-Samuelson Theorem: A Golden Jubilee*, chapter 8. University of Michigan Press.

18. Mayer, W. 1974. Variable Returns to Scale in General Equilibrium Theory: A Comment. *International Economic Review*, 20:225-235.

19. Mussa, M. L. 1984. The Economics of Content Protection. NBER Working Paper Series.

20. Neary, J. P. 1978. Short-run Capital Specificity and the Pure Theory of International Trade. *The Economic Journal*, 88:488-510.

21. Rodrik, D. 2018. Populism and the Economics of Globalization. *Journal of International Business Policy*, 1:12-33.

22. Smithies, A. 1965. Argentina and Australia. *The American Economic Review*, 55:17-30.

Appendix to "Populism, Protectionism, and Political Instability"

This Appendix proofs all the Lemmas and Propositions in the paper.

Lemma 1 *Suppose that at the beginning of period* 2 *there is a switch to an investor controlled government. Let* $\bar{c}_1 = U_K(n,a) - U_K(r,m)$. *Then:*
1. *If* $[k_1 = a]$ *or* $[k_1 = m$ *and* $c < \bar{c}_1]$, *then* $\left(g_2^K(k_1), k_2^K(k_1)\right) = (n,a)$.
2. *If* $k_1 = m$ *and* $c \geq \bar{c}_1$, *then* $\left(g_2^K(m), k_2^K(m)\right) = (r,m)$.

Proof. Suppose that $k_1 = a$. Then, when there is a switch to an investor controlled government, K selects $\left(g_2^K(a), k_2^K(a)\right) = \text{argmax}_{g_2, k_2}\{U_K(g_2, k_2) - C(a, k_2)\}$. Due to Assumption 1, $U_K(n,a) > U_K(g,k)$ for all $(g,k) \neq (n,a)$. Moreover, if $k_2 = a$, then $C(a, k_2) = 0$. Therefore, $\left(g_2^K(a), k_2^K(a)\right) = (n,a)$. Suppose that $k_1 = m$. Then, when there is a switch to an investor controlled government, K selects $\left(g_2^K(m), k_2^K(m)\right) = \text{argmax}_{g_2, k_2}\{U_K(g_2, k_2) - C(m, k_2)\}$. Due to Assumption 1, $U_K(r,m) > U_K(n,m) > U_K(x,m)$. Moreover, if $k_2 = m$, then $C(m, k_2) = 0$. Thus, if K selects $k_2 = m$, the best K can do is to choose $g_2 = r$, which implies that the payoff of K will be given by $U_K(r,m)$. Due to Assumption 1, $U_K(n,a) > U_K(x,a) > U_K(r,a)$. Moreover, if $k_2 = a$, then $C(m, k_2) = c$. Thus, if K selects $k_2 = a$, the best K can do is to choose $g_2 = n$, which implies that the payoff of K will be given by $U_K(n,a) - c$. Therefore, if $c < \bar{c}_1 = U_K(n,a) - U_K(r,m)$, then $\left(g_2^K(m), k_2^K(m)\right) = (n,a)$, while if $c \geq \bar{c}_1$, then $\left(g_2^K(m), k_2^K(m)\right) = (r,m)$. ∎

Lemma 2 $k_1^L(n) = k_1^L(x) = a$.

Proof. We must consider two possible cases.
Case 1. Suppose that $g_1 = n$. If $k_1 = a$ and the government remains under the control of workers, then $k_2 = a$ and $g_2 = n$. From Lemma 3.1, if $k_1 = a$ and there is a switch to an investor controlled government, then $(g_2, k_2) = \left(g_2^K(a), k_2^K(a)\right) = (n,a)$. Therefore, if in period 1, K selects $k_1 = a$, its expected discounted payoff is given by:

$$V_K(n,a) = \begin{cases} U_K(n,a) - C(a,a) \\ \beta\pi\left[U_K\left(g_2^K(a), k_2^K(a)\right) - C\left(a, k_2^K(a)\right)\right] \\ \beta(1-\pi)[U_K(n,a) - C(a,a)] \end{cases}$$
$$= (1+\beta)U_K(n,a)$$

