War and the Transition Away from Absolutism

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Abstract

We propose a model to explain the transition from Absolutism to rule by Parliament. The Citizens face a trade-off between the loss of a war today with the future benefits under an alternative King. The threat of losing a war and being replaced may lead the King to compromise with the Citizens and hand over power. The model has two key parameters. One is the fraction of the country's wealth that is nonverifiable (and therefore hard for the King to tax or expropriate). The second is how likely the country is to be attacked. Our model gives a rationale for why absolutism ended in England by 1688 but not in France or Spain.

1 Introduction

In the the year 1500 the economies of France, England, and Spain were similar: mostly agrarian and with similar income per capita (see Table 1

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columns 1, 2, and 3). Their institutions were also similar (columns 4 and 5). In all three countries a monarch ruled relatively unconstrained and led the country into war. Most of the government's revenue was under direct control of the monarch.[1] A parliament could be summoned if the king required resources beyond ordinary revenues.[2]

By the year 1700 the institutional differences between England, France, and Spain were striking. France and Spain had became models of an absolutist state, with their respective parliaments rarely summoned in the late 17^{th} century.[3] In England, after the Glorious Revolution, the Parliament met yearly without fail and the sessions lasted longer (almost double then during the Restoration). [4]

This paper provides a theoretical framework to analyze the political transition away from absolutism that took place in England in the late 17^{th} century, whereas the regimes in France and Spain became even more absolutist during the same period. Our model can also be used to analyze other political transitions away from absolutism such as the Netherlands and Venice, that took place before modern times.

We restrain our focus to a historical period for two reasons. First, the role of government prior to the 19^{th} century was very different. In line with what governments do today, the political economy literature and the literature on political transitions has modeled government mostly as a mechanism to achieve redistribution (e.g. Downs (1957) and Acemoglu and Robinson

[1]In Elisabeth's reign (1558-1603), for example, 73% of the English government's revenue came from sources that did not require the approval of parliament (Braddick (1996) Figure 1.3, pg.13). In Spain, the share of revenue that required approval by the Cortes was 63% in 1517, it goes down to an average of 30% in the remaining of the 16^{th} century and does not go above 50% in the $17^t h$ century (Thompson (1994a) Table 3, pg. 165).

[2]The English parliament was relative stronger than the French. This is so because the French King could play the national assembly against their provincial counterparts. See Hoffman (1994) for a discussion of the role of provincial assemblies in in France between 1450-1700. For a discussion of the Cortes during the same period see Thompson (1994b).

[3]van Zanden et al. (2010).

[4]Pincus and Robinson (2011) Figure 1.

Table 1: England and France

		(1)	(2)	(3)	(4)	(5)
Country	year	agric(%)	wages	income	prince	polity-IV
England	1500	74	9.3	714	1	2
	1600	69	5.5	974	1	3
	1700	55	6.9	1250	0	5
France	1500	73	8.7	727	0	2
	1600	68	6.8	841	1	1
	1700	63	6.3	910	1	1
Spain	1500	65	10.7	661	0	1-2
	1600	63	7.8	853	1	1
	1700	63	9	853	1	1

Note: Column 1 presents the percentage of the population living in the countryside. Column 2 presents the daily wage of laborers (source Allen (2003), Appendix I). Column 3 presents Maddison (2007)'s estimates for GDP per capita. Column 4 presents the institutional coding proposed by de Long and Schleifer (1993): a 1 means a strong king and a 0 means that the king's powers are not consolidated. Column 5 presents the institutional coding proposed by Acemoglu et al. (2005): the value 1 indicates an absolute ruler and 7 a highly constrained executive. According Acemoglu et al. (2002), due to the discoveries of gold and silver mines in Spain, and their effect on the autonomy of the monarch, Spain receives a score of 1 in the year 1500. Since the large scale mining of American silver did not start in earnest until after the year 1500 (e.g. the silver mountain of Potosí was discovered in 1545 - see Findlay and O'Rourke (2009) pg. 165), our preferred measure is the same used for Spain in 1400: 2. This is in line with de Long and Schleifer (1993), who take the death of Queen Isabella in 1504 and the take-over of power by the Habsburgs as the threshold for to switch Spain's regime classification

(2001)). This is not, however, an adequate view of government prior to the 19^{th} century. Then, the main purpose of government was war. Brewer (1989) shows that between 74 and 85 per cent of the government revenue in the late 17^th century England was dedicated to warfare[5]. The figures are similar for France and Spain.[6]

Following the importance of war in this period, the main decision a ruler takes in our model is whether to go to war and which war to go to. Moreover, one of the key variables that drives political transitions in our model is the relative military strength of a country. We model it by introducing a probability of transition between two possible states of the world, one in which the risky of a foreign invasion is high and one in which this risk is low.

The second reason our focus is historical is that we want to compare countries that were similar in the year 1500 and that were influenced differently by a common shock to the economy: the rise of Atlantic trade and the colonizations of the Americas. The importance of the Atlantic trade to the growth of Western Europe has been studied by Acemoglu et al. (2005).

The Atlantic trade affected England, France, and Spain differently. England's trade with the Americas increased rapidly during the 17^{th} century.[7] In Spain the economic change was driven by the mining and import of American silver in the 16^{th} and 17^{th} centuries.[8] France's economy remained mostly agricultural as France did not become a major player in oversees trade until the 18^{th} century.[9]

The change in the economy led by the rise in Atlantic trade was reflected in how government raised revenue. In England, where the commercial and financial sectors grew more significantly, the government started to rely more on indirect taxes, i.e., sales taxes and tariffs. Indirect taxation contributed

[5]See Brewer (1989) Table 2.2.

[6]See Bonney and Bonney (1993) Figure 7 for data on France and Thompson (1994a) pg. 156 for data on Spain.

[7]See Findlay and O'Rourke (2009) Table 5.1, pg. 228 and pg. 230.

[8]See Thompson (1994a) pg. 151.

[9]See Findlay and O'Rourke (2009) Table 5.1

to around 23% of total revenues in the reign of Elizabeth (1558-1603) while in the reign of James II (1686-1688) indirect taxation accounted for 80% of total revenues.[10] In France, where the agricultural sector continued to be dominant, revenue was mainly raised through direct taxation (e.g. property and poll taxes), which contributed to around 50% of revenues throughout the 17^{th} century.[11]

As argued in Bonney (1995)[12] the growth in the relative importance of indirect taxation of goods is partly due to the difficulty to tax financial and commercial wealth directly. According to Brewer (1989), Ertman (1997), and Bates and Lien (1985) the commercial and financial sectors are also harder to tax overall. Brewer (1989) shows that the number of bureaucrats needed to administer the excise and custom taxes were much higher than the number needed for land taxes.[13] Ertman (1997) notes that a land tax is easier to administer because a fixed amount can be attributed to each region, which is then left to raise the resources as the local officials see fit.[14] Bates and Lien (1985) go further and propose a model in which the owners of the more elastic assets have more influence over the government. This is so because in order to tax highly elastic assets the government must bargain with the owners of such assets.

Given the relative importance of the commercial and financial sector in determining how easily the wealth of the country is accessible to the King, the other key variable in our model is the fraction of the country's wealth that is verifiable. By verifiable wealth we mean that it can be easily appropriated by the King. This can be done either through taxation, forced loans, or outright

[10] See Braddick (1996) Figure 1.1, pg.10.

[11] See Hoffman (1994) (table 2, pg. 239) and Bonney and Bonney (1993) (figure 10, pg. 30).

[12] See chapters 13.5 and 13.6.

[13] While the bureaucracy handling the excise and customs taxes were around 3,000 strong in the late $17^{t}h$ century, the land tax scarcely had an administration at all (see Brewer (1989) pg. 66 and 101).

[14] See Ertman (1997) pg.16.

expropriation. The fraction of the wealth that is non-verifiable may come from oversees trade, finances, manufacturing, and commerce, for example.

Our model builds on the framework of Acemoglu and Robinson (2001). Our focus, however, is not on redistribution as in Acemoglu and Robinson (2001), but on wars and how they are financed. Another key difference is that our model does not require the threat of a revolution to trigger a political transition.[15]In Acemoglu and Robinson (2001) a collective action problem must be solved for a revolution to take place. Individuals have an incentive to free-ride and let others carry out a potentially costly revolution. In our model the threat is external. In order to trigger a regime change, all individual citizens must do is withhold resources from the King. There is no collective action problem.[16]

As mentioned above at each period there are two possible states of the world. In a period in which the King faces no external threat, the King may chose to go on aligned wars or misaligned wars. These wars can be seen as investments. In the case the war is lost, King and Citizens lose their investment but nothing more. As in Jackson and Morelli (2007), in a misaligned war the ruler is able to appropriate more than his fair share of the spoils of war.[17] This misalignment between King and Citizens may lead the Citizens to wish that the King be replaced by an alternative - less misaligned - king.

The Citizens may help trigger the replacement of their ruler by withhold-

[15]Lizzeri and Persico (2004) also focus on a model of political transitions that does not require the threat of a revolution. They focus on the extension of the suffrage in 19^{th} century England. Ticchi and Vindigni (2009) focus on how a transition may be triggered by the redistributions demands of a mass army.

[16]We choose not to model a multitude of citizens explicitly. We only have two agents in the model: the King and the Citizens. Individuals citizens would have an incentive to free ride on their peers' financial assistance to the King. In our model the collective action problem would go the other way.

[17]An example of a misaligned war is a war led by a catholic King with protestant subjects against a protestant country. Other examples of misaligned wars are costly dynastic wars that benefit the King but not the Citizens. Examples of aligned wars are defensive wars and trade wars, which expand the markets for the Citizens products.

ing resources from the King when the country faces an external threat. If a war is lost in this defensive state of the world the King loses his throne and the Citizens incur a higher cost than simply losing an investment. We can think of this cost as the destruction generated by an invading army.

The interpretation of events in 17^{th} England within our framework is very similar to that of Pincus and Robinson (2011). A boom in Atlantic trade increased the importance of the commercial and financial sector in England - which was characterized by the rise of the Whig party.[18] This sector's clout over the economy increased to the extent that the crown needed its cooperation to defend the country. The institutional innovations of the Glorious Revolutions proved stable because the King handed over power to Parliament.[19] Had the English King chosen not to hand over power, he would only have had access to the verifiable fraction of the country's wealth.[20]

The French King on the other hand, did not have to make concessions to the Citizen in order gain access to most of France's resources, as most of France's wealth still came from the land and was verifiable. In Spain the silver windfall effectively allowed the King to bypass the Cortes.[21]

Our interpretation departs considerably from North and Weingast (1989), who argue that the institutional arrangements designed by the winners of the Glorious Revolution generated an equilibrium in which it was optimal for the King to pay back his debts instead of reneging on them - as was widespread up to then. The counterfactual implied by this view is that had France, or

[18]A similar argument is made by Jha (2010) relating to the Long Parliament (1640-60) and how those with interests oversees pushed for reforms to limit monarchic power.

