Fiscal Policy & Social Unrest in a “Soft” Autocracy
Johnson Gwatipedza & Thorsten Janus

Abstract
We model fiscal policy when an autocratic regime can be toppled by social unrest. The government seeks to maximize its office rent via public goods provision and the citizens allocate time to either producing or protesting. Compared to the economically efficient outcome or a “hard” autocracy, introducing the protest sector on one hand undermines public goods provision by decreasing the private labor supply and making the regime myopic. On the other hand, if labor and public goods are strong enough complements in the production function, the government may increase public goods provision in order to “distract” the citizens from protesting. We apply the model to understand the economic collapse of Zimbabwe in the late 1990s and the persistence of autocracy in Saudi Arabia during the Arab Spring.

1 The authors would like to thank Avinash Dixit, whose discussions inspired this paper while he was visiting the University of Wyoming in November 2007. We would also like to thank Ed Barbier and Sherrill Shaffer for extensive comments, as well as members of the University of Wyoming Department of Economics and Finance Crocker Award Committee for kindly reviewing and commenting on an earlier version of the paper.
1. Introduction

In this paper we study fiscal policy determination when a political elite with office rents can be toppled by social unrest. The elite attempts to maximize its office rent while the citizens allocate time to either producing or protesting. Compared to either the first-best outcome or a “hard” autocracy, introducing a protest sector on one hand undermines public goods provision by decreasing the citizens’ labor supply and making the regime myopic. On the other hand, if labor and public goods are sufficiently strong complements in the production function, the government may choose to increase public goods provision in order to “distract” the citizens from protesting.

After developing the theory, we use it to explain the divergent histories of Zimbabwe in the 1990s and Saudi Arabia during the Arab Spring. In Zimbabwe we argue that the negative rainfall shocks the country experienced in the first half of the 1990, along with external pressures to democratize, decreased the regime’s public goods provision incentive. The fall in productivity and the higher return to protesting due to external democracy support, pushed citizens into the protest sector and made the regime resort to rent-grabbing, causing a massive economic crisis. In contrast, the scope for protesting which opened up to Saudi Arabia’s citizens due to the Arab Spring incentivized the regime to placate its citizens in order to preserve its large oil rents.

In the remainder of the paper, Section 2 positions our work within the political economy literature. Section 3 develops the model and some general analytic results. Section 4 simulates the model. Section 5 considers extensions. Section 6 applies to model to Zimbabwe in the 1990s and Saudi Arabia during the Arab Spring. Section 7 concludes the paper.

2. Related Literature

The paper intersects the literatures on redistributive conflict (Rodrik 1999, Bates 2008), the economics of autocracy (Bueno de Mesquita et al. 2003, Acemoglu and Robinson 2006) and the political economy of natural resource rents (Caselli and Cunningham 2007, Robinson and Torvik 2009). Most closely related, Herschel Grossman (1991, 1995) studies conflict between an autocratic government and the population in a general equilibrium setting similar to ours. In the first of these papers, the government hires soldiers from among the citizens to repress the protest. In the second paper it pays a wage subsidy to encourage production as an alternative to protesting. In contrast to the mainly redistributive policy instruments used by the government in Grossman’s work, we focus on a fiscal policy instrument that affects output directly and
introduce exogenous rents from office holding and a more general production function. Although at first these modelling differences may sound like minor extensions, they turn out to be critical for the model’s predictions, and particularly for how the threat of political unrest affects the government’s incentive structure, output and efficiency. When the substitution elasticity between the labor and public goods inputs in the production function is below a threshold (so the degree of input complementarity is sufficiently high) the government responds to political threats with stabilizing counter-cyclical fiscal policy rather than resort to rent-grabbing. Acemoglu and Robinson (2001) study a dynamic game where the rich elite cannot commit to future transfers and may be unable to raise sufficient tax revenues to pay the poor not to rebel when the opportunity cost of rebelling is low. Vargas (2011) further assumes that the elite cannot commit not to expropriate the poor if they remain peaceful. The poor therefore rebel when either the opportunity cost of violence is low or they fear future expropriation. Our main departure from Acemoglu and Robinson (2001) and Vargas (2011) is that both papers assume an economy with endowment incomes and an exogenously determined opportunity cost of rebelling. In our paper, instead, the economy’s output level and the opportunity cost of protesting are endogenously determined by a productivity shock, the regime’s optimal fiscal policy, and the citizens’ optimal labor allocation. By endogenizing the output level we show that, depending on the parameters of the aggregate production function, the threat of political unrest can either make the government behave more efficiently or sharply erode its incentives.

In other studies of autocracy, Olson (1993) and McGuire and Olson (1996) argue that a dictator who expects to remain in power will extract less rent than a sequence of myopic dictators since the former internalizes that rent extraction erodes the future tax base. While government myopia also affects government investment in our paper, we derive the political stability level which determines myopia endogenously based on the regime’s optimal fiscal policy decision and the citizens’ optimal labor allocation. Myerson (2010) studies the effect of government temptation to expropriate on private investment. In contrast, our model assumes two commitment problems: not only can the elite not commit to future taxation (creating expropriation risk), but the citizens cannot commit not to protest after the government provides public goods. The anticipation of future protest undermines the government’s provision incentive. Azam et al. (2009) studies an opportunistic government that can hide its true nature by acting benevolently. Once it starts preying on the private sector, however, it destroys the private production incentive and output collapses. While we similarly study a predatory government, we
depart by studying a general equilibrium model with perfect information. The paper also differs from Dixit (2010), who studies the optimal design of bureaucracy in autocratic and democratic regimes. Our model abstracts from the role of bureaucracies in autocratic political structures and focuses on the interaction between regimes and citizens. Another difference between this paper and the work of Olson (1993), McGuire and Olson (1996), Myerson (2010), Azam (2010) and Dixit (2010) is that we focus on the government’s trade-off between rent extraction and regime stability rather than current and future rent extraction given an exogenous likelihood that the regime will stay in power. Besley and Kudamatsu (2008), Buena de Mesquita et al. (2003) and Padró I Miquel (2007) argue that in practice autocratic leaders depend on party structures, economic elites or other social groups that can in principle depose them. Leaders whose key support groups do not depend on the leader staying in power can more easily be held accountable. While the elite in our paper is also accountable, the source of accountability is not the need to please a well-defined narrow group of supporters, but the fact that inefficient public goods provision increases the amount of popular protest. Finally, Acemoglu et al (2006a,b) argue that many of Africa’s recent democracies have weak constraints on political elites. We similarly emphasize government discretion as a source of abuse of power, poor public goods provision, low output and political instability.