On the contrary, if K selects $k_1 = m$, its expected discounted payoff is given by:

$$V_K(n,m) = \begin{cases} U_K(n,m) - C(a,m) \\ \beta\pi\left[U_K\left(g_2^K(m), k_2^K(m)\right) - C\left(m, k_2^K(m)\right)\right] \\ \beta(1-\pi)[U_K(n,m) - C(m,m)] \end{cases}$$

Due to Assumption 1, $U_K(n,a) > U_K(g,k)$ for all $(g,k) \neq (n,a)$. Moreover, $C(a,m) = c$. Thus, $V_K(n,a) > V_K(n,m)$, which implies $k_1^K(n) = a$.

Case 2. Suppose that $g_1 = x$. If $k_1 = a$ and the government remains under the control of workers, then $k_2 = a$ and $g_2 = x$. From Lemma 1, if $k_1 = a$ and there is a switch to an

17

investor controlled government, then $(g_2, k_2) = \left(g_2^K(a), k_2^K(a)\right) = (n, a)$. Therefore, if in period 1, K selects $k_1 = a$, its expected discounted payoff is given by:

$$V_K(x, a) = \begin{cases} U_K(x, a) - C(a, a) \\ \beta\pi\left[U_K\left(g_2^K(a), k_2^K(a)\right) - C\left(a, k_2^K(a)\right)\right] \\ \beta(1 - \pi)[U_K(x, a) - C(a, a)] \end{cases}$$

$$= U_K(x, a) + \beta\pi U_K(n, a) + \beta(1 - \pi)U_K(x, a)$$

On the contrary, if K selects $k_1 = m$, its expected discounted payoff is given by:

$$V_K(x, m) = \begin{cases} U_K(x, m) - C(a, m) \\ \beta\pi\left[U_K\left(g_2^K(m), k_2^K(m)\right) - C\left(m, k_2^K(m)\right)\right] \\ \beta(1 - \pi)[U_K(x, m) - C(m, m)] \end{cases}$$

Due to Assumption 1, $U_K(x, a) > U_K(x, m)$ and $U_K(n, a) \geq U_K\left(g_2^K(m), k_2^K(m)\right)$. Thus, $V_K(x, a) > V_K(x, m)$, which implies $k_1^L(x) = a$. ∎

Lemma 3 *If* $c < \bar{c}_1$, *then* $g_1^L = x$.

Proof. Suppose that workers select $g_1^L = x$. Then, the expected discounted payoff obtained by workers will be given by:

$$V_L(x) = \begin{cases} U_L\left(x, k_1^L(x)\right) \\ +\beta\pi\left[U_L\left(g_2^K\left(k_1^L(x)\right), k_2^K\left(k_1^L(x)\right)\right)\right] \\ +\beta(1 - \pi)\left[U_L\left(x, k_1^L(x)\right)\right] \end{cases}$$

Due to Lemma 3.2, $k_1^L(x) = a$. Therefore:

$$V_L(x) = \begin{cases} U_L(x, a) \\ +\beta\pi\left[U_L\left(g_2^K(a), k_2^K(a)\right)\right] \\ +\beta(1 - \pi)[U_L(x, a)] \end{cases}$$

Due to Lemma 3.1, $g_2^K(a) = n$ and $k_2^K(a) = a$. Therefore:

$$V_L(x) = U_L(x, a) + \beta\pi U_L(n, a) + \beta(1 - \pi)U_L(x, a)$$

Analogously, if workers select $g_1^L = n$, then $V_L(n) = (1 + \beta)U_L(n, a)$. Due to Assumption 1, $U_L(x, a) > U_L(n, a)$, which implies that $V_L(x) > V_L(n)$.