[19]Pincus and Robinson (2011) note that William and Mary surrendered the historical royal right to collect customs. Moreover, William did not interfere to revert a courts decision that oversees monopolies could not be created by royal prerogative but by Parliament alone. Pincus and Robinson (2011)(pg. 34) describe how in 1678 Parliament tried and failed to make Charles II go to war, and how in 1689 was to force William to go to war before he wanted to.

[20]A later event supports the idea the Whigs had substantial financial clout. Pincus and Robinson (2011) note how in 1715 when the Tories took office, Whig financiers refused to offer loans to the government, setting off an international financial crisis.

[21]Thompson (1994a) pg. 167

Spain, adopted the same institutions that England did after the Glorious Revolutions, their kings would have found it optimal to pay back their loans. And as a consequence, France and Spain would also have had access to the sort of credit England had after 1688.

The counterfactual implied by our framework is that had England found silver in the Americas to the extent that Spain did, there would have been no need for the English king to hand over power to parliament. The English king would have been able to fund his wars and defend his throne on his own.

An important aspect of our argument is that the boom in the English economy led by the rise of the commercial and financial sector brought about a decrease in the *fraction* of the wealth that the King could summon. There is evidence for this in the data compiled by Karaman and Pamuk (2011).[22] They show that a proxy for state capacity (annual revenue per capita as a fraction of daily urban wages) stayed more or less constant in England during the 16^{th} and 17^{th} century up to the Glorious Revolution. This fraction remained constant in an environment of high GDP per capita growth (as measured by Maddison (2007) - see column (3) in Table 1 above), suggesting an actual decrease in state capacity if measured with GDP per capita. The data for France and Spain reveal that in the year 1500 all three economies had the same state capacity as measured by Karaman and Pamuk (2011). After 1500 state capacity grew rapidly in France and Spain.[23]

Our model generates some comparative statics that contribute to the literature on state capacity such as Besley and Persson (2009).

In the economics literature, our paper is related to the analysis of political transitions (see Acemoglu and Robinson (2001), Lizzeri and Persico (2004), and Ticchi and Vindigni (2009)), to the analysis of endogenous constitutions

[22] See Karaman and Pamuk (2011) Figures 1,2, and 3.

[23] See Karaman and Pamuk (2011) Figures 1,2, and 3. Their empirical work shows a positive correlation between state capacity and absolutist regimes in agricultural economies, but in highly urbanized economies the correlation between state capacity and absolutism is negative. This empirical result suggests that in highly urbanized countries, such as England, increasing state capacity is easier to obtain under a more representative regime.

(see Aghion et al. (2004) and Ticchi and Vindigni (2010)), and to economic history literature that has looked at the English case (see Mathias and O'Brien (1976), North and Weingast (1989), Jha (2010), and Pincus and Robinson (2011)).

There is a large literature in history, sociology, and political sciences that analyzes the relationship between the economy and institutions (see Lipset (1959), Moore Jr. (1966), Bates and Lien (1985), Ertman (1997), and Stasavage (2003)). And some that analyze the the relationship between war and institutions (see Hintze (1975), Tilly (1990), and Downing (1988)).

There is also a vast literature in political science and economics that discusses whether the level of income leads to democratization (see Lipset (1959), Przeworski et al. (2000), Epstein et al. (2006), Acemoglu et al. (2008), and Boix (2009)). Our framework suggests that is not the level of income that matters, but the fraction that is non-verifiable. In a contemporary context our model would predict that countries in which the national income is concentrated on verifiable sources of wealth such as oil would tend to have autocratic regimes, whereas countries with large financial, services, and trade sector are more likely to be democratic. In this sense our model proposes an alternative modernization hypothesis.

2 The Model

2.1 Setup

Our setting focuses on a specific country (which we sometimes refer to as "our country") with two players: King (K) and Citizen(s) (C).[24] The two players represent the whole of society and have total resources equal to $W = 1 + \phi$. The parameter $\phi > 0$ is the portion of wealth in the country that belongs to C and cannot be used for war. We interpret them as resources that cannot

[24] We abstract from any free-rider issues by treating C as an individual player.

be converted in a war investment either because they are required as normal investments or consumption in the economy or because these are illiquid resources and there are credit market constraints that make it impossible to utilize ϕ in war, so that ϕ will be influenced by how developed our country's financial system is.[25] The remaining resources, which we normalize to one, are shared between K and C in proportion k and $1-k$ respectively and these are the resources available for a war investment. The fraction $k \in (0,1)$ is available to the King through ownership, taxation, or loans.[26]

We will assume an infinite number of periods, where utility for both players is discounted at a rate $\beta \in (0,1)$. Both players are risk-neutral. In each period, our country is either under attack and thus faces a defensive war (we call this a "defensive" period) or, if it not under attack, there is the opportunity for an offensive war (we call this an "offensive" period). We assume wars are always against a (single) enemy i with wealth $\omega_i + \phi_i$, where ω_i is the portion of the enemy's wealth that is invested in the war effort and ϕ_i are the enemy's illiquid resources that cannot be invested in war. Since our interest is in the effect wars have on political institutions within our country and not in the interaction between different countries, we do not model enemies as strategic players and simply assume that there is a probability π that our country will be under attack. Of course, π will be influenced by several factors, such as potential enemy's relative wealths and military strenghts, their political institutions as well as geographical factors and we will discuss these issues later on in the paper.

In an offensive period, we assume our country always has the option of choosing between aligned and disaligned wars. Aligned wars are wars that are profitable for both K and C while disaligned wars may be very profitable for K but not profitable at all for C. We begin our description of how we model

[25]We assume these resources all belong to C for simplicity as this does not have a qualitative impact on our results.

[26]Any loans from outside the country would have to backed up by the king's resources as collateral.

this by assuming that expected returns from participation in an offensive war in a given period t for K when country i is attacked are equal to

$$r_t^{K,O} = p\left(X_t, x_t, \omega_i\right)\left[g^K\left(X_t, x_t\right)\left(\omega_i + \phi_i\right) + \alpha_i\right] + \left(1 - p\left(X_t, x_t, \omega_i\right)\right) \times 0$$

In other words, by participating in a war, K invests her resources k and gets some gains with probability p and loses her investment with probability $1 - p$. More specifically, $p\left(X_t, x_t, \omega_i\right)$ represents the probability of winning, which depends on the enemy's strength as captured by ω_i and the decision by both K ($X_t \in \{0, 1\}$) and C ($x_t \in \{0, 1\}$) to invest resources in the war: if the enemy's resources increase or if only K or C invest in the war, then the probability of winning will be reduced. Similarly, $g^K\left(X_t, x_t\right)$ represents the share of the enemy's wealth that will be given to K. The parameter $\alpha_i \geq 0$ represents ego-rents that will be given to K in case of victory in the war. In our interpretation, a good example of the case where $\alpha_i > 0$ is that of a dynastic war where a sovereign has an incentive to go to war for her own or her royal house's prestige regardless of the possible benefits that may accrue to her citizens.

The corresponding expected returns for C for participation in this war are

$$r_t^{C,O} = p\left(X_t, x_t, \omega_i\right) g^C\left(X_t, x_t\right)\left(\omega_i + \phi_i\right) + \left(1 - p\left(X_t, x_t, \omega_i\right)\right) \times 0 + \phi$$

where we note that her illiquid resources ϕ, which are not used by C for the war, are unaffected by the war outcome. Clearly, if K (resp. C) chooses not to participate in the war, then returns are equal to k (resp. $1 - k + \phi$).

To keep our analysis as simple as possible, we assume that for all possible enemies i, $\omega_i = \omega > 0$, and that $\left(\phi_i, \alpha_i\right) \in \left\{\left(\upsilon, \alpha\right), \left(\tau, 0\right)\right\}$ with $\tau > \upsilon > 0$

and $\alpha > 0$. Further,

$$\begin{array}{rcc} p\left(1,1,\omega\right) = \chi\left(\omega\right) & g^{K}\left(0,x_t\right) = 0 & g^{C}\left(X_t,0\right) = 0 \\ p\left(1,0,\omega\right) = k\chi\left(\omega\right) & g^{K}\left(1,1\right) = k & g^{C}\left(1,1\right) = 1-k \\ p\left(0,1,\omega\right) = (1-k)\chi\left(\omega\right) & g^{K}\left(1,0\right) = k & g^{C}\left(0,1\right) = 1-k \end{array}$$

with $\chi\left(\omega\right) \in \left(0,1\right)$. The above provides the simplest possible form for the probability of winning, where we assume a basic probability $\chi\left(\omega\right)$ if both K and C participate in the war, with the probability of winning if only one of them participates reduced proportionally to their investment. Naturally, we assume that χ is (weakly) decreasing in ω to capture the notion that an enemy that invests more resources in the war is difficult to beat.[27] More interesting is our assumption for the g^{K} and g^{C} functions. On the one hand, it must be that if K or C alone participate in a war, they should get all the spoils whereas when both participate they only get a fraction of the spoils. On the other hand, it must be that if both participate, the overall amount of spoils should be higher than when only one of them participates. By assuming that $g^{K}\left(1,1\right) = g^{K}\left(1,0\right)$ and $g^{C}\left(1,1\right) = g^{C}\left(0,1\right)$ we assume that these two effects exactly compensate each other. Put another way, for either K or C to get the other player to participate in the war does not bring any advantage or disadvantage other than the increased probability of winning.