3. Model

3.1. Assumptions

We consider a game with one period and the following timing. First nature decides a level of total factor productivity (TFP) $\theta > 0$. Then the elite supplies public goods in the amount $G \geq 0$ at a unit output cost. Then the citizens allocate $l \in [0,1]$ labor units to political protest, and $1-l$ units to production. The protest activity may be organizing a social movement, opposition party, public demonstration, or even a violent insurgency. The elite repels the popular uprising with probability $q(l), q_i < 0$, and whether or not the uprising succeeds output is

\[^2\] We take an agnostic approach to how the citizens overcome potential collective actions problems in the protest activity. Potentially an entrepreneur organizing the protest can pay the individual participants either up-front or on condition of the regime being toppled. Alternatively, the protest participants may be incentivized by social pressure, an intrinsic desire to serve “their people,” political ideology or the promise of glory and martyrdom. For further discussion, we refer to the large literature on social movement formation (McAdam et al. 2001, Tarrow 2011) and the smaller literature on the formation of rebel movements (Blattman and Miguel (2010)).
\[y = \theta f(1-l,G). \tag{1}\]

We assume that the function \(f\) is strictly increasing and concave in both arguments, and that \(f_{12} > 0\). Finally, once the uprising ends, if the elite stayed in power it sets a revenue-maximizing tax rate \(\tau < 1\). For instance, if citizens can hide output at a cost \(c < 1\) per unit, then the revenue-maximizing rate would be \(\tau = c\). \(^3\) If instead the citizens oust the regime there is no taxation. Finally, we allow the political incumbent after the protest to collect an exogenous natural resource or other type of office rent given by \(R \geq 0\). The expected payoffs in the model are therefore

\[u^c = (1-q(l)\tau)\theta f(1-l,G) + (1-q(l))R\]  \tag{2}

for the citizens and

\[u^e = q(l)(\tau \theta f(1-l,G) + R)\]  \tag{3}

for the elite, where \(q(l)\tau\) is the expected tax rate. \(^4\) To focus we assume that the equilibrium is always interior. Figure 1 summarizes the timing of the game.

\begin{center}
\begin{tabular}{|l|l|l|l|}
\hline
Productivity \(\theta\) & The elite provides public good \(G\) & The citizens allocate \(l \in [0,1]\) labor units to protest and \(1-l\) to production & The elite stays in power with probability \(q(l)\in (0,1)\) & Output is \(y = \theta f(1-l,G)\),
\hline
\end{tabular}
\end{center}

(i) If the elite stayed in power it gets \(\tau y + R\) and the citizens get \((1-\tau)y\)
(ii) If the elite was ousted citizens get \(y + R\) and the elite gets nothing

\textit{Figure 1: The timing of the game.}

\(^3\) We show later that allowing the elite to commit to \(\tau\) before the citizens allocate labor to the protest sector does not change the qualitative results.

\(^4\) We implicitly assume the elite gets zero if it is replaced. If instead it faces a loss \(x\) from being replaced, then \(- (1-q(l))x\) should be added to its payoff (3). The cost \(x\) could potentially depend on elite behaviour while in office \((x = x(G)\), e.g., an elite which fails to provide public goods may be punished once it is ousted. We leave this extension to future work but do not believe it would change the qualitative results.
3.2. The first-best and hard autocracy outcomes
Two useful benchmarks are the first-best outcome and the outcome in a hard autocracy, defined as an autocracy where the citizens cannot protest or the cost of protesting is prohibitive. This might describe dictatorships where the military is strong and loyal to the government, so that the protest success probability \( q(l) = 0 \) for any \( l \in [0,1] \).

The first-best (\( fb \)) outcome solves

\[
\max_{l,G} \theta_f (1-l,G) + R, \text{ giving }
\]

\[ l^{fb} = 0; \quad \theta_f^*(1, G^{fb}) = 1. \]  \hfill (4)

In contrast, in the hard autocracy the elite solves

\[
\max_{l,G} \tau \theta_f (1,G) + R, \text{ giving }
\]

\[ l^{ua} = 0; \quad \tau \theta_f^*(1, G^{ua}) = 1. \]  \hfill (5)

Comparing (5) to (4) shows that the hard autocracy under-provides public goods because it cannot collect the full output gain on the margin (\( \tau < 1 \)).

3.3. The soft autocracy outcome
We now find the equilibrium when the protest sector is active. Using backward induction, in the third stage of the game the citizens solve

\[
\max_{l} (1 - q(l) \tau) \theta_f (1-l,G) + (1-q(l)) R. \]  \hfill (6)

The optimal labor allocation solves
\[-q_i^\prime \left( \tau \theta (1-l,G) + R \right) = (1-q \tau) \theta_i^\prime (1-l,G) \tag{7} \]

which equates the marginal expected tax saving and rent appropriation from protesting, on the left hand side, with the marginal loss of after-tax income from producing on the right hand side.

To ensure that (7) defines a maximum we assume the following second-order condition holds:

\[
(1-q \tau) \theta_{11}^{\prime\prime} - q_{il}^{\prime} \left( \tau \theta (1-l,G) + R \right) + 2q_i \tau \theta_i^\prime < 0 \tag{8}.
\]

Condition (8) will be satisfied if the negative effect of protest on the elite’s survival probability \( q_i^\prime \) does not increase too rapidly, i.e., \( q_{il}^{\prime\prime} \) is not too negative. In other words we assume that the global optimum for the citizens strikes a balance between producing and protesting rather than focus exclusively on one of the two. Using the implicit function theorem, we can additionally compute \( l_G^{\prime} \) - the marginal effect of public good provision on protest effort - from (7):

\[
l_G^{\prime} = \frac{(1-q \tau) \theta_{12} + q_i \tau \theta_{2}^{\prime\prime}}{\psi_{il}^{\prime\prime}}.
\tag{9}
\]

Equation (9) shows that increasing public good provision will attract workers to the production sector and away from protest \( (l_G^{\prime} < 0) \) if public goods and labour are strong enough complements in the aggregate production function, i.e., if the cross-partial \( f_{12}^{\prime\prime} \) satisfies \( (1-q \tau) f_{12}^{\prime\prime} > -q_i \theta_i^\prime > 0 \).

The reason strong complementarity \( (f_{12}^{\prime\prime} >> 0) \) is needed is that public goods provision increases both the marginal product of labor (since \( f_{12}^{\prime\prime} > 0 \)) and the output level (since \( f_{2}^{\prime\prime} > 0 \)). While the former effect tends to distract the citizens from protesting, the rise in output increases the total amount of tax revenues at stake in the conflict, and therefore the return to protest activity, by \( q_i \tau \theta_{2}^{\prime\prime} \). Labor will only shift into the production sector if the return to labor in that sector increases more than the return to protest. A simpler expression can be found by substituting (7) into (9). This gives
\[ l'_G < 0 \iff \frac{(f'_2 / f'_f)(f'_{12} / f'_1)}{1 + R / \tau \theta} < 1. \tag{10} \]

or that the labor-public goods substitution elasticity – the growth in output compared to the growth in the marginal product of labor due to public goods provision, \((f'_2 / f'_f)(f'_{12} / f'_1)\) - cannot be too large. For \( R = 0 \) the substitution elasticity must be less than unity, but for \( R > 0 \) we can have \( l'_G < 0 \) even if labor and public goods are gross substitutes in production, i.e., the substitution elasticity is above unity. We henceforth refer to condition (10) as the (strong-enough-) complementarity condition.