Suppose that workers select $g_1^L = r$. Then, the expected discounted payoff obtained by workers will be given by:

$$V_L(r) = \begin{cases} U_L\left(r, k_1^L(r)\right) \\ +\beta\pi\left[U_L\left(g_2^K\left(k_1^L(r)\right), k_2^K\left(k_1^L(r)\right)\right)\right] \\ +\beta(1 - \pi)\left[U_L\left(r, k_1^L(r)\right)\right] \end{cases}$$

Since $c < \bar{c}_1$, Lemma 3.1 implies that $g_2^K\left(k_1^L(r)\right) = n$ and $k_2^K\left(k_1^L(r)\right) = a$. Therefore:

$$V_L(r) = U_L\left(r, k_1^L(r)\right) + \beta\pi U_L(n, a) + \beta(1 - \pi)U_L\left(r, k_1^L(r)\right)$$

Due to Assumption 1, $U_L(x, a) > U_L(r, k)$ and for $k = a, m$. Thus, $U_L(x, a) > U_L\left(r, k_1^L(r)\right)$, which implies that $V_L(x) > V_L(r)$. Thus, if $c < \bar{c}_1$, workers select $g_1^L = x$. ∎

Lemma 4 *Let* $\bar{c}_2 = (1 + \beta)[U_K(r, m) - U_K(r, a)] - \beta\pi[U_K(n, a) - U_K(r, a)]$. *If* $\bar{c}_1 \leq c < \bar{c}_2$,

then $k_1^K(r) = m$, *while if* $c > \bar{c}_2$, *then* $k_1^K(r) = a$.

Proof. Suppose that workers select $g_1^L = r$ and $c \geq \bar{c}_1$. Then, the expected discounted payoff obtained by investors if they select $k_1 = m$ will be given by:
$$V_K(r, m) = U_K(r, m) - c + \beta\pi U_K(r, m) + \beta(1 - \pi)U_K(r, m)$$
On the contrary, if investors select $k_1 = a$, then:
$$V_K(r, a) = U_K(r, a) + \beta\pi U_K(n, a) + \beta(1 - \pi)U_K(r, a)$$
Thus, $V_K(r, m) > V_K(r, a)$ if and only if $c < \bar{c}_2$. Therefore, $k_1^L(r) = m$ if and only if $\bar{c}_1 \leq c < \bar{c}_2$. Otherwise, $k_1^L(r) = a$. ∎

Proposition 1 *Equilibrium*. *Suppose that the following conditions hold:*
$$\bar{c}_1 \leq c < \bar{c}_2$$
$$U_L(r, m) > \frac{\beta\pi U_L(n,a) + (1+\beta-\beta\pi)U_L(x,a)}{1+\beta}$$
Then, the unique SPNE outcome is $O^r = (r, m, r, m)$. In any other case, the unique SPNE outcome is $O^x = \big(x, a, (x, a, 1 - \pi), (n, a, \pi)\big)$.

Proof. We must consider three possible cases.
Case 1. Suppose that $c < \bar{c}_1$. Then, from Lemmas 1, 2 and 3, the unique SPNE outcome is $O^r = (r, m, r, m)$.

Case 2. Suppose that $\bar{c}_1 \leq c < \bar{c}_2$. Assume that workers select $g_1^L = x$. Then, from Lemmas 1 and 2, the expected discounted payoff obtained by workers will be given by $V_L(x) = U_L(x, a) + \beta\pi U_L(n, a) + \beta(1 - \pi)U_L(x, a)$. On the contrary, if workers select $g_1^L = r$, then, from Lemma 3.4, the expected discounted payoff obtained by workers will be given by $V_L(r) = U_L(r, m) + \beta\pi U_L(r, m) + \beta(1 - \pi)U_L(r, m)$. Note that $V_L(r) > V_L(x)$ if and only if
$$U_L(r, m) > \frac{\beta\pi U_L(n,a) + [1+\beta(1-\pi)]U_L(x,a)}{(1+\beta)}$$
Thus, if the above inequality holds, workers select $g_1^L = r$. Then, from Lemmas 1, 2, and 4, the unique SPNE outcome is $O^r = (r, m, r, m)$. If the above inequality does not hold, workers select $g_1^L = x$. Then, from Lemmas 1 and 2, the unique SPNE outcome is (x, a) in period 1, (x, a) in period 2 if workers control the government, and (n, a) in period 2 if investors gain control over the government, i.e., $O^x = \big(x, a, (x, a, 1 - \pi), (n, a, \pi)\big)$.