Given this it is easy to see that when both K and C participate in the war expected returns are equal to

$$r_t^{K,O} = \begin{cases} \chi k\left(\omega+\tau\right) & if \quad \left(\phi_i,\alpha_i\right) = \left(\tau,0\right) \\ \chi k\left(\omega+\upsilon\right) + \chi\alpha & if \quad \left(\phi_i,\alpha_i\right) = \left(\upsilon,\alpha\right) \end{cases} \text{ and } r_t^{C,O} = \begin{cases} \chi\left(1-k\right)\left(\omega+\tau\right)+\phi & if \quad \left(\phi_i,\alpha_i \right. \\ \chi\left(1-k\right)\left(\omega+\upsilon\right)+\phi & if \quad \left(\phi_i,\alpha_i \right. \end{cases}$$

[27] When we discuss the results of our analysis of the model we'll also focus on the special cases where $\chi\left(\omega\right) = \frac{1}{1+\omega}$ or $\chi\left(\omega\right) = \chi \in \left(0,1\right)$. In the meantime, whenever there is no risk of confusion, we'll often write χ instead of $\chi\left(\omega\right)$ to economize on notation.

while if only K or C participates

$$r_t^{K,O} = \begin{cases} \chi k^2 (\omega + \tau) & if \quad (\phi_i, \alpha_i) = (\tau, 0) \\ \chi k^2 (\omega + \upsilon) + \chi k \alpha & if \quad (\phi_i, \alpha_i) = (\upsilon, \alpha) \end{cases} \text{ or } r_t^{C,O} = \begin{cases} \chi (1-k)^2 (\omega + \tau) + \phi & if \quad (\phi_i, \\ \chi (1-k)^2 (\omega + \upsilon) + \phi & if \quad (\phi_i, \end{cases}$$

We complete the description of offensive periods by assuming that in each such period there is always at least one potential enemy for which $(\phi_i, \alpha_i) = (\tau, 0)$ and at least one potential enemy for which $(\phi_i, \alpha_i) = (\upsilon, \alpha)$ and that

$$\begin{aligned} \chi (\omega + \tau) &> 1 \\ \chi (\omega + \upsilon) &\leq 1 \end{aligned}$$

In other words, we assume that when the enemy is such that $(\phi_i, \alpha_i) = (\tau, 0)$, C and K have an incentive to participate in a joint war because the returns are higher than peace returns. When $(\phi_i, \alpha_i) = (\upsilon, \alpha)$, on the other hand, C will (weakly) prefer not to participate in a joint war while K may prefer these wars because, even though the return on wealth are low, they wars generate additional ego-rents. Thus, a war with an enemy for which $(\phi_i, \alpha_i) = (\tau, 0)$ is an *aligned war* while one with an enemy for which $(\phi_i, \alpha_i) = (\upsilon, \alpha)$ is a *disaligned war*.[28]

In a defensive period, roles are reversed. Now, our country is under attack and the country's resources are under threat. In this scenario, K or C may decide to actively participate in the war effort or not, but whatever their decision, their resources will be lost in case of a loss. Now, expected returns

[28] Of course, one could also imagine "neutral" periods, where our country is not under attack but equally, there are no opportunities to attack or periods where only aligned or only disaligned wars are possible. Allowing for this would make the set up more realistic, but would not change our main conclusions and would further complicate the analysis. In section XXXX we briefly discuss these possibilities.

for K and C are equal to

$$
\begin{aligned}
r_t^{K,D} &= p\left(X_t, x_t, \omega\right)\left[g^K\left(X_t, x_t\right)\omega_i + \left(1 - X_t\right)\lambda k\right] + \left(1 - p\left(X_t, x_t, \omega\right)\right) \times 0 \\
r_t^{C,D} &= p\left(X_t, x_t, \omega\right)\left[g^C\left(X_t, x_t\right)\omega_i + \left(1 - x_t\right)\lambda\left(1 - k\right) + \lambda\phi\right] + \left(1 - p\left(X_t, x_t, \omega\right)\right) \times 0
\end{aligned}
$$

The first difference with the previous case is that since now our country is under attack both K and C lose everything in case of a loss, including illiquid resources ϕ, whether they participate or not. The interpretation here is that there is a successful invasion and even these illiquid resources will be taken away by the enemy, in the same way that our country takes the enemy's illiquid resources when our country succeeds in an offensive war.[29] In case of a win, by the same logic, anyone who participates gets a share (determined by g^K and g^C) of ω_i only and not ϕ_i.[30] Also, because defensive wars are more destructive than peace, even if won, only a fraction $\lambda \leq 1$ of his illiquid resources are retained by C. Finally, if K (or C) does not participate, they get their peace time returns, again reduced by λ. Otherwise, our previous assumptions still hold (in particular for the functions p, g^K and g^C), so that if both K and C actively participate in our country's defense, expected returns are equal to

$$r_t^{K,O} = \chi k\omega \text{ and } r_t^{C,O} = \chi\left(\left(1 - k\right)\omega + \lambda\phi\right)$$

while if only K actively participates expected returns are

$$r_t^{K,O} = \chi k^2\omega \text{ and } r_t^{C,O} = \chi k\left(\left(1 - k\right)\lambda + \lambda\phi\right)$$

[29] We don't allow for a distinction between the cases where our country's enemy is their K or their C or both by assuming that all our country's wealth is lost in case of defeat. This simplifies things considerably and has no important consequence for our results. We will discuss this assumption later.

[30] We assume this for symmetry with offensive wars, but the assumption is not necessary for our main results.

and, finally, if only C actively participates expected returns are

$$r_t^{K,O} = \chi (1-k) k\lambda \text{ and } r_t^{C,O} = \chi (1-k) ((1-k) \omega + \lambda\phi)$$

The second difference with the previous case is that we assume that if the war is lost, K is replaced and any future K will have a new ego-rents parameter $\alpha_i = 0$ regardless of the war, which is equivalent to assuming that K's replacement (and any future king) will be a benevolent king who shares C's preferences for aligned wars. This is again a simplifying assumption, but our main results would still hold as long as one assumes that for C the expected returns from the defeat of the current K in a defensive war are higher than the return from his victory.

At each time period t we can define a *state* η_t as vector (s_t, q_t, e_t) where $s_t \in \{O, D\}$ denotes the type of period t: either offensive or defensive; $q_t \in \{a, c\}$ denotes the regime at the end of period $t-1$: either absolutism a or rule by parliament c; and $e_t \in \{\alpha, 0\}$ denotes the type of King at the end of period $t-1$: either α or 0. We assume that at the initial period we have absolutism with K's ego-rents from a disaligned war equal to α: $q_0 = a, e_0 = \alpha$. We also assume that Rule by parliament, once in place, cannot be reversed ($q_t = c$ whenever $q_\tau = c$ for any $\tau < t$) and compatibly with the discussion above, that $e_t = 0$ whenever $e_\tau = 0$ for any $\tau < t$.

At the beginning of each period, (q_t, e_t) are already defined, and the timing of the game within a period is as follow:

1. Nature determines the period type $s_t \in \{O, D\}$ using a Bernoulli distribution where $\Pr(s = O) = \pi$.

2. If $q_t = a$ then

    (a) K decides whether to continue with absolutism $Y_t = a$ or to hand over power to parliament $Y_t = c$.

    (b) If $s_t = O$ then

i. K (whenever $Y_t = a$) or C (whenever $Y_t = c$) decides which war, if any, to participate in. Formally, we have W_t or $w_t \in \{\tau, \upsilon, \varnothing\}$ where W_t or $w_t = \tau$ represents the decision to attack in an aligned war, W_t or $w_t = \upsilon$ the decision to attack in a disaligned war and W_t or $w_t = \varnothing$ the decision to not go to war. Obviously, if W_t or $w_t \neq \varnothing$, then X_t or $x_t = 1$ while if W_t or $w_t = \varnothing$ then X_t or $x_t = 0$. The ruler (K or C) can also choose to make a costless transfer Z_t or z_t to the other player.

ii. If W_t or $w_t \neq \varnothing$, the remaining player decides whether to join the chosen war (x_t or $X_t = 1$) or not (x_t or $X_t = 0$).

(c) If $s_t = D$ then

i. K (whenever $Y_t = a$) or C (whenever $Y_t = c$) decide whether whether to join the defensive war (X_t or $x_t = 1$) or not (X_t or $x_t = 0$). Again, it can also decide to make a costless transfer Z_t or z_t to the other player.

ii. The remaining player decides whether to join the war (x_t or $X_t = 1$) or not (x_t or $X_t = 0$).

3. If $q_t = c$ then stage 2a above does not apply but the rest of the game proceeds as if $Y_t = c$.

4. If a war happens, the winner is determined using a Bernoulli distribution with probability $p(X_t, x_t, \omega)$.

5. Payoffs are realized. Also, formalizing the discussion regarding q_t and e_t we have

$$q_{t+1} = \begin{cases} c & if \quad q_t = c \text{ or } (q_t, Y_t) = (a, c) \\ a & otherwise \end{cases}$$

$$e_{t+1} = \begin{cases} 0 & if \quad e_t = 0 \text{ or } (s_t, e_t) = (D, \alpha) \text{ and the defensive war is lost} \\ \alpha & otherwise \end{cases}$$

To reiterate in words, rule by parliament is in place at time $t + 1$ when we already had a rule by parliament at time t or when K decided to hand over power to parliament at time t. We have a king with no ego-rents in any war at time $t + 1$ when we already had such K at time t or when period t is a defensive period and the resulting war is lost. In this way, both $q = c$ and $e = 0$ are absorbing states.

Finally, in any equilibria we discuss below, we will always select those where K chooses aligned wars if indifferent between them and misaligned wars, K does not make transfers if indifferent between making them or not, and C participates in a war whenever it is indifferent between participating and not participating.

A few observations about the structure we've described are worth making, particularly with respect to comparisons with the existing literature. The first observation is that our payoff structure is very similar to that in Jackson and Morelli (XXXX) in that wars require that a country invests certain resources hoping to gain a return by taking over the enemy's resources, with the possibility of a bias that implies a difference in preferences towards war between ruler and citizens. A first, obvious, difference is that while Jackson and Morelli study the impact of the bias on the decision to go to war, we assume that a war will happen, with the bias being about preferences between aligned and disaligned wars.[31] More importantly, however, we distinguish between resources that K can freely utilize for war and those that require C's participation and this will be crucial in our dynamic setting where K may be forced to abandon absolutism in order to obtain C's cooperation. Indeed, being able to explain when this mechanism leads to a change in political regime away from absolutism and when it doesn't can be seen as a way of endogenizing bias.

[31]We model bias in the form of ego-rents because it fits some of the historical evidence for the age we consider than the difference in transferable returns obtained by the ruler and citizens in a successful war in Jackson and Morelli (XXXX). It would be easy to model bias in their terms in our setting without significantly affecting our results.

The second observation is that there are also important similarities and differences with the Acemoglu and Robinson (XXXX) setting. The obvious similarities are that both models seek to explain institutional transitions by taking economic fundamentals as given. The differences are in the fundamentals themselves that matter. Acemoglu and Robinson (XXXX) assume a level of development where redistribution is the crucial issue in public policy so that the incentives for democratization are mainly determined by the the level of inequality in the country. In their model, recessions might give the poor a lower opportunity cost of a revolution and democracy might ensue because it is the only way for the elites to crediblt committ to a redistributive policy. In our paper, we focus on an earlier level of development, when public policy is mostly about the decision of whether to pursue unaligned (e.g. dynastic) or aligned (e.g. colonial) wars and the incentives for introducing rule by parliament are mainly determined by how many resources the sovereign has at her disposal in order to wage war; this, in turn, is determined by the way the economy is structured. Thus, defensive wars, might give citizens the opportunity to remove a sovereign that chooses unaligned wars even if this comes at a cost. When this threat is credible, the sovereign might decide to voluntarily relinquish her absolutist powers (i.e. the power to choose which wars to wage) in order to stay in power.

Finally, we observe that the distinction between liquid and illiquid resources, on the one hand, and the distinction between resources that are immediately available to the sovereign and those that are available only with the citizens' consent, allows us to capture the notions of state and fiscal capacity as discussed in Besley and Persson (XXXX). In our setting, these are modeled as exogenous parameters, but when we discuss our results, we will consider the possibility of changes driven by economic development and development in credit markets.