In the second stage of the game the elite will anticipate the labor allocation (7). It therefore solves

\[
\max_G q(l^*(G))(\tau \theta (1 - l^*(G), G) + R) - G, \tag{11}
\]

implying

\[
\frac{q \theta l'_G (\tau \theta f + R)}{\text{Rent protection}} + \frac{\tau q (f'_2 - f'_1 l'_G)}{\text{Rent increase}} = \frac{1}{\text{Marginal cost}}. \tag{12}
\]

The first term on the left hand side of (12) is a marginal rent protection benefit of public goods provision: the elite knows that whenever \( l'_G < 0 \), public good provision will attract workers into production and away from protest. Public goods provision therefore increases the likelihood of regime survival by \( q l'_G > 0 \). The second term is a marginal rent increase benefit: with probability \( q \) the elite will get to tax the rise in production due to public good provision. The rise in production is in turn the marginal product of the public good, \( f'_G \), plus the output gain from attracting labor into production, \(- f'_1 l'_G > 0\), provided \( l'_G < 0 \). The sum of the rent protection and
rent increase effects are the marginal benefit from public good provision and equal to the unity marginal provision cost. After we substitute the citizens’ labor allocation (6) into (12) we get

\[
\text{MR given the labor allocation} \quad \text{MR from labor reallocation}
\]

\[
\theta \left( \tau Gf_G(1-l, G) - f_1 l_G \right) = \frac{1}{\text{MC}}.
\]

(13)

which provides an alternative way to interpret the elite’s tradeoff. The first bracketed term in (13) is the expected marginal revenue from public goods provision for a fixed labor allocation. The second term is the marginal revenue from labor reallocation. The sum of the two is the total marginal benefit from public goods provision and again equals the marginal cost. Finally, we note that in order for (12) or (13) to describe a maximum the second-order condition for (13),

\[
\tau q \left( -f_{21} l_G + f_{22} \right) + f_{11} l_G l_G - f_{12} l_G - f_{11} l_{GG} \leq 0,
\]

where \( l_G \) and \( l_{GG} \) can be substituted from (9), must hold. Because this second-order condition is difficult to sign analytically, we instead verify that the elite’s payoff function is concave in public goods provision in all the numerical simulations we conduct in Section 4 of the paper.

The three equations (7), (9) and (13), along \( \psi_{ii} \) in (8), jointly define the equilibrium values of protest labor, public goods provision and regime survival probability \((l, G, q)\). Given these

\[5\] Condition (13) also shows that the elite fully internalizes the general equilibrium benefit of public goods provision due to labor reallocation; shifting labor into production earns the elite \( \theta \tau Gf_G \) in marginal expected tax revenues, \( plus, from (7), \theta Gf_G \) from increased likelihood of retaining office. The sum is the marginal social benefit of labor reallocation, \( \theta f_G \). In a more general model, where citizens can substitute between leisure, protest and productive labor (rather than just the last two), a rise in productive labor can partly come from diminished leisure. Since in that case protest activity would not decline as much as in our model, the elite’s office security gain from labor reallocation would be smaller. It would not fully internalize the marginal social benefit from labor reallocation.
values we can use equations (1)-(3) to compute aggregate output \( y = \theta f(1 - l, G) \), the citizens’ expected payoff \( (1 - q \tau) y + (1 - q) R \), and the elite’s expected payoff \( q(l)(\tau \theta f(1 - l, G) + R) \).

3.4. Overview of factor distortions in the protest equilibrium

Comparing equation (13) with the first-best outcome defined by equation (4) shows that the protest equilibrium distorts both the labor allocation and public goods provision. The labor distortion simply reflects that the rent-seeking protest sector absorbs a share \( l > 0 \) of the labor force. Public goods provision, on the other hand, is subject to four different distortions:

(i) **Imperfect appropriation**: Since the revenue-maximizing tax rate \( \tau < 1 \), the elite cannot fully appropriate the marginal social product of public goods provision.

(ii) **Elite myopia**: Because protests decrease the likelihood that the elite will stay in power to \( q < 1 \), they make the elite myopic. This decreases public provision compared to either the first-best or the hard autocracy outcome.\(^6\)

(iii) **Labor misallocation**: The shift of labor from the production to the protest sector decreases not only the elite’s return due public goods provision, but also the social return. That is, \( \theta_2 f(1 - l, G) < \theta_2 f(1, G) \) since \( f_{12} > 0 \). This decreases public goods provision in (13) further.

(iv) **The labor reallocation incentive**: The elite’s incentive to attract workers from protest back into production - the second let hand side term in (13) –can potentially decrease public goods provision even more. This will happen when the complementarity condition (10) fails, so that \( l_G > 0 \). However, if instead \( l_G < 0 \) the elite will increase public goods provision in order to attract workers away from the protest sector and back to production.

\(^6\) Olson (1993) similarly argues that a self-interested government that expects to stay in power will act less myopically, and be more willing to invest in the economy in order to build a future tax base, than a government expecting it may lose power. However, he does not provide a formal model or suggest that, as shown here, the degree of political instability facing the government can be endogenous to its fiscal policy choice. Bates (2008), de Figueiredo and Weingast (1999) and Hoff (2003) argue that the threat of replacement led to highly destructive behavior by incumbent political elites in Africa, Yugoslavia, and the Former Soviet Union.
4. Simulation

4.1. Simulation assumptions and procedure

We simulate the model using the CES production function

\[ y = \theta f(1-l,G) = \theta \left( \lambda (1-l)^\sigma + (1-\lambda)G^\sigma \right)^{\sigma}, \sigma \leq 1. \quad (14) \]

In (14) the parameter \( \lambda \in (0,1) \) measures the relative importance of labor in production and \( 1/(1-\sigma) \) is the labor-public goods substitution elasticity. With \( \sigma = 0 \) the production function becomes Cobb-Douglas and \( \sigma = 1 \) gives the perfect-substitution case. We further assume that the probability that the regime can repress the popular protest (the elite’s survival probability) is

\[ q(l) = 1 - \mu l, \quad (15) \]

where \( \mu \in (0,1) \). The parameter \( \mu \) can be interpreted as the marginal effectiveness of protesting. Because \( q''_l = 0 \) the second-order condition for citizen optimality, the inequality (8), is guaranteed to hold. A simple way to derive a micro-foundation for (15) is to assume that (a) the elite is ousted whenever its realized level of strength \( \rho \), measured as the level of protest the elite is able to resist, turns out to be less than the actual protest level; and (b) \( \rho \) is uniformly distributed on \([0, 1/\mu]\). If so, we have \( q(l) = pr(\rho \geq l) = 1 - F(l) = 1 - \mu l \).