Case 3. Suppose that $c \geq \bar{c}_2$. Assume that workers select $g_1^L = x$. Then, from Lemmas 1 and 2, the expected discounted payoff obtained by workers will be given by $V_L(x) = U_L(x, a) + \beta\pi U_L(n, a) + \beta(1 - \pi)U_L(x, a)$. On the contrary, if workers select $g_1^L = r$, from Lemma 4, we have $k_1^K(r) = a$. Then, the expected discounted payoff obtained by workers will be given by $V_L(r) = U_L(r, a) + \beta\pi U_L(a, n) + \beta(1 - \pi)U_L(r, a)$. Since $U_L(x, a) > U_L(r, a)$, we have that $V_L(x) > V_L(r)$. Then, from Lemmas 1 and 2, the unique SPNE outcome is $O^x = \big(x, a, (x, a, 1 - \pi), (n, a, \pi)\big)$. ∎

Proposition 2 *Comparative Statics*.
1. *An increase in π makes (3) less likely to hold, but (4) more likely to hold.*
2. *An increase in β makes (3) more likely if and only if*

19

$$U_K(r,m) \geq \frac{U_K(n,a)+U_K(r,a)}{2} \text{ and } \pi < \frac{1}{2}$$

or

$$U_K(r,m) < \frac{U_K(n,a)+U_K(r,a)}{2} \text{ and } \pi < \frac{U_K(r,m)-U_K(r,a)}{U_K(n,a)-U_K(r,a)}$$

and (4) more likely to hold if and only if $U_L(r,m) > \pi U_L(n,a) + (1-\pi)U_L(x,a)$.

3. *An increase in* $U_K(r,m)$ *and decrease in* $U_K(r,a)$ *or* $U_K(n,a)$ *makes (3) more likely to hold.*

4. *An increase in* $U_L(r,m)$ *and a decrease in* $U_L(n,a)$ *or* $U_L(x,a)$ *make (4) more likely to hold.*

Proof.

Part 1. From the thresholds defined in Lemmas 1 and 4 we have:

$$\bar{c}_2 - \bar{c}_1 = \begin{cases} (2+\beta)U_K(r,m) - (1+\beta)U_K(r,a) - U_K(n,a) & \\ -\beta\pi[U_K(n,a)-U_K(r,a)] & \text{if } \pi < 1/2 \\ 0 & \text{if } \pi \geq 1/2 \end{cases}$$

Therefore, $\bar{c}_2 - \bar{c}_1$ is strictly decreasing in π for $\pi < 1/2$ (because Assumption 1 implies $U_K(n,a) > U_K(r,a)$) and $\bar{c}_2 - \bar{c}_1 = 0$ for $\pi \geq 1/2$. Thus, an increase in π makes (3) less likely to hold. (4) holds if and only if $(1+\beta)U_L(r,m) > \beta\pi U_L(n,a) + (1+\beta - \beta\pi)U_L(x,a)$ or, which is equivalent, $(1+\beta)[U_L(r,m) - U_L(x,a)] + \beta\pi[U_L(x,a) - U_L(n,a)] > 0$. Due to Assumption 1, $U_L(x,a) > U_L(n,a)$ and, hence, an increase in π makes (4) more likely to hold.

Part 2. From the thresholds defined in Lemmas 1 and 4 we have:

$$\bar{c}_2 - \bar{c}_1 = \begin{cases} 2U_K(r,m) - U_K(r,a) - U_K(n,a) & \\ \beta\{U_K(r,m) - U_K(r,a) - \pi[U_K(n,a)-U_K(r,a)]\} & \text{if } \pi < 1/2 \\ 0 & \text{if } \pi \geq 1/2 \end{cases}$$

We must consider two cases:

Case 1. Suppose that $U_K(r,m) < [U_K(n,a) + U_K(r,a)]/2$. Then, $[U_K(r,m) - U_K(r,a)] > \pi[U_K(n,a) - U_K(r,a)]$ for all $\pi < \frac{U_K(r,m)-U_K(r,a)}{U_K(n,a)-U_K(r,a)}$ and $[U_K(r,m) - U_K(r,a)] < \pi[U_K(n,a) - U_K(r,a)]$ for all $\pi > \frac{U_K(r,m)-U_K(r,a)}{U_K(n,a)-U_K(r,a)}$. Thus, $\bar{c}_2 - \bar{c}_1$ is increasing in β for $\pi \in \left[0, \frac{U_K(r,m)-U_K(r,a)}{U_K(n,a)-U_K(r,a)}\right)$; $\bar{c}_2 - \bar{c}_1$ is decreasing in β for $\left[\frac{U_K(r,m)-U_K(r,a)}{U_K(n,a)-U_K(r,a)}, \frac{1}{2}\right)$; and, finally, $\bar{c}_2 - \bar{c}_1 = 0$ for $\pi \geq 1/2$.

Case 2. Suppose that $U_K(r,m) \geq [U_K(n,a) + U_K(r,a)]/2$. Then, $[U_K(r,m) - U_K(r,a)] > \pi[U_K(n,a) - U_K(r,a)]$ for all $\pi < 1/2$. Thus, $\bar{c}_2 - \bar{c}_1$ is increasing in β for $\pi \in \left[0, \frac{1}{2}\right)$ and $\bar{c}_2 - \bar{c}_1 = 0$ for $\pi \geq 1/2$.

Part 3. From the thresholds defined in Lemmas Lemmas 1 and 4 we have:

$$\bar{c}_2 - \bar{c}_1 = \begin{cases} (2+\beta)U_K(r,m) - (1+\beta-\beta\pi)U_K(r,a) - (1+\beta\pi)U_K(n,a) & \text{if } \pi < 1/2 \\ 0 & \text{if } \pi \geq 1/2 \end{cases}$$

Thus, $\bar{c}_2 - \bar{c}_1$ is increasing in $U_K(r,m)$ and decreasing in $U_K(r,a)$ and $U_K(n,a)$.

Part 4. (4) holds if and only if $(1+\beta)U_L(r,m) > \beta\pi U_L(n,a) + (1+\beta-\beta\pi)U_L(x,a)$ or, which is equivalent, $(1+\beta)U_L(r,m) - (1+\beta-\beta\pi)U_L(x,a) - \beta\pi U_L(n,a) > 0$, which is more likely to hold when $U_L(r,m)$ is higher and $U_L(x,a)$ or $U_L(n,a)$ are lower. ∎

Proposition 3 *Suppose that Assumption 1 holds and $c_1 \leq c \leq c_2$. Then, in the model with commitment, Workers and Investors will agree to implement policy x.*

Proof. We solve via backwards induction and show that the unique SPNE is such that Workers offer policy x and Investors accept it.

Suppose that Investors reject the offer, regardless of which policy is offered. Then, according to Proposition 1, Workers receive $(1+\beta)U_L(r,m)$ and Investors receive $(1+\beta)U_K(r,m) - c$.

Suppose that Workers offer r and Investors accept. Then, according to Lemmas 1 and 4, Investors will move to sector-m and receive $(1+\beta)U_K(r,m) - c$. This is the same payoff as Investors receive under no commitment, so they are indifferent between accepting and rejecting the offer.

Suppose that Workers offer policy n. Then Investors will accept and stay in sector-a, since
$$(1+\beta)U_K(n,a) > (1+\beta)U_K(n,m) - c, (1+\beta)U_K(r,m) - c.$$

Finally, suppose that Workers offer policy x. Then Investors will accept and stay in sector-a, since
$$(1+\beta)U_K(x,a) > (1+\beta)U_K(x,m) - c, (1+\beta)U_K(r,m) - c.$$

Therefore, we must consider the following two possible cases:

Case 1: Investors accept any policy offer. Workers therefore compare their payoffs under the three policies. They will offer policy x since $U_L(x,a) > U_L(r,a) > U_L(n,a)$.

Case 2: Investors reject r, but accept n and x. If Workers offer r, they get $(1+\beta)U_L(r,m)$. If Workers offer n, they get $(1+\beta)U_L(n,a)$, while if they offer x, they get $(1+\beta)U_L(x,a)$, Since $U_L(x,a) > U_L(r,m) > U_L(n,a)$, Workers offer policy x. ∎