2.2 Static Model

Before moving to the analysis of the dynamic model, we briefly first look at a benchmark case where the game consists of a single period in which K is in power at the beginning of the period. This allows us to better understand the impact of dynamics on the relationship between K and C. We will assume, from now on, that

Assumption 1 $\omega \geq \lambda$

This guarantees that in a defensive period, each player prefers participation in the defensive war to free-riding on the other player by letting him/her participate alone. This is because we wish to focus on situations where in a static setting C would unambiguously want to help K defend our country so that the potential incentives not to help are completely due to the dynamics where C would tra-off losses today for the potential benefit of a better king tomorrow Given this, we look for the unique pure-strategy (with the selection criteria described above) subgame perfect equilibrium of the stage game. Under these conditions, we can provide an informal statement of our first result in proposition 1. In the appendix we provide a formal statement of proposition 1.

Proposition 1 In any subgame-perfect pure strategy equilibrium of the static model

1. K chooses absolutism.
2. In a defensive period, both players choose to participate in the war.
3. In an offensive period, K chooses an aligned war whenever $k > 1 - \chi(\omega + \upsilon)$ and $\alpha \leq \alpha_1^S = \frac{1}{\chi} - (\omega + \upsilon) + k\left((\omega + \tau) - \frac{1}{\chi}\right)$ or $k \leq 1 - \chi(\omega + \upsilon)$ and $\alpha \leq \alpha_2^S = (\omega + \tau) - \frac{1}{\chi} - k(\omega + \upsilon)$. In all other cases, the King chooses a misaligned war. When he chooses

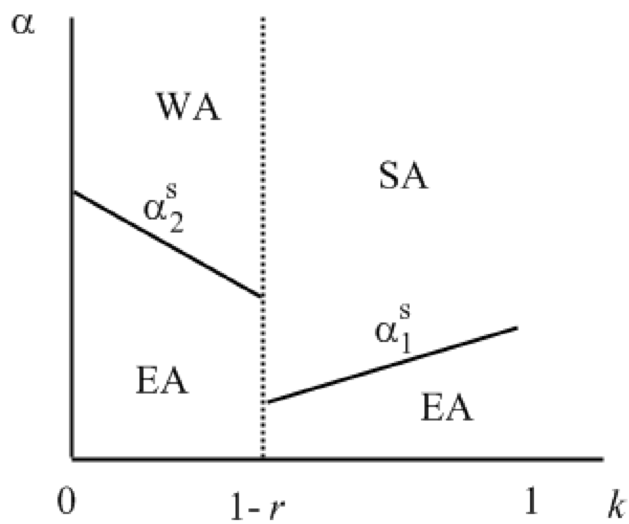
a misaligned war and when $k > 1 - \chi(\omega + \upsilon)$ then he will pay a transfer $Z = (1-k)(1-\chi(\omega+\upsilon))$ to buy C's participation in the misaligned war, while in all other cases $Z = 0$. C always participates in aligned wars and participates in a misaligned war iff $Z \geq (1-k)(1-\chi(\omega+\upsilon))$.[32]

Proof See appendix.

In the static version of our model, K never has an incentive to hand over power. This is so because in the case the state of the world is a defensive, then C has every incentive to participate in the war. Whereas if the state is offensive then K would either do equally well (if it is the case that C and K would both prefer aligned wars) or strictly worse (K would prefer a misaligned war and C an aligned one) by handing over power. As we shall see in the dynamic model, C may no longer be willing to participate in wars in defensive periods because he may be willing to trade off present losses for possible future gains from replacing the current king. This threat on the current king opens the possibility of rule by parliament because the King may be willing to concede power to C in order to get the latter's participation and protection.

Nevertheless, the static model, has other interesting features that can be represented in figure 1. In the area denoted by EA (enlightened absolutism) the King simply prefers aligned wars to the cost of getting C to agree to misaligned wars or to going to misaligned wars alone. In the area denoted by SA (strong absolutism) the King is able and willing to buy C's cooperation to support him during misaligned wars. Finally, WA denotes weak absolutism, and in this area the King goes to misaligned wars on his own as he can not afford to buy C's cooperation but still prefers to go to misaligned wars alone to going to aligned wars with C's help.

[32]For completeness, we should add that in the off-equilibrium path case where $Y = c$



If K has the resources to buy C's cooperation for a misaligned war, it becomes easier for the King to choose such a war. Thus, when k is large enough to buy C's cooperation, a misaligned war is chosen for lower values of α than when K can not afford to buy C's cooperation: ($\alpha_2^S > \alpha_1^S$ for any value of k). The incentives to get C's cooperation and choose a misaligned war are, however, are decreasing in k. This is equivalent to saying that α_1^S is increasing in k. To see this, note that the condition that defines α_1^S is such that for any $\alpha > \alpha_1^S$ we have

$$k\chi(\omega + \upsilon) + \chi\alpha - (1 - k)(1 - \chi(\omega + \upsilon)) > k\chi(\omega + \tau).$$

In this inequality we can see that the marginal benefit of an increase in k of choosing an aligned war is equal to $\chi(\omega + \tau)$ while the corresponding marginal benefit of choosing a misaligned war is $\chi(\omega + \upsilon)$ (the increase in benefits) plus $(1 - \chi(\omega + \upsilon))$ (the decrease in costs) which totals one. Since $\chi(\omega + \tau) > 1$, we have that when K has the opportunity to get C's cooperation, the incentive to do so and to choose a misaligned war over choosing an

then in a high-threat period both C and K would participate, while in a low-threat period, C would always choose aligned wars with no transfers and K would always participate.

aligned war is decreasing in k.[33]

In the case K cannot get C's cooperation, the relevant condition that defines α_2^S is that for any $\alpha > \alpha_2^S$ we have:

$$k\left(k\chi\left(\omega+\upsilon\right)+\chi\alpha\right) > k\chi\left(\omega+\tau\right)$$
$$\Leftrightarrow k\chi\left(\omega+\upsilon\right)+\chi\alpha > \chi\left(\omega+\tau\right),$$

which is to say that the relative marginal benefit of an increase in k for a misaligned war over an aligned war is $\chi\left(\omega+\upsilon\right)$. Therefore the incentive to go to a misaligned war increases in k.

The whole analysis implies that the incentive to go to a misaligned war is not monotonic in k. At first it increase in k and then (as soon as $k > 1-\chi\left(\omega+\upsilon\right)$) it start decreasing again, although it is always greater when K can afford to get C's cooperation for a misaligned war than when K cannot. It is also worth noting that while the static model does not generate a hand-over of power, it does imply different behaviors for absolutist kings. If $\alpha > \alpha_1^S$ and $k > 1-\chi\left(\omega+\upsilon\right)$ then K will choose misaligned wars but will be able to compensate C and thus built a strong absolutism because the country will put all its resources in fighting wars. If $\alpha > \alpha_2^S$ and $k \leq 1-\chi\left(\omega+\upsilon\right)$ then K will still choose misaligned wars but now it will not be able to get C's cooperation. This will lead to a weak absolutism where in offensive periods the king chooses wars, but only a a fraction of the country's resources are invested in the fighting. Finally, in all other cases, we could talk of a enlightened absolutism because α is not large enough and K chooses wars just as C would.

[33]As the proof in the appendix makes clear, with assumption 1, whenever K prefers a misaligned war to getting C's cooperation to an aligned war, she also strictly prefers getting cooperation than going alone.

2.3 Dynamic Model

While the static model provides a useful benchmark where some of the salient features of the model can be highlighted, it is clear that incentives for rule by parliament to emerge, if any, must come from a dynamic setting because in such setting, C may decide to not participate in the war in order to get K replaced. In analyzing the dynamic game, we will maintain our selection assumptions of the static game and also focus on Markov Perfect Equilibria (MPE). MPEs are subgame perfect equilibria with the additional requirement that equilibrium strategies can only be dependent on the current state of the world and not on past histories. In our context, this requirement means that in period t both players can only condition their strategies on $\eta_t = (s_t, q_t, e_t)$.

We also make the simplifying assumption that

Assumption 2 $\upsilon = \frac{1}{\chi} - \omega$.

This implies that $\chi(\omega + \upsilon) = 1$ and K can always afford to buy C's cooperation since, for C, the return from participation in a misaligned war is the same as the return from non participation. We will discuss this assumption and the consequences of having $\chi(\omega + \upsilon) < 1$ later on but it does not affect our main results and simplifies the exposition a great deal.

We begin by noting that whenever it is the case that η_t is such that either $e_t = 0$ or $q_t = c$, then the unique MPE follows immediately from our static analysis. In the former case, the king's preferences are perfectly aligned with C's so that she will always choose aligned wars in an offensive period. Given that, there is no incentive for C not to participate in wars in offensive or defensive periods and there will never be a hand over of power. In the latter case, it is easy to see that C always chooses aligned wars in offensive periods and it is always a dominant strategy for K to participate in wars in any period. Therefore, the only interesting states are $\eta_t = (D, a, \alpha)$ or $\eta_t = (O, a, \alpha)$. Thus, without loss of generality, from now on, we will only discuss the cases $s_t = O$ and $s_t = D$ assuming that $q_t = a$ and $e_t = \alpha$.

It is useful to present the unique MPE of the dynamic game by following the analysis step by the step. We will collect out results in proposition 2 in section 2.3.3.

2.3.1 The Citizen's decision

First note that if $\alpha \leq \alpha_1^S$ then C has no incentive to avoid participation in a defensive or a offensive period because K chooses as C would choose if in power. Equally, if $Y_t = c$, C is in charge and both C and K would choose participation in offensive periods (where C would choose aligned wars) and defensive periods.

Now let's assume that $Y_t = a$, and that $\alpha > \alpha_1^S$.[34] The incentives during an offensive period are clear because K faces no threat. K proposes a misaligned war and C chooses to participate because participation provides the same expected returns as non-participation, given assumption 2. In a defensive period, however, C may decide not to participate. If C chooses to participate in a defensive period, C has the following value functions:

$$V_C^O(1,1) = (1-k) + \phi + \beta\left[\pi V_C^O(1,1) + (1-\pi)V_C^D(1,1)\right],$$
$$V_C^D(1,1) = \chi\left[(1-k)\omega + \lambda\phi + \beta\left[\pi V_C^O(1,1) + (1-\pi)V_C^D(1,1)\right]\right]$$
$$+ (1-\chi)\frac{\beta}{1-\beta}\left[(1-k)\left(\pi\chi(\omega+\tau) + (1-\pi)\chi\omega\right) + \pi\phi + (1-\pi)\chi\lambda\phi\right],$$

where $V_C^s(1,1)$ indicates the value for player C at any state $s \in \{O, D\}$ of participating in a misaligned war (and being compensated for it) in an offensive period and participating in war in a defensive period.[35]

In C chooses not to participate in a defensive period, C has the following

[34] Note that assumption 2 now implies that $\alpha_1^S = k\left((\omega+\tau) - \frac{1}{\chi}\right)$

[35] This is conditional on $(q_t, e_t) = (a, \alpha)$, $\alpha > \alpha_1^S$ and $Y_t = a$, of course, but we omit this for notational simplicity.

value functions:

$$V_C^O(1,0) = (1-k) + \phi + \beta\left[\pi V_C^O(1,0) + (1-\pi)V_C^D(1,0)\right],$$
$$V_C^D(1,0) = \chi k\left[(1-k)\lambda + \lambda\phi + \beta\left[\pi V_C^O(1,0) + (1-\pi)V_C^D(1,0)\right]\right]$$
$$+ (1-\chi k)\frac{\beta}{1-\beta}\left[(1-k)\left(\pi\chi(\omega+\tau) + (1-\pi)\chi\omega\right) + \pi\phi + (1-\pi)\chi\lambda\phi\right],$$

where $V_C^s(1,0)$ indicates the value for player C at any state $s \in \{O, D\}$ of participating in a misaligned war in a offensive period and *not* participating in war in a defensive period *as long as K remains in power*.