We implement the simulation by substituting the specific functional forms (14) and (15) into equations (4) and (5), which identify public goods provision in the first-best and hard autocracy equilibriums, as well as into the soft autocracy equilibrium (7)-(9) and (13). Given the CES assumption, the complementarity condition (10) is simply

\[ l'_G < 0 \iff \frac{1}{1-\sigma} < 1 + R/\nu. \quad (16) \]
The simulation now proceeds by substituting (14) into (7)-(9) and (13), solving the latter four conditions numerically and thereby obtaining \(l, l'_e\), \(G\), and \(\psi_\mu\). We then get output \(y\) from (14), the regime survival chance \(q\) from (15), and the payoffs to the elite- and citizens from equations (2) and (3). Finally, in order to compare the economic efficiency levels obtained under hard and soft autocracy with the first-best efficiency level, we compute the variable

\[ e \equiv y - G, \quad (17) \]

for all three cases.

In terms of parameters, unless otherwise stated, the simulations hold the level of protest effectiveness at \(\mu = 0.6\), the tax rate at \(\tau = 0.5\), and the relative importance of labor in the aggregate production function at \(\lambda = 0.5\). We first set the office rent to \(R = 0\) and then compare the simulation results to the case when \(R > 0\) (in Figure 4). Rather than study all possible comparative statics, we focus on the effect of changing the levels of protest effectiveness \(\mu\) and total factor productivity \(\theta\). We interpret the former as a political shock, which might reflect a wave of democratization sweeping the region a country is located in. The productivity shocks is instead a purely economic shock. We further study both the infra-marginal and the marginal effects of increasing protest effectiveness as follows. The infra-marginal effect is measured by comparing the model predictions under hard and soft autocracy. The idea is that a large enough jump in protest effectiveness from a small initial level (e.g., from \(\mu = 0\) to \(\mu = 0.6\)) means that the citizens will start protesting and the country transitions from a hard to a soft autocracy. We can then also study the effects of marginal increases in protest effectiveness by increasing \(\mu\) gradually within a soft autocracy. Since we know that the comparative statics will depend on whether the complementarity condition (16) holds, we run two sets of simulations: one where the labor-public goods substitution elasticity is \(1/(1-\sigma) \approx 0.56 < 1\) or \(\sigma = -0.8\), so the complementarity condition holds for both \(R = 0\) and \(R = 0.5\), and one where \(1/(1-\sigma) = 1.25\) or \(\sigma = 0.2\), so complementarity fails.

### 4.2. Results

Figure 1 shows results for the case where \(l'_e < 0\), i.e., the complementarity condition holds. We vary the TFP level \(\theta\) along the horizontal axis and record the endogenous variables on the
vertical axis. The fact that the curves showing efficiency in soft and hard autocracies cross implies that allowing popular protests can either decrease or increase efficiency. Protest decreases efficiency at low TFP levels but increases efficiency at high TFP levels. The reason is that, at low TFP levels, a relatively large share of the labor force engages in protest (i.e., $l$ is relatively large). The combination of input complementarity and labor scarcity in the production sector decreases the government’s return to public goods provision on the left hand side of (13) More precisely, if we compare provision under hard and soft autocracy, given by (5) and (13), we find that the fall in production labor from one to $1-\frac{1}{l}<1$ and the fall in the office survival probability from one to $q<1$ both decrease the return to public goods provision. These are the labor misallocation and myopia effects when a hard autocracy goes soft. On the other hand, the addition of $-f_1 l' \theta > 0$ when the complementary condition holds increases the provision return. This is the labor reallocation incentive. When the TFP level $\theta$ is low, however, the drop in $q$ and $1-\frac{1}{l}$ when the country enters soft autocracy are large relative to $l' \theta$, i.e., the labor misallocation and myopia effects dominate the reallocation incentive. As a result public goods provision falls. As TFP gradually increases, public goods provision starts to exceed its hard autocracy level but due to the labor misallocation $l$ efficiency remains lower. As TFP increases further, however, the labor misallocation and myopia effects decrease compared to the reallocation incentive. As a result, past a TFP level of about $\theta = 3$, efficiency becomes higher under soft than under hard autocracy. Beyond about $\theta \approx 4.2$, in fact, the efficiency level in the soft autocracy approaches the first-best efficiency level. In other words, despite the option to protest almost no citizens do so; and despite the elite’s inability to appropriate the social return to public goods provision (since $\tau < 1$) it provides the efficient amount. We conclude from Figure 1 that when the input complementarity condition holds, the ability to protest in an autocracy can improve economic efficiency. In situations where the threat of protesting is present but is not exercised much, moreover, the autocratic regime may be forced to almost implement the efficient outcome. This being said, the regime may still appropriate a large output share (in our simulations, $\tau = 50\%$) and soft autocracy is not efficient at all TFP levels. In other words, the soft autocracy is a political regime type which may more efficient than hard autocracy and almost as efficient as well-functioning democracy at relatively high productivity levels. At low productivity levels, however, the political instability induced by soft autocracy may have large short-run efficiency costs as autocratic regimes are faced with end-game incentives.
Figure 2 shows the simulation results when instead \( I_G > 0 \) and the complementarity condition fails. The ability to protest now decreases efficiency compared to the hard autocracy outcome. Intuitively, not only does the protest sector draw workers away from production, but if the regime tries to sustain production with public goods provision it will decrease the labor force further and exacerbate the protest. The elite therefore decreases provision, which adds to the inefficiency. The four distortions to public goods provision discussed in the previous section – linked to to imperfect appropriation, regime myopia, labor misallocation, and labor reallocation – all work in the same direction and the last three compound each other. Figure 2 also shows that the absolute efficiency loss under soft autocracy compared to either hard autocracy or the first-best increases with the TFP level. The reason is that the knowledge that public goods provision will induce protest \((I_G > 0 \) in (13)) acts like a tax on provision. The absolute loss from under-provision increases with the TFP level.

Although we showed in Figure 1 that switching from hard to soft autocracy – perhaps reflecting an infra-marginal gain in protest effectiveness - can increase efficiency, it turns out that marginal gains in protest effectiveness conditional on soft autocracy are inefficient. This point is illustrated in Figure 3, which uses the same parameters as Figure 1, but increases protest effectiveness from \( \mu = 0.6 \) to \( \mu = 0.7 \). Efficiency under soft autocracy is less in Figure 3 than in Figure 1 for any given TFP level. The reason is that although the threat of protest can increase efficiency, actual protest always decreases it. When protest effectiveness increases in Figure 3 the greater return to rent-seeking leads to more labor misallocation across sectors. Production falls due to the rise in labor misallocation and the fall in the government’s benefit from public goods provision. The labor reallocation incentive for provision weakens as the higher return to protesting makes it more expensive to persuade workers to return to producing. The effects of increasing protest effectiveness when the complementary condition (16) fails are qualitatively similar and are therefore omitted for brevity.