Note that the decision to withhold resources and not help the King has important consequences. If C doesn't participate in war in a defensive period, then with probability $1-\chi k$ the war is lost. In that case C loses his endowment $1-k+\phi$ but gets a new king that will always choose aligned wars in a offensive period. With such new king, as discussed above, C would always be willing to participate in wars, which are then always won. The expected return to C from time $t+1$ onwards would then be γ plus return $R(1-k)$ in offensive periods (which happen with probability π) and $\rho(1-k)$ in defensive periods (which happen with probability $1-\pi$). Rearranging terms, it is easy to see that we can define the expected gain for C from not participating in a war in a defensive, which we call θ as:

$$V_C^D(1,0) - V_C^D(1,1) = \theta = \chi(1-k)(1-\beta\pi)\frac{\beta\pi(1-k)(\omega+\chi\tau-1) - (1-\beta\chi)(1-k)\omega - \lambda\phi(1}{(\chi\beta\pi - \beta\pi - \chi\beta + 1)(\chi k\beta\pi - \beta\pi - \chi k\beta}$$

The function $\theta(k)$ has zeros at $k=1$ and at $\widehat{k}$, where

$$\widehat{k} = 1 - \frac{\lambda\phi(1-\beta\chi-\beta\pi+\pi\beta\chi)}{\beta\pi(\omega+\chi\tau-1)-(1-\beta\chi)\omega}$$

and where $\widehat{k} \in (0,1]$ if and only if

$$\begin{aligned} \beta &> \widehat{\beta} = \frac{\omega + \lambda\phi}{\chi\omega + \pi(\omega + \tau\chi - 1) + (\pi + \chi(1-\pi))\phi\lambda} \\ \chi &> \widehat{\chi} = \frac{\omega(1-\pi) + \pi + \lambda\phi(1-\pi)}{\omega + \pi\tau + \lambda\phi(1-\pi)} \end{aligned}$$

If $\beta \leq \widehat{\beta}$, $\theta < 0$ for all values of k which means that C is always willing to participate in wars in defensive periods and there is no effective threat against the king that would make him want to hand over power and so rule by parliament cannot obtain. The condition $\chi > \widehat{\chi}$ ensures that $\widehat{\beta} < 1$. The condition $\beta > \widehat{\beta}$ is standard as C will not be willing to increase the probability of losing today for future gains if he isn't sufficiently patient. The condition $\chi > \widehat{\chi}$ is more interesting as it tells us that for the decision to participate in the defensive war to make a difference, the probability of winning together χ must be sufficiently high as otherwise the gains from removing the gain when future wars are likely to be lost would be too small, no matter how patient C is.[36] On the other hand, if $\beta > \widehat{\beta}$, and $\chi > \widehat{\chi}$, then θ is strictly positive for $k = 0$ and strictly decreasing in k in the $\left[0, \widehat{k}\right]$ interval. This means that if $k \in \left[0, \widehat{k}\right)$ then C would now be willing to leave the king to fight the war so that there is a higher probability that she will be removed. It is in these circumstances that rule by parliament becomes possible because the king might prefer to stay in power with limited rule to the higher risk of being replaced. Thus, a necessary condition for rule by parliament is

Assumption 3 $\beta > \widehat{\beta}$ and $\chi > \widehat{\chi}$

Without assumption 3, the equilibrium outcomes described in proposition 1 would obtain in the dynamic game as well. Of course, this assumption is only a necessary condition for rule by parliament. Indeed, if $k \geq \widehat{k}$ then,

[36] The assumption that $\chi(\omega + \tau) > 1$ already puts a lower bound on the possible values of χ, but it is easy to show that $\chi > \widehat{\chi}$ is even more restrictive.

even if $\beta > \widehat{\beta}$ and $\chi > \widehat{\chi}$, we have that $\theta \leq 0$ and rule by parliament cannot obtain.[37]So consider again the case $k < \widehat{k}$, where $\theta > 0$. We know C would prefer to avoid participation in a defensive war in order to replace K. The King, however, has (expected) resources $k\chi\omega$ which he can transfer to C in order to compensate C for the loss of θ and obtain C's participation in the war. This will be possible whenever $k\chi\omega \geq \theta$.

Since $k\chi\omega$ is a strictly increasing continuous function of k and is zero for $k = 0$ and positive for $k = \widehat{k}$ while θ is continuous, strictly decreasing in k, positive for $k = 0$ and zero for $k = \widehat{k}$, it follows that there must be a unique $k^* \in \left(0, \widehat{k}\right)$ such that

$$\theta\left(k^*\right) = k^*\chi\omega$$

where for $k < k^*$, C cannot be compensated while for $k \in \left[k^*, \widehat{k}\right)$ such compensation is possible.

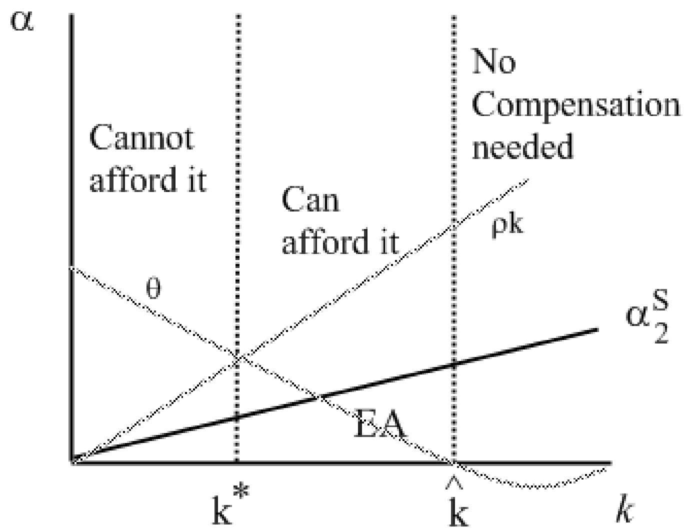
Therefore, under assumptions 2 and 3, C will participate in a misaligned war in an offensive period, while in a defensive period C's participation will depend on the value of k.[38] For $k < k^*$ C will not participate in the war; for $k \in \left[k^*, \widehat{k}\right)$ he will participate if he gets compensation θ but not otherwise; while for $k \in \left[\widehat{k}, 1\right)$ he will participate even without compensation. We have illustrated these results in Figure 2.

2.3.2 The King's decision

We now focus our analysis on K. Our analysis so far has shown that under assumptions 2 and 3, whenever $\alpha \leq \alpha_1^S$ or $k \in \left[\widehat{k}, 1\right)$ K does not face any threat that C will not participate in war during defensive periods. If this is the case, it is optimal for K to choose absolutism, whichever war K prefers in an offensive period. It is also not necessary that K make any transfers in an offensive period since assumption 2 holds. Therefore, we only need to focus on the two cases where $\alpha > \alpha_1^S$ and either $k \in [0, k^*)$ or $k \in \left[k^*, \widehat{k}\right)$.

[37]If $\lambda\phi = 0$ then $\widehat{k} = 1$ because C has nothing to lose.

[38]Assuming, of course, $q_t = a, e_t = \alpha, Y_t = a, \alpha > \alpha_1^S$.



We begin our analysis with the case in which $k \in (0, k^*)$. In an offensive period, K will optimally choose absolutism and a misaligned war, while in a defensive period the only choices available to K are going it alone or handing over power, since she cannot afford to compensate C for θ. The value function for sticking to absolutism in an offensive period and going it alone in a defensive period is given by:

$$\begin{aligned} V_K^O(a,a) &= k + \chi\alpha + \beta\left[\pi V_K^O(a,a) + (1-\pi)V_K^D(a,a)\right] \\ V_K^D(a,a) &= \chi k\left[k\omega + \beta\left[\pi V_K^O(a,a) + (1-\pi)V_K^D(a,a)\right]\right] \end{aligned}$$

where $V_K^s(a,a)$ indicates the value for player K at any state $s \in \{O, D\}$ of choosing absolutism in an offensive and defensive period respectively. Notice that in a defensive period this strategy implies that C will not participate in the war and so K survives only if the war is won, which happens with probability χk.

The value function for handing over power in a defensive period and going it alone in offensive period is given by:

$$\begin{aligned} V_K^O(a,c) &= k + \chi\alpha + \beta\left[\pi V_K^O(a,c) + (1-\pi)V_K^D(a,c)\right] \\ V_K^D(a,c) &= \chi\left[k\omega + \beta\left[\pi V_K^O(c,c) + (1-\pi)V_K^D(c,c)\right]\right] \end{aligned}$$

where $V_K^s(c,c)$ denotes the value function when there is rule by parliament and C decides on wars in offensive periods. Note that $V_K^D(a,c) = V_K^D(c,c)$ in that with strategy (a,c) once in a defensive period, rule by parliament is established and cannot be reversed. So, we calculate $V_K^D(a,c)$ by calculating $V_K^D(c,c)$ instead, which solves the system

$$\begin{aligned} V_K^O(c,c) &= \chi k(\omega+\tau) + \beta\left[\pi V_K^O(c,c) + (1-\pi)V_K^D(c,c)\right] \\ V_K^D(c,c) &= \chi\left[k\omega + \beta\left[\pi V_K^O(c,c) + (1-\pi)V_K^D(c,c)\right]\right] \end{aligned}$$

We can now show that handing over power will be better for K whenever

$$V_K^D(a,c) = V_K^D(c,c) > V_K^D(a,a)$$
$$\Leftrightarrow \alpha < \alpha^* = (1-\beta\pi)(1-k)\frac{\beta\pi(\chi\tau-(1-\chi)\omega)+\omega}{\beta\pi\chi(1-\pi\beta-\beta\chi+\pi\beta\chi)} + \alpha_1^S.$$

Note that $\alpha^* > \alpha_1^S$ so that for $k \in (0,k^*)$ we will have that in defensive periods K will choose absolutism whenever $\alpha \geq \alpha^*$ and rule by parliament whenever $\alpha_1^S < \alpha < \alpha^*$ (and absolutism again whenever $\alpha \leq \alpha_1^S$). We can see this result represented graphically in Figure 3. It is also immediate to see that $\alpha^* - \alpha_1^S$ is strictly decreasing in k.