Figure 4 shows the effect of increasing the exogenous part of the office rent from \( R = 0 \) to \( R = 0.5 \), while keeping the other parameters as in Figure 1. Increasing the rent has the same effects as increasing protest effectiveness: equilibrium protest effort increases and efficiency decreases for any given TFP level. Intuitively, either a rise in protest effectiveness or a rise in the office rent increase the citizens’ return to rent-seeking.

A last result we believe is worth highlighting is that higher TFP levels always decrease protest effort when the complementarity condition holds, as in Figures 1 and 3. When instead the
complementarity condition fails, as in figure 2, TFP gains can increase the protest level. To see why this is the case, consider the citizens’ optimality condition for labor allocation (7). If we momentarily assume that $R = 0$, as in Figure 2, then increasing $\theta$ increases the return to rent-seeking on the left-hand-side of (7) by the same proportion as the return to producing on the right-hand side of (7). Equivalently, the relative return to rent-seeking instead of producing does not change. If this were all that happened, the labor allocation $l$ would not change. However, the rise in $\theta$ also prompts the elite to increase public goods provision $G$ in order to solve (13). If now the complementarity condition fails ($l_G > 0$), by definition the rise in public goods provision increases protest effort. If the complementarity condition holds ($l_G < 0$) it decreases protest. The analysis gets more complicated once we allow $R > 0$, however: when $R > 0$ a rise in $\theta$ will decrease protest effort in (7) for any given value of $G$. When the government chooses $G$ to solve (13), both the labor supply $(1 - l)$ and the TFP level $\theta$ will be higher, so the government will clearly increase $G$. If the complementarity condition holds the rise in $G$ will decrease protest effort even more. If it fails, however, then the rise in protest as $G$ increases could potentially dominate the fall in protest as $\theta$ increases, causing the same positive productivity-protest relationship seen in Figure 2. Although the formal analysis is intractable when $R > 0$, we believe the important and general point is that the effect of economic downturns depends critically on the elasticity of substitution in the production function. Low-substitution economies (economies where the complementarity condition holds) will unambiguously respond to negative economic shocks with diminished public goods provision and increased social unrest. They will exhibit a negative productivity-political stability correlation. High-substitution economies (economies where the complementarity condition does not hold), in contrast, may exhibit a positive correlation. Economic downturns can therefore be politically stabilizing (as illustrated in Figure 2). Linear empirical models linking economic shocks to popular protest, general strikes, civil conflict or other political protest outcomes therefore risk confounding the different “treatment” effect of shocks on economies with different substitution elasticities.

7 Notice that from equation (8)-(9) with $R = 0$, the marginal effect of public goods provision on labor allocation in (13), $l_G^* = \frac{\tau f (1 - l, G) + q_i \hat{f}_2}{(1 - q \tau) f_1 + q_i \tau f (1 - l, G) + 2 q_i \hat{f}_1}$, is independent of $\theta$.

8 The differential effect of productivity growth on political unrest depending on the elasticity of factor substitution in the production function suggests more broadly that economic shocks can have context-dependent “treatment” effects

15
Figure 1 Effect of productivity growth (increasing $\theta$) when the complementarity condition holds. The parameters are $\tau = \lambda = 0.5, R = 0, \mu = 0.6, \sigma = -0.8$. The curve marked with $\bullet$ shows efficiency (GDP minus the public good provision cost) in the first-best outcome; $\Delta$ and $\Diamond$ show efficiency and public goods provision in hard autocracy; $\times, +, o,*$ show efficiency $e$, protest labor $l$, public goods provision $G$, regime stability $q$ in soft autocracy.

---

on social conflict, which is consistent with previous research (Rodrik 1999, Bates 2008, Miguel et al. 2004, Eynode 2011, Janus 2011).
**Figure 2** Effect of productivity growth (increasing $\theta$) when the complementarity condition fails. The parameters are $\tau = \lambda = 0.5, R = 0, \mu = 0.6, \sigma = 0.2$. The curve marked with • shows efficiency (GDP minus the public good provision cost) in the first-best outcome; $\Delta$ and $\bigtriangleup$ show efficiency and public goods provision in hard autocracy; $x, +, o, *$ show efficiency $e$, protest labor $l$, public goods provision $G$, regime stability $q$ in soft autocracy.
Figure 3 Effect of productivity growth (increasing $\theta$) when the complementarity condition holds, but the level of protest effectiveness $\mu$ is higher than in Figure 1. The parameters are $\tau = \lambda = 0.5, R = 0, \mu = 0.7, \sigma = -0.8$. The curve marked with $\bullet$ shows efficiency (GDP minus the public good provision cost) in the first-best outcome; $\Delta$ and $\Diamond$ show efficiency and public goods provision in hard autocracy; $\times, +, o, *$, show efficiency $e$, protest labor $l$, public goods provision $G$, regime stability $q$ in soft autocracy.
Figure 4 Effect of productivity growth (increasing $\theta$) when the office rent $R$ is positive. The parameters are $\tau = \lambda = 0.5, R = 0.5, \mu = 0.6, \sigma = -0.8$. The curve marked with • shows efficiency (GDP minus the public good provision cost) in the first-best outcome; $\Delta$ and $\Diamond$ show efficiency and public goods provision in hard autocracy; $x, +, o, *$, show efficiency $e$, protest labor $l$, public goods provision $G$, regime stability $q$ in soft autocracy.
5. Extensions

In this section we sketch some possible extensions of the model. We leave a thorough analysis and simulation is to future work, however.

1. Public goods are useful for protest The model assumes that the protest activity only depend on a labor input. In practice, public goods may also be turned against governments. Schools and telecommunication networks can spread ideas and help to organize social movements. Access to water, power and roads can similarly help protesters. We therefore now assume that citizens can divert \( g < G \) public goods units to the protest activity. Given the new regime survival probability \( q = q(l, g), q_l, q_g < 0 \), in the third stage of the game the citizens solve

\[
\max_{l, g} (1 - q(l, g)\tau)(\tilde{f} (1 - l, G - g) + R),
\]

(6b)

implying

\[
-q_l'(\tau \tilde{f} (1 - l, G - g) + R) = (1 - q \tau)\tilde{f}_l (1 - l, G - g),
\]

(7b1)

\[
-q_g'(\tau \tilde{f} (1 - l, G - g) + R) = (1 - q \tau)\tilde{f}_g (1 - l, G - g),
\]

(7b2)

where we must assume the second-order conditions

\[
\psi_{ll} < 0; \quad \psi_{lll} \psi_{l22} - (\psi_{l2})^2 \leq 0,
\]

(8b)

given

\[
\psi_{ll} \equiv (1 - q \tau)f_{11} - q_l \tilde{f} (1 - l, G) + 2q_l' \tilde{f}_1
\]

\[
\psi_{gg} \equiv (1 - q \tau) f_{22} - q_g \tilde{f} (1 - l, G - g) + 2q_g' \tilde{f}_g
\]
\[ \psi_{lg} = -q_l \hat{\tau} f(1-l, G-g) + (q_l + q_g) \hat{\tau} f_1(1-l, G-g) + (1-q\tau)f_{12}(1-l, G-g) \]

The citizen response to public goods provision by elite - so the analogue of equation (9) - can be computed by totally differentiating (7b1-7b2) with respect to \( G \). Solving for \( l_G \) and \( g_{G} \) using Cramer’s rule gives

\[
\begin{align*}
    l_G &= \frac{q_l \hat{\tau} f_{2}^* + (1-q\tau)\hat{\tau} f_{12}^*}{\psi_{lg} - (\psi_{lg}^*)^2} \psi_{lg} \\
    g_G &= \frac{\psi_{lg} q_g \hat{\tau} f_{2}^* + (1-q\tau)\hat{\tau} f_{12}^*}{\psi_{lg} - (\psi_{lg}^*)^2} \psi_{lg} .
\end{align*}
\]

We conjecture that, similarly to how the ambiguous sign of \( q_l \hat{\tau} f_{2}^* + (1-q\tau)\hat{\tau} f_{12}^* \) makes the sign of \( l_G \) in equation (9) ambiguous, it can make the signs of \( l_G \) and \( g_G \) in (9b) ambiguous. As a result, the effect of public goods provision on protest activity is likely to be ambiguous also with two rather than just a single input to protest.

Given the citizens’ best-response functions (7b1-7b2), in the second stage the elite solves

\[
\max_G q(l^*(G), g^*(G))\hat{\tau} f(1-l^*(G), G-g^*) - G ,
\]

implying

\[
\theta \tau \left( \frac{(q_l l^*_G + q_g g^*_G) f}{\text{Rent/protection}} + \frac{g(f_{2}^*(1-g^*_G) - f_{12}^*)}{\text{Rent/ increase}} \right) = \frac{1}{\text{Marginal cost}} .
\]
As in (12), the first bracketed term in (12b) is the rent protection benefit from public goods provision: Provided this term is negative, public good provision helps the elite stay in power by attracting either the labor input or the public goods input, or both, away from the protest sector.\(^9\)

The second term in (12b) is the rent increase effect: the effect of public good provision on expected tax revenues. The only difference to (12) is that the direct effect of public goods provision on output is now \(f_2'(1 - g'_G)\) instead of \(f_2'\), since now the citizens control the public good allocation. Substituting (7b) into (12b) gives the analogue of (13):

\[
\theta \left( \frac{\alpha f_2'}{MR_{\text{given factor allocation}}} - \frac{f_1'i_G - f_2'g_G}{MR_{\text{from factor reallocation}}} \right) = \frac{1}{MC}.
\]

As in (13), the first term in (13b) is the elite’s marginal revenue from public goods provision for a given factor allocation. The second term is the marginal revenue effect when the citizens reallocate labor and public goods in response to public goods provision. The elite discounts the direct output effect of public goods provision by \(\alphaq\), reflecting imperfect tax powers and myopia, but internalizes the social benefit of factor reallocation due to public goods provision. Given the similarity of the solution (7b1-7b2), (9b1-9b2) and (13b) with the original solution (7), (9) and (13) we conjecture that the negative effects of imperfect taxation, myopia and factor reallocation on public goods provision identified in the original model, as well as the potentially positive effect of factor reallocation, are likely to remain if public goods can be turned against the ruler.

2. Commitment to the tax rate If the elite can commit to the tax rate before the citizens allocate labor, the citizens’ optimality condition remains (7). In the prior stage of the game, the elite still provides public goods to increase the tax base. Unlike in the original model, however, it chooses both a public goods level and the tax rate to apply to a given tax base. The trade-off when choosing the tax rate is that increasing revenues by increasing the tax rate pushes workers into the protest sector, which destabilizes the regime. The elite’s maximization problem is

\(^9\)Although diminishing returns in production suggest that citizens may share the marginal public good between production and protest, so \(g'_G > 0\), it is still possible that the labor reallocation effect dominates \((q_{l_G}'/q_x') > -g'_G)\).
\[
\max_{G, \tau} q(l^*(G, \tau)) \tau \theta'(1 - l^*(G, \tau), G) - G
\]  \hspace{1cm} (11c)

with optimality conditions

\[
\theta \left( q^* l^*_G f + q(f_2 - f'_1 l^*_G) \right) = \frac{1}{\text{Marginal cost}} .
\]  \hspace{1cm} (12c1)

\[
q(l^*(G, \tau)) \theta'(1 - l^*(G, \tau), G) = \theta \left( -q^* l^*_G f + \frac{q f'_1 l^*_G}{\text{loss of rent protection due to laborreallocating}} + \frac{q f'_1 l^*_G}{\text{loss of output due to laborreallocating}} \right).
\]  \hspace{1cm} (12c2)

Using (7) in (12c1)-(12c2) gives the analogues of (13):

\[
\theta \left( \frac{\tau f'_2}{\text{MR}(G) 	ext{ given the MR from factor allocation realtime}} - f'_1 l^*_G \right) = \frac{1}{\text{MC}(G)} .
\]  \hspace{1cm} (13c1)

\[
q(l^*(G, \tau)) \theta'(1 - l^*(G, \tau), G) = \frac{\theta' l^*_G}{\text{MC}(\tau) \text{ due to laborreallocating}}.
\]  \hspace{1cm} (13c2)

Condition (13c1) is identical to the original condition (13) for optimal public goods provision. The tax optimality condition (13c2) balances the marginal revenue from increasing the tax rate for a fixed tax base with the revenue loss due to a shrinking tax base as workers move into the protest sector. Rent extraction via increasing taxation is a substitute for rent extraction via decreasing public goods provision. In both cases, the elite’s fiscal budget improves at the cost of a smaller tax base and potentially increasing protest (using (7) it is easy to show that \( l'_G > 0 \) although \( l'_G \) may take either sign).
3. Repression Other than using fiscal policy to reallocate labor, potentially the elite can resort to repression to deter protest. We thus assume that the elite sets a repression level $r$ at the same time it chooses public goods provision. The regime’s probability of retaining power is then $q = q(l, r), q'_l < 0, q'_r > 0, q''_l > 0$. The last assumption means that protest labor is less effective the more the ruler represses. The citizens again solve (6), yielding the labor allocation (7). The only difference to the original model is that $q$ depends on $r$. Therefore the optimal labor allocation across sectors, the solution to (7), will be $l^* = l^*(G, r)$. In the prior stage of the model the ruler solves

$$\max_{G, r} q(l^*(G, r), r) \tau \theta f (1 - l^*(G, r), G) - G - r,$$  

(11d)

implying

$$\theta \tau \left( \frac{q'_l l_G f}{\text{Rent from G provision}} + \frac{q(f'_G - f'_l l_G)}{\text{Rent from G provision}} \right) = \frac{1}{\text{Marginal cost of G provision}}.$$  