Suppose now that $k \in \left[k^*, \widehat{k}\right)$ so that K can also contemplate the possibility of compensating C in a defensive period in order to guarantee his participation in the war. This strategy gives

$$\begin{aligned} V_K^O(a,a,Z) &= k + \chi\alpha + \beta\left[\pi V_K^O(a,a,Z) + (1-\pi)V_K^D(a,a,Z)\right] \\ V_K^D(a,a,Z) &= \chi k\omega - \theta + \beta\chi\left[\pi V_K^O(a,a,Z) + (1-\pi)V_K^D(a,a,Z)\right], \end{aligned}$$

where now Z emphasizes that K chooses absolutism but compensates C in a defensive period. The King will choose to hand over power if:

$$V_K^D(a,c) > V_K^D(a,a,Z)$$
$$\Leftrightarrow \alpha < \widehat{\alpha} = \frac{1-\beta\pi}{\chi^2\beta\pi}\theta + \alpha_1^S$$
$$= (1-k)(1-\beta\pi)^2 \frac{\beta\pi(1-k)(\omega+\chi\tau-1) - (1-\beta\chi)(1-k)\omega - \lambda\phi(1-\beta\chi-\beta\pi+\pi\beta\chi)}{\chi\beta\pi(\chi\beta\pi-\beta\pi-\chi\beta+1)(\chi k\beta\pi-\beta\pi-\chi k\beta+1).} + \alpha_1^S.$$

Since $\widehat{\alpha} - \alpha_1^S = \frac{1-\beta\pi}{\beta\pi}\theta$, then $\widehat{\alpha} - \alpha_1^S$ is strictly positive and strictly decreasing in k.

We can also show that

$$V_K^D(a,a,Z) > V_K^D(a,a)$$
$$\Leftrightarrow \alpha > \alpha^{**} = \frac{1-\pi\beta-k\beta\chi(1-\pi)}{\pi\beta\chi^2(1-k)}\theta - k\frac{\omega(1-\pi\beta)+\pi\beta\chi(\omega+\tau)}{\pi\beta\chi} + \alpha_1^S$$

and, crucially, that $\alpha^* > \widehat{\alpha} > \alpha^{**}$ for any $k \in (0,1)$.[39]

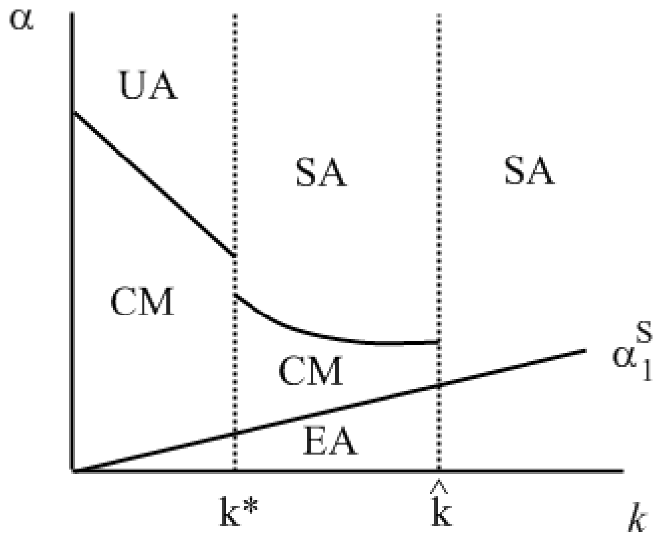
[39]

$$\alpha^* - \widehat{\alpha} = \frac{(1-\beta\pi)(1-k)\Lambda}{\pi\beta\chi(-\pi\beta-\beta\chi+\pi\beta\chi+1)(-\pi\beta-k\beta\chi+\pi k\beta\chi+1)}$$
$$\widehat{\alpha} - \alpha^{**} = \frac{k\Lambda}{\pi\beta\chi(-\pi\beta-k\beta\chi+\pi k\beta\chi+1)}$$

where it is easy to show that

$$\Lambda = (1-\pi\beta-\beta\chi+\pi\beta\chi)(\pi k\beta\chi\tau+\lambda\phi(1-\beta\pi)) + \beta\pi(1-k)(1-\beta\pi)$$
$$+\omega\left[(1-\beta\pi)(2-2\pi\beta-\beta\chi+\pi\beta\chi) + k\left(2\pi\beta-\pi^2\beta^2-\pi\beta^2\chi^2-\pi^2\beta^2\chi+\pi\beta\chi+\pi^2\beta^2\chi^2-1\right)\right]$$

is strictly positive.



We therefore have the following possibilities:

$$\begin{aligned}&\text{If } \alpha > \alpha^* \text{ then } (a,a,Z) \succ_K (a,a) \succ_K (a,c)\\&\text{If } \alpha^* > \alpha > \widehat{\alpha} \text{ then } (a,a,Z) \succ_K (a,c) \succ_K (a,a)\\&\text{If } \widehat{\alpha} > \alpha > \alpha^{**} \text{ then } (a,c) \succ_K (a,a,Z) \succ_K (a,a)\\&\text{If } \alpha^{**} > \alpha > \alpha_1^S \text{ then } (a,c) \succ_K (a,a) \succ_K (a,a,Z)\,.\end{aligned}$$

This tells us that in the case $k \in \left[k^*, \widehat{k}\right)$ then K will choose absolutism with compensation to C whenever $\alpha \geq \widehat{\alpha}$, and K will choose to hand over power whenever $\widehat{\alpha} > \alpha > \alpha_1^S$.[40] Also, an important feature of the model is that since $\alpha^* - \widehat{\alpha} > 0$ for any $k \in (0,1)$, it is the case that

$$\alpha^*(k^*) > \widehat{\alpha}(k^*)\,,$$

which implies a discontinuous jump downwards in the values of α for which constitutional monarchy obtains when k crosses k^*.

[40]One can show that α^{**} may be smaller than α_1^S for certain realizations of k so that it is not possible that $(a,a) \succ_K (a,a,Z)$.This is irrelevant, however, as in all such cases rule by parliament is preferred by K anyway.

2.3.3 Summary of Results

Our analysis can therefore be summarized in the following proposition. We represent it graphically in Figure 3.

Proposition 2 In the unique MPE pure strategy equilibrium of the dynamic model

1. Whenever $q_t = c$, C chooses aligned wars in offensive periods and participates in the war in defensive periods, never making any transfers. K always participates in wars.
2. Whenever $e_t = 0$ K chooses to stick with absolutism, to go to aligned wars in offensive periods, and to participate in the war in defensive periods. C also participates in any war, and K doesn't have to make transfers.
3. If $\eta_t = (O, a, \alpha)$ K chooses absolutism. If $\alpha \leq \alpha_1^S$ (resp. $\alpha > \alpha_1^S$) then K chooses aligned (resp. misaligned) wars with no transfers to C. C always participates in any war.
4. If $\eta_t = (D, a, \alpha)$ then
   (a) K chooses to hand over power to parliament if $\beta > \widehat{\beta}, \chi > \widehat{\chi}$ and if one of the following two conditions hold: either $k \in (0, k^*)$ *and* $\alpha \in \left(\alpha_1^S, \alpha^*\right)$, or $k \in \left[k^*, \widehat{k}\right)$ *and* $\alpha \in \left(\alpha_1^S, \widehat{\alpha}\right)$. In all other cases, K chooses absolutism.
   (b) If K chooses to hand over power, then both C and K participate in the war.
   (c) If K chooses absolutism, then
      i. K participates in the war and makes no transfer to C. C participates in war if $\beta \leq \widehat{\beta}$ or $\chi \leq \widehat{\chi}$; or $\beta > \widehat{\beta}, \chi > \widehat{\chi}$ and $k \geq \widehat{k}$; or $\beta > \widehat{\beta}, \chi > \widehat{\chi}, k < \widehat{k}$ and $\alpha \leq \alpha_1^S$.

ii. K participates in the war and makes a transfer θ to C, while C participates in the war for any transfer no smaller than θ whenever $\beta > \widehat{\beta}, \chi > \widehat{\chi}$, $k \in \left[k^*, \widehat{k}\right)$ and $\alpha \geq \widehat{\alpha}$

iii. K participates in the war and makes no transfer to C, while C participates in the war for any transfer no smaller than θ whenever $\beta > \widehat{\beta}, \chi > \widehat{\chi}$, $k \in (0, k^*)$ and $\alpha \geq \alpha^*$.

We begin our discussion with points 1 and 2. Whenever $q_t = c$, or $e_t = 0$ we are in absorbing states. In item 1, the power to choose wars in offensive periods belongs to C. There is no conflict since K has no means of removing C and C has no need to remove K. In item 2 the king is in power but chooses aligned wars in offensive periods so there is no need for C to pay the necessary cost to try and trigger a hand over of power. In offensive period with absolutism (item 3), C has no power to remove K whether he wants to $(\alpha > \alpha_1^S)$ or not $\left(\alpha \leq \alpha_1^S\right)$. Given that, and our assumption 2, it is optimal for C to participate in the war.[41]

In item 4.*a*. rule by parliament cannot happen if $\beta \leq \widehat{\beta}$ or $\chi \leq \widehat{\chi}$ because either the probability of winning future wars is too small for C or he doesn't sufficiently care about the future and C's threat is only credible if the gains from replacing the current king with someone who will choose aligned wars in the future is greater than the cost of a higher probability of losing a war today. This tradeoff is characterized by θ, and as we have seen in section 2.3 a necessary condition for θ to be positive for some values of k is that both $\chi > \widehat{\chi}$ and $\beta > \widehat{\beta}$ (assumption 3). However, even if assumption 3 obtains, rule by parliament can only occur if α is not too small or too large and if k is sufficiently small. From C's perspective, if k is large, the difference between getting an aligned war and a misaligned war is not so significant because he only gets $(1 - k)$ of that, while there still is a greater probability of losing ϕ. Thus, a transition to rule by parliament relies on the credibility of C's

[41] Recall that we assume C participates in wars whenever he's indifferent between participating or not.

threat to deny help to K in a defensive period and this threat is not credible for a small enough β and χ or a large enough k. From K's perspective, the decision also depends on the combination of α and k. If $\alpha \leq \alpha_1^S$ then K doesn't need to cede power to parliament because their interests are aligned while if α is sufficiently large, the King will still care enough for misaligned wars to stick with absolutism. Exactly what happens in this case depends on whether $k < k^*$ or $\widehat{k} > k \geq k^*$. In the latter case, K can afford to buy C's assistance in a defensive period by paying θ. Since k is not too low, this strategy dominates not compensating C and going to war alone. In the former case, buying C's cooperation is not an option and K's only alternative to rule by parliament is to go to war alone. Indeed, how large α needs to be for absolutism to obtain depends on k: as k increases, K has a better chance of surviving a defensive war even without C's help (if $k < k^*$) or needs fewer resources to compensate C (if $k^* \leq k < \widehat{k}$) for participation in the war and will be willing to stick to absolutism for lower values of α.