(12d1)

$$\theta \tau \left( \frac{(q'_r + q'_l) f}{\text{Rent from repression}} - \frac{q f'_l l'_r}{\text{Rent from repression}} \right) = \frac{1}{\text{Marginal cost of repression}}.$$  

(12d2)

Using (7) in both equations gives

$$\theta \left( \frac{\tau q f'_l}{\text{MR(G) given the labor allocation}} - \frac{f'_l l'_r}{\text{MR(G) from labor reallocation}} \right) = \frac{1}{\text{MC(G)}}.$$  

(13d1)

$$\theta \left( \frac{\tau q f}{\text{MR(r) given the labor allocation}} - \frac{f l'_r}{\text{MR(r) from labor reallocation}} \right) = \frac{1}{\text{MC(r)}}.$$  

(13d2)
Condition (13d1) is identical to the original equation (13). Equation (13d2) shows that extracting rents via repression involves a trade-off similar to the one from increasing public goods provision or decreasing taxation. Like the latter policies, repression has a direct resource cost, but the elite benefits from greater regime stability (as \( q_r < 0 \)) as well as indirectly because the smaller return to protesting causes workers to shift into the production activity.

4. **Transfers to the military** In many countries the military is a powerful political player standing ready to intervene in the political process unless it receives a current or future economic rent. To capture this, we assume that, unless the regime makes a transfer \( T \) to the military, the latter will conduct a coup. For simplicity, the coup always succeeds. The sequence of the game is now as follows. First the elite provides public goods. Then the military decides whether to stage a coup. It is deterred from a coup provided it gets a share \( \delta \in (0,1) \) of the ruler’s expected tax revenues. Then the citizens decide how much to protest against the incumbent political party (either the elite or the military). As in previous sections the probability that the elite repels a citizen uprising is \( q(l) \). If the military is in power, however, it seems plausible to assume that it can always repel the protest. The reason the military may still nonetheless settle for a share \( \delta < 1 \) of the elite’s expected tax revenues may be that the military is an inefficient economic manager or military intervention may have negative international repercussions due to economic sanctions. Alternatively, the military knows that once it intervenes citizens will fear very high taxation at gunpoint, which will destroy private production in future years.

With these assumptions, the citizen labor allocation remains (7). In the second stage, the share of revenues \( \delta \) the elite must transfer to the militia acts like a tax on the elite. The elite’s optimality condition (12) is therefore

\[
\left( \frac{\tau (1 - \delta) q f_j'}{\text{MR given the labor allocation}} - \frac{f_j l_g'}{\text{MR from labor reallocation}} \right)_{\text{w.r.t. }} = \frac{1}{MC} .
\]  

Comparing (12e) to (12) that the two optimality conditions are qualitatively similar, but the tax the elite must pay in (12e) decreases public goods provision. Thus, the threat of a coup hurts both
the elite and the citizens. It can potentially even hurt the military: the military tax rate $\delta$ could potentially be above the maximum on the Laffer curve and yet the military cannot commit to a lower rate. Finally, we note that the military could potentially also move first in the game and force the ruler to set a public goods level which maximizes the military’s income. In that case, however, the military is analytically equivalent to the elite - the government is effectively a military regime - and the model remains as we originally assumed.

5. Other extensions Another possible extension would be to allow citizens to move before the elite. Although a formal analysis is beyond the scope of our paper, suppose that after nature decides the productivity level, but prior to the elite’s public goods choice, the citizens allocate time across the production and protest sectors. For instance, some individuals might join a social movement that subsequently absorbs all their time and attention regardless of which job opportunities open up in the production sector. Alternatively, once they join a rebel movement they may be unable to return to production because the regime will punish them. In this case, in the first move of the game, citizens know that the protest diminishes public good provision by inducing elite myopia and decreasing the labor supply in the production sector. Even so, they might wish to begin the protest. After all, if the protest succeeds they avoid taxation. We conjecture that the lower the private sector’s opportunity cost of an uprising and the more likely the uprising is to succeed, the more likely it will rise against the government. Another possibility would be to extend the game to multiple periods and allow private investment. Yet another option is to allow for international policy interventions.

6. Applications

Zimbabwe in the 1990s

Although Zimbabwe’s economy did not grow rapidly in the 1980s, it easily outperformed most of its neighbours (Makina 2010, Chavunduka and Bromley 2010). PPP-measured income grew 0.3% per year compared to an average of negative 2% for the other sub-Saharan African countries. The ruling ZANU-PF - a broad-based alliance dominated by the former liberation movement, but supported by urban professionals, organized labor and peasants - expanded social services, health, and education (Barry et al 2009, Eriksen 2011). The economy became
dominated by industry and mining and was among the most sophisticated and integrated in sub-Saharan Africa (Potts 2006). On the negative side, however, much of the industry was a legacy of import-substitution linked to pre-independence sanctions on Rhodesia as well as post-independence protectionism (Barry et al. 2009, Makina 2010). Although increasing awareness of the limits of import substitution led to gradual market reforms in the 1990s, Zimbabwe’s heavily rain-dependent economy was struck by a major drought in 1992. There was also a localized drought in 1995 (Barry et al. 2009, Chavunduka and Bromely 2010, Makina 2010). Due in large part to the rainfall shocks GDP per capita declined by 20% from 1991-92 and 13.5% from 1991-95. The economic decline was associated with urban and rural discontent and support for the political opposition movement, the Movement for Democratic Change (MDC). As social services and agricultural subsidies were reduced, eventually even ZANU-PF’s traditional rural support weakened (Eriksen 2011). In August 1997, thousands of veterans of the independence war rose up demanding land and factories as compensation (Potts 2006, Barry et al 2009, Chavunduka and Bromely 2010, Makina 2010). President Mugabe reacted by seizing the property of farmers to distribute to the ruling elite and his supporters (Besley and Ghatak 2010, Eriksen 2011). The veterans got large one-off payments and on-going pensions (Chavunduka and Bromley 2010, Eriksen 2011). The weak economy and fiscal transfers made the budget unsustainable. On 14 November 1997, the Zimbabwe dollar crashed due to a combination of contagion from the Asian crisis (via South Africa) and fiscal imbalances. As the state became increasingly weak and politicised youth militias unleashed violence on farmers and the opposition (Eriksen 2011). The regime redistributed commercial and financial institutions and acquired large stakes in private firms. It reduced investment in education, health, housing, and other public services (Makina 2010). Manufacturing output and investment plummeted, banks failed, and urban households turned to informal activities (Makina 2010, Potts 2006). The regime tried to repress dissent and rig elections (Robinson and Torvik 2009, Makina 2010).

Figure 5 shows data for five economic indicators for Zimbabwe: income per capita in 2005 PPP US$ and the ratio of government spending to GDP (both from the Penn World Tables), annual rainfall 1980-99 from Miguel et al. (2004), the trade-weighted ratio of commodity export prices to commodity import prices – or the commodity terms of trade - from

---

10 This was not the first time that civilians had suffered from state-sponsored violence. During Gukurahundi, the 1980s civil war in Matabeleland, over 20 000 people were killed by government militias (Chavunduka and Bromley 2010).
Janus and Riera-Crichton (2013), and the average polity2 democracy score for sub-Saharan Africa net of Zimbabwe (from the Polity IV database).\textsuperscript{11} To ease the exposition we divided the rainfall data (mm/year) by two and normalized the government spending share in GDP, the commodity price index and the democracy-outside-Zimbabwe index to equal 100 in 1980. The data depicted in Figure 5, combined with our reading of the country-specific literature, suggests several conclusions. First, the correlation of the rainfall data with income suggests that the droughts accounted for much of the decline in income in the first half of the 1990s. Miguel et al. (2004) document a major role of rainfall shocks in accounting for growth fluctuations in sub-Saharan Africa more broadly. In terms of the model we can interpret the rainfall shocks as a fall in the total factor productivity level $\theta$. Second, the rapid spread of democracy in the rest of sub-Saharan Africa in the early 1990s is likely to have pressured the Mugabe regime to instigate reforms as well. In terms of the model, there was probably a large increase in protest effectiveness $\mu$. Third, Figure 5 shows that, until the late 1990s, Zimbabwe’s fiscal policy was decidedly countercyclical. In the late 1990s, however, it seems to have suddenly become procyclical: the government curtailed spending not just in absolute terms, but as a share of a shrinking GDP. The GDP share of government spending fell from 10.5% in 1995 to 6.4% in 1997 before declining further more gradually. It only recovered once the Mugabe regime reached a power-sharing agreement with the opposition MDC in 2003.

We believe that the combination of declining productivity $\theta$ and increasing protest effectiveness $\mu$ in Zimbabwe in first half of the 1990s caused a sharp change in the government’s incentives for public goods provision in the late 1990s. In Figure 2, which assumes that the complementarity condition fails, the arrival of the possibility of protesting as democratization swept sub-Saharan Africa caused a transition from a hard to a soft autocracy. As a result public goods provision and efficiency dropped sharply (from the $\Delta$ to the $x$ curve and the $\hat{\diamond}$ to the $o$ curve, respectively). The significant fall in $\theta$ due to the rainfall shocks (and possibly the failure of the economic reform program) moved the productivity level left along the horizontal axis in Figure 2 and thereby decreased efficiency and public goods provision further,

In practice the regime’s decision to focus on short-term rent-extraction rather than building a future tax base was not only manifested in sharp cuts in government spending. The regime also engaged in extensive expropriations and asset redistribution to regime insiders

\textsuperscript{11} http://www.systemicpeace.org/polity/polity4.htm
(Eriksen 2011). In a sense, however, these assets grabs also, like the fiscal spending cuts, mounted to taking productive assets from the private sector. The sharply rising inflation rate can also be seen as a conscious decision to sacrifice the public good of monetary stability to allow the government to collect an inflation tax. In this way Zimbabwe’s government became not only a captured state, but a predatory state.

We believe that this interpretation of events in Zimbabwe is consistent, not only with the theoretical model, but with the broad arguments in Rodrik (1999) and Bates (2008). that a series of negative shocks led to redistributive conflict, government predation on the private sector, and a sharp growth decline in developing countries from the 1970s.

**Figure 5** Government spending, terms of trade, rainfall and GDP per capita in Zimbabwe

---

**Saudi Arabia during the Arab Spring**

The Arab Spring started in Tunisia in January 2011, after the fruit-seller, Mohamed Bouazizi self-immolated to protest price hikes and political repression (Habibul 2011). Protests for political reforms and economic participation in Tunisia soon spread to other Arab Countries, including Bahrain, Libya, Qatar, Saudi Arabia, and the United Arab Emirates. The regimes in Tunisia, Egypt, Yemen, and eventually Libya fell, while the outcome of Syria’s civil war remains unknown. Other regimes, such as Saudi Arabia and Bahrain, resisted the pressure. In Bahrain the Sunni dominated regime survived the Shia majority’s protest primarily due to Saudi
Arabia’s support. In Saudi Arabia the Monarchy responded to the popular protests with increased public goods and services provision as well as increased pay scales, government jobs and consumer subsidies (Game III 2011). It has followed a similar pattern historically by drawing on its large oil wealth (Acemoglu and Robinson 2012). As the Saudi regime’s financed public goods provision and transfers during the Arab Spring, only a small segment of the population participated in the protests.

The newfound possibility of political protest in Saudi Arabia due to the international Arab Spring can arguably be modelled as a regime switch from a hard to a soft autocracy. In terms of the model, due to the large oil rents accruing to the country’s power holders the results in Figure 4 may be particularly relevant. Assuming the initial productivity level exceeded roughly 2.5 in figure 4, the switch from hard to soft autocracy should indeed increase public goods provision (from the \( \diamond \) to the o curve) as the resource-rich regime sought to placate the disgruntled citizens and thereby protect its resource rents. Comparing the \( \Delta \) and x curves in Figure 4 also shows that the regime’s positive public goods response may have kept the country’s overall efficiency loss due to political unrest to a minimum, even with a significant labor switch to the protest sector.

7. Conclusion

This paper has studied the determination of fiscal policy and political unrest in a general equilibrium model. The model assumes that that an autocratic government provides public goods in response to a productivity shock. Knowing the productivity level and public investment, the citizens allocate time to either producing or protesting. We showed that the ability to protest decreases efficiency by pulling workers out of production and making the government myopic. However, the government’s incentive to “distract” the citizens actually increases public goods provision and efficiency provided labor and public goods are complementary production inputs or the government’s exogenous office rent component is sufficiently high. We then applied the model to explain the divergent economic paths of Zimbabwe in the 1990s and Saudi Arabia.


13 The large migrant population in Saudi Arabia has also created a labor force without demand for inclusive institutions.(Acemoglu and Robinson 2012). Regime repression has also stabilized the country heavy (Jones 2012)).
during the Arab Spring. In Zimbabwe, we argue that productive declines and external democratization pressure led to decreased public goods provision, political instability and economic collapse. In contrast, the increase in the perceived effectiveness of protesting in Saudi Arabia during the Arab Spring increased public goods provision and potentially efficiency as the regime sought to protect its large resource-based rents.
References


Habibul Haque Khondker (2011): Role of the New Media in the Arab Spring, *Globalizations*, 8:5, 675-679


Jenkins Carolyn and John Knight (2002), The Economic Decline of Zimbabwe: Neither Growth nor Equity, Palgrave.