The most interesting consequence of this is that the difference between the $k < k^*$ or $\widehat{k} > k \geq k^*$ cases has two implications. The first implication is that whenever $k < k^*$, absolutism requires higher values of α to obtain than when $\widehat{k} > k \geq k^*$ because C's cooperation cannot be bought. The second, related, implication is that when $k < k^*$ then absolutism is inherently more unstable than in the other cases because K has a higher risk of being defeated in the defensive war whereas in all other cases C would be willing to help K and increase stability.

2.4 Comparative Statics

We have these parameters:

$$\alpha, k, \chi, \pi, \omega, \tau, \gamma, \beta$$

where $\gamma = \lambda\phi$ is a sufficient statistic. We leave β alone as it is not particularly interesting and also we look at the (α, k) space so we focus on the remaining parameters $\chi, \pi, \omega, \tau, \gamma$. We also have the following thresholds

$$\widehat{\beta}, \widehat{\chi}, \widehat{k}, k^*, \widehat{\alpha} - \alpha_1^S, \alpha^* - \alpha_1^S$$

(we also look at θ because it influences k^* and $\alpha^* - \alpha_1^S$). We begin below by showing how the parameters affect the thresholds when χ, π and ω are independent of each other and then consider the case where both χ and π depend on ω and the case where χ depends on ω but π is fixed.

The case where all of them are independent is the case where we believe both the probability of winning a war and the probability of being attacked are independent (or not very dependent) on relative resources invested in war. The intermediate case is that where the probability of winning is dependent on relative resources being invested in war but the probability of being attacked is not.

Jackson and Morelli only have the probability of winning (χ) which they model as either fixed (this corresponds to the case where $\chi(\omega) = \chi$) or as proportional to relative wealth $\left(\chi(\omega) = \frac{1}{1+\omega} \text{ in our setup}\right)$. The probability of being attacked π is endogenous in their model (as is the probability of attacking, which we assume to be $1 - \pi$). As a matter of a fact, in a sense, their whole model is about determining π. Thus, their model implies that π depends on ω but also depends on many other factors, and so can be conceived as half way between the π fixed and $\pi = \frac{1}{1+\omega}$ case. They also look at the case where $\chi(\omega) = 1$ if $\omega < 1$ and $\chi(\omega) = 0$ if $\omega > 1$. In our model if we assume that all of this is common knowledge, we would have to assume that we are always attacked by someone who has fewer war resources than us (otherwise we cannot win) so that $\chi = 1$ and then the question is why would they atack us to begin with. I don't think this story is compatible with the model, but I don't think it is very interesting either.

Note that the comparative statics of any threshold with respect to τ, γ is unaffected by whether χ and π are functions of ω. Also, the comparative statics of any threshold for π is unaffected by whether χ depends on ω or not. What will change are the comparative statics with respect to ω. Finally, if $\chi = \frac{1}{1+\omega}$, the condition $\chi > \widehat{\chi}$ must become a condition $\omega < \widehat{\omega}$.

- We begin with the case where χ, π are independent of ω.

1. For τ.

$$\frac{d\widehat{\beta}}{d\tau} < 0, \frac{d\widehat{\chi}}{d\tau} < 0, \frac{d\widehat{k}}{d\tau} > 0, \frac{d\theta}{d\tau} > 0 \left(\Rightarrow \frac{dk^*}{d\tau} > 0\right), \frac{d\alpha^*}{d\tau} > 0, \frac{d\left(\alpha^* - \alpha_1^S\right)}{d\tau}, \frac{d\widehat{\alpha}}{d\tau} > 0, \frac{d\left(\widehat{\alpha} - \alpha_1^S\right)}{d\tau} >$$
$$\frac{d\left(\alpha^* - \widehat{\alpha}\right)}{d\tau} > 0$$

All this is obvious from simple inspection except for $\frac{d\left(\alpha^* - \widehat{\alpha}\right)}{d\tau}$ which can be verified.[42]

2. We now consider γ. Simply by inspection we can show that

$$\frac{d\widehat{k}}{d\gamma} < 0, \frac{d\theta}{d\gamma} < 0 \left(\Rightarrow \frac{dk^*}{d\gamma} < 0\right), \frac{d\alpha^*}{d\gamma} = 0, \frac{d\left(\alpha^* - \alpha_1^S\right)}{d\gamma} = 0, \frac{d\widehat{\alpha}}{d\gamma} < 0, \frac{d\left(\widehat{\alpha} - \alpha_1^S\right)}{d\gamma} < 0, \frac{d\left(\alpha^* - \widehat{\alpha}\right.}{d\gamma}$$

whereas

$$\frac{d\widehat{\beta}}{d\gamma} = \pi \frac{\chi\left(\tau + \omega\right) - 1}{\left(-\pi + \pi\gamma + \pi\omega + \gamma\chi + \chi\omega + \pi\tau\chi - \pi\gamma\chi\right)^2} > 0$$
$$\frac{d\widehat{\chi}}{d\gamma} = \pi\left(1 - \pi\right)\frac{\tau + \omega - 1}{\left(\gamma + \omega + \pi\tau - \pi\gamma\right)^2} > 0$$

[42]Recall that

$$\alpha^* - \widehat{\alpha} = \frac{\left(1 - \beta\pi\right)\left(1 - k\right)\Lambda}{\pi\beta\chi\left(-\pi\beta - \beta\chi + \pi\beta\chi + 1\right)\left(-\pi\beta - k\beta\chi + \pi k\beta\chi + 1\right)}$$

and Λ is increasing in τ.

3. For χ, notice first that of course $\widehat{\chi}$ is not a function of χ. On the other hand,

$$\begin{aligned}\frac{d\widehat{\beta}}{d\chi} &= (\omega+\gamma)\frac{-\omega-\pi\tau-\gamma(1-\pi)}{(\pi-\pi\omega-\chi\omega-\pi\gamma-\pi\tau\chi-\gamma\chi+\pi\gamma\chi)^2}<0\\ \frac{d\widehat{k}}{d\chi} &= \pi\beta\gamma\frac{(1-\pi\beta)(\omega+\tau)-\beta(1-\pi)}{(-\omega-\pi\beta+\pi\beta\omega+\beta\chi\omega+\pi\beta\tau\chi)^2}>\pi\beta\gamma\frac{(1-\pi\beta)(\omega+\tau-1)}{(-\omega-\pi\beta+\pi\beta\omega+\beta\chi\omega+\pi\beta\tau\chi)^2}>\end{aligned}$$

It takes more complicated proofs, but one can show that

$$\frac{d\theta}{d\chi}>0,\frac{dk^*}{d\chi}>0,\frac{d\left(\widehat{\alpha}-\alpha_1^S\right)}{d\chi}>0$$

Finally, consider $\frac{d\left(\alpha^*-\alpha_1^S\right)}{d\chi}$. If we take the lim for $\beta\to 1$ of the above, we can show that this is positive whenever

$$\left(\pi\chi^2-2\pi\chi+\pi+2\chi-1\right)\omega+\pi\chi^2\tau>0$$

and solving for χ gives us the condition

$$\chi>\frac{\sqrt{\omega(1-\pi)(\omega+\pi\tau)}-\omega(1-\pi)}{\pi(\tau+\omega)}$$

which may be more restrictive than $\chi>\widehat{\chi}$.[43] One may wonder why $\widehat{\alpha}-\alpha_1^S$ is increasing in χ (see below) while for $\alpha^*-\alpha_1^S$ we need additional conditions on β and χ. The answer is that here we are looking at the threshold between absolutism where K goes alone and rule by parliament which implies that the probability of winning is χ versus χk while for $\widehat{\alpha}-\alpha_1^S$ we are looking at the threshold between absolutism where K goes pays C to participate and rule by parliament so that χ influences how much is paid but the probability of winning is still the

[43]It seems that this is a particular problem for high values of ω or τ.

same.

4. For ω,we can show the following assuming that $\beta > \widehat{\beta}$ and $\chi > \widehat{\chi}$

    (a) If $\tau - \gamma \leq 0$ then $\widehat{k}$ is increasing while $\widehat{\beta}$ and $\widehat{\chi}$ are decreasing in ω.

    (b) If $0 < \tau - \gamma < \frac{1}{1-\pi}$ then $\widehat{k}$ is increasing in ω if $\chi < \frac{1}{\tau-\gamma}$ or $\beta > \frac{1}{\chi+\pi}$ and decreasing otherwise. $\widehat{\chi}$ and $\widehat{\beta}$ are decreasing in ω.

    (c) If $\tau - \gamma \geq \frac{1}{1-\pi}$ then $\widehat{k}$ is increasing in ω if $\beta > \frac{1}{\chi+\pi}$ and decreasing otherwise. $\widehat{\chi}$ and $\widehat{\beta}$ are increasing in ω.

    Note that in the conditions b. and c. above, $\frac{1}{\chi+\pi} > \widehat{\beta}$ and so they constitute a further restriction. In a. on the other hand, we have the case where $\frac{1}{\chi+\pi} < \widehat{\beta}$. Also

$$\frac{d\theta}{d\omega}, \frac{d\left(\widehat{\alpha} - \alpha_1^S\right)}{d\omega} > 0 \text{ iff } \beta > \frac{1}{\chi + \pi}$$

    while

$$\frac{d\left(\alpha^* - \alpha_1^S\right)}{d\omega} > 0$$

    Finally, the sign of $\frac{dk^*}{d\chi}$ depends on the sign of $\frac{d\theta}{d\omega} - k\chi$.

    All of these conditions would be taken care of by assuming $\beta \to 1$ and $\chi + \pi > \frac{1}{2}$ without having to make assumption about the sign of $\tau - \gamma$.

5. For π simples inspection shows that

$$\begin{aligned}
\frac{d\widehat{\beta}}{d\pi} &= -(\gamma+\omega)\frac{\gamma(1-\chi)+(\omega+\tau\chi-1)}{(-\pi+\pi\gamma+\pi\omega+\gamma\chi+\chi\omega+\pi\tau\chi-\pi\gamma\chi)^2} < 0 \\
\frac{d\widehat{\chi}}{d\pi} &= -(\gamma+\omega)\frac{\omega+\tau-1}{(\gamma+\omega+\pi\tau-\pi\gamma)^2} < 0 \\
\frac{d\widehat{k}}{d\pi} &= \beta\gamma(1-\beta\chi)\frac{\chi(\tau+\omega)-1}{(-\omega-\pi\beta+\pi\beta\omega+\beta\chi\omega+\pi\beta\tau\chi)^2} > 0
\end{aligned}$$

And we have that

$$\frac{d\left(\alpha^{*}-\alpha_{1}^{S}\right)}{d\pi}=(1-k)\frac{-\pi^{2}\beta^{2}\chi^{2}(1-\beta)(\tau+\omega)-(1-\pi\beta)^{2}\omega+\beta(\pi\beta-1)(2\pi-\pi\beta-1)\chi\omega}{\pi^{2}\beta\chi\left(-\pi\beta-\beta\chi+\pi\beta\chi+1\right)^{2}}$$

but notice that either $\beta(\pi\beta-1)(2\pi-\pi\beta-1)\chi<0$ or, if $\beta(\pi\beta-1)(2\pi-\pi\beta-1)\chi>0$ then

$$\begin{aligned}\beta(\pi\beta-1)(2\pi-\pi\beta-1)\chi-(1-\pi\beta)^{2} &< \beta(\pi\beta-1)(2\pi-\pi\beta-1)-(1-\pi\beta)^{2}\\ &= -(1-\beta)(1-\pi\beta)(\pi\beta+1)<0\end{aligned}$$

and so $\frac{d\left(\alpha^{*}-\alpha_{1}^{S}\right)}{d\pi}<0$. Finally, we can show that

$$\begin{aligned}\lim_{\beta\to1^{-}}\frac{d\theta}{d\pi} &= \frac{\chi}{1-\pi}(1-k)\frac{(1-k)\left((\pi+\chi-1)\omega+\pi\chi\tau-\pi\right)-(1-\chi)(1-\pi)\gamma}{\pi(1-\chi)(1-k\chi)}>\\ \lim_{\beta\to1^{-}}\frac{d\left(\widehat{\alpha}-\alpha_{1}^{S}\right)}{d\pi} &= (1-k)\frac{(1-k)\left((\pi+\chi-1)\omega+\pi\chi\tau-\pi\right)-(1-\chi)(1-\pi)\gamma}{\pi^{2}\chi(1-\chi)(1-k\chi)}>0\end{aligned}$$

which follows since in both expressions the numerator is just the numerator of θ evaluated for $\beta=1$ (and we assume that $\chi>\widehat{\chi}$ and so this must be positive).

- We now take up the case where $\chi=\pi=\frac{1}{1+\omega}$. We can show that the condition

$$\chi(\omega+\tau)>1$$

becomes $\tau>1$. Given that, $\widehat{\omega}$ is well defined (it exists and is unique) and we need $\omega<\widehat{\omega}$ plus $\beta>\widehat{\beta}$ as necessary conditions for rule by parliament. $\widehat{\omega}$ is increasing in τ and decreasing in γ. We can also show that

$$\frac{d\widehat{\beta}}{d\omega}>0,\ \frac{d\widehat{k}}{d\omega}<0,\ \lim_{\beta\to1^{-}}\frac{dk^{*}}{d\omega}<0$$

while

$$\frac{d\left(\widehat{\alpha}-\alpha_1^S\right)}{d\omega}, \frac{d\left(\alpha^*-\alpha_1^S\right)}{d\omega}$$

are difficult to sign. We can show that $\lim_{\beta\to 1^-} \frac{d\left(\alpha^*-\alpha_1^S\right)}{d\omega}$ converges to $-\infty$ for $\omega \to 0^+$ and ∞ for $\omega \to \infty$ while $\lim_{\beta\to 1^-} \frac{d\left(\widehat{\alpha}-\alpha_1^S\right)}{d\omega}$ converges to $-\infty$ for $\omega \to 0^+$ and again $-\infty$ for $\omega \to \infty$ (NEED TO DO MORE WORK ON THIS)

- Finally, take up the case where $\chi = \frac{1}{1+\omega}$ while π is exogenous. Again the condition $\chi(\omega+\tau) > 1$ becomes $\tau > 1$. Given that, $\widehat{\omega}$ is well defined (it exists and is unique) and we need $\omega < \widehat{\omega}$ plus $\beta > \widehat{\beta}$ as necessary conditions for rule by parliament. $\widehat{\omega}$ is increasing in τ and decreasing in γ. We can also show that

$$\frac{d\widehat{\beta}}{d\omega} > 0, \frac{d\widehat{k}}{d\omega} < 0, \lim_{\beta\to 1^-} \frac{dk^*}{d\omega} < 0$$

while

$$\frac{d\left(\widehat{\alpha}-\alpha_1^S\right)}{d\omega}, \frac{d\left(\alpha^*-\alpha_1^S\right)}{d\omega}$$

are difficult to sign. We can show that $\lim_{\beta\to 1^-} \frac{d\left(\alpha^*-\alpha_1^S\right)}{d\omega}$ converges to $-\infty$ for $\omega \to 0^+$ and ∞ for $\omega \to \infty$ while $\lim_{\beta\to 1^-} \frac{d\left(\widehat{\alpha}-\alpha_1^S\right)}{d\omega}$ converges to $-\infty$ for $\omega \to 0^+$ and again $-\infty$ for $\omega \to \infty$ (NEED TO DO MORE WORK ON THIS, BUT THIS WOULD INDICATE THAT THERE ARE NO REAL DIFFERENCES BETWEEN THE CASE WHERE π IS FIXED AND $\pi = \frac{1}{1+\omega}$. IF TRUE THAT WOULD BE A VERY INTERESTING RESULT. ON THE OTHER HAND, WHETHER χ IS FIXED OR NOT SEEMS TO HAVE VERY SIGNIFICANT CONSEQUENCES FOR THE COMPARATIVE STATICS OF

ω).

3 Concluding Remarks

In the context of governments dedicated to warfare, the consequences on the economy from the opening up of Atlantica Trade and the colonization of the Americas must be largely taken for unexpected: specially finding silver or not.

Our model also contributes to a literature that has tried to explain the English exceptionalism by focusing on factor endowments alone. See for example Pomeranz (2000) and Allen (2009), who focus on why the industrial revolution started in England. Our argument is that factor endowments in England and Holland led these countries to specialize in trade and later in manufacturing. This economic transition - together with a offensive incidence of external threats - would eventually lead to a more representative form of government in these countries. In France, specialization led by comparative advantage meant that it continued to have an economy dominated by agriculture. In Spain the American silver turned into a source of revenue controlled by the King, undermining the city assemblies and the Spanish parliament. [44] Another transition that can be explained with our framework is that of Venice which transited from a one-man government at its creation to an oligarchy as the importance of trade increased.[45]

4 Appendix

Proposition 1 In any subgame-perfect pure strategy equilibrium of the static model:

1. $Y = a$

[44]For a detailed description of events in these countries in the 16^{th} and 17^{th} centuries see Findlay and O'Rourke (2009).

[45]See Gonzales de Lara et al. (2008) for a brief discussion on the role of important trading families in keeping the checks-and-balances in the polity, see Finer (1997) for a more detailed discussion of the political transition in Venice.

2. If $s = D$ then for any Y, $X = x = 1$,

3. If $s = O$ and $Y = c$ then $w = \tau, X = 1$ and $Z, z = 0$.

4. If $s = O$ and $Y = a$ then $z = 0$ and

$$W = \begin{cases} \tau \quad if & k > 1 - \chi(\omega + \upsilon) \text{ and } \alpha \leq \alpha_1^S = \frac{1}{\chi} - (\omega + \upsilon) + k\left((\omega + \tau) - \frac{1}{\chi}\right) \\ & \text{or } k \leq 1 - \chi(\omega + \upsilon) \text{ and } \alpha \leq \alpha_2^S = (\omega + \tau) - \frac{1}{\chi} - k(\omega + \upsilon) \\ \upsilon & otherwise \end{cases}$$

$$x = \begin{cases} 1 \quad if & W = \tau \\ & \text{or } W = \upsilon \text{ and } T \geq (1-k)(1 - \chi(\omega + \upsilon)) \\ 0 & otherwise \end{cases}$$

$$Z = \begin{cases} (1-k)(1 - \chi(\omega + \upsilon)) \quad if & k > 1 - \chi(\omega + \upsilon) \text{ and } \alpha > \alpha_1^S \\ 0 & otherwise \end{cases}$$

Proof If $s = D$, then K prefers participation to going alone always while she prefers participation to having C going alone whenever $\omega > (1-k)\lambda$. Similarly, C prefers participation to going alone always while she prefers participation to having K going alone whenever $\omega + \lambda\phi > k\lambda$. Thus, assumption 1 guarantees that both players participate in the defensive war.

Consider now the $s = O$ case. Clearly if the first player chooses an aligned war, then the other player also has an incentive to participate without any need for transfers. If $Y = c$ and C chooses a misaligned war, then K will also always participate and C will not need transfers. Given that, C would choose an aligned war. The only issue arises if $Y = a$ and $W = \upsilon$. In order to participate, it must be that C gets transfers that give him at least as much utility as non participation. Formally,

$$\chi(1-k)(\omega + \upsilon) + \phi + T \geq (1-k) + \phi \Leftrightarrow Z \geq (1-k)(1 - \chi(\omega + \upsilon)).$$

For K to be willing to do this, it must be that a) she has enough resources and b) that she gains from doing so. The first constraint is formally (recalling that α is non-transferable):

$$k\chi(\omega+\upsilon) > (1-k)(1-\chi(\omega+\upsilon)) \Leftrightarrow k > 1-\chi(\omega+\upsilon),$$

and the second is:

$$\begin{gathered} k\chi(\omega+\upsilon)+\chi\alpha-(1-k)(1-\chi(\omega+\upsilon)) > k(k\chi(\omega+\upsilon)+\chi\alpha) \\ \Leftrightarrow \alpha > \frac{1}{\chi}-(\omega+\upsilon)(1+k). \end{gathered}$$

We have two cases.

a. In the first case $k > 1-\chi(\omega+\upsilon)$. Now, if K wants to go to a misaligned war, he can afford to compensate C for their participation. The alternative is to choose an aligned war. So, K will prefer a misaligned war when

$$\begin{gathered} k\chi(\omega+\upsilon)+\chi\alpha-(1-k)(1-\chi(\omega+\upsilon)) \geq k\chi(\omega+\tau) \\ \Leftrightarrow \alpha > \alpha_1^S = \frac{1}{\chi}-(\omega+\upsilon)+k\left((\omega+\tau)-\frac{1}{\chi}\right) \end{gathered}$$

Note that $\alpha_1^S > \frac{1}{\chi}-(\omega+\upsilon)(1+k)$ since $(\omega+\tau)-\frac{1}{\chi} > 0$ which means that if it the case that K can compensate C for a misaligned war but does not want to, it is also the case that K prefers an aligned war over a misaligned war.

b. In the second case, $k \leq 1-\chi(\omega+\upsilon)$. This means that, in a misaligned war, K cannot compensate C. Now the choice for K is between a misaligned war on her own and an aligned war. That is, K prefers misaligned wars whenever

$$\begin{gathered} k(k\chi(\omega+\upsilon)+\chi\alpha) > k(\chi(\omega+\tau)-1) \\ \Leftrightarrow \alpha > \alpha_2^S = (\omega+\tau)-\frac{1}{\chi}-k(\omega+\upsilon). \end{gathered}$$

Given all of the above, we can see that K has no incentive to choose $Y = c$ since she would either get the same payoff (in the case K would choose an aligned war anyway) or a strictly worse one (in the case K would choose a misaligned war).

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