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# Crises, reforms, and regime persistence in sub-Saharan Africa

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## Abstract

African countries have experienced pervasive rent-seeking and repeated coups d'état. I model these features to show how rent-reducing economic reforms deter coups and allow regime persistence. An incumbent ruler may choose to risk an attempted coup in the hope of surviving and obtaining high future rents. A permanent crisis that reduces future rents may be necessary for reforms, particularly if the regime is limited in its ability to credibly implement reforms. The model yields insights into the incidence of political instability and reforms in sub-Saharan African. The Ghanaian and Nigerian experiences are used as examples.

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## 1. Introduction

Many less-developed countries undertook economically liberalizing reforms while facing severe economic difficulties in the 1980s. Although these reforms usually included some combination of fiscal deficit reduction, trade liberalization, privatization, and deregulation (Williamson, 1994a), actual reform experiences vary widely, and researchers

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have endeavored to explain the variation.<sup>1</sup> In sub-Saharan Africa (SSA), countries have ineffective bureaucracies, weak democratic institutions, high levels of rent-seeking, and coups d'état.<sup>2</sup> La Ferrara and Bates (2001) formally consider some of these features; however, there has been no attempt to model their relation to economic reforms. A regime might not initiate reforms when its bureaucracy lacks expertise to implement reforms, when it does not expect to retain power long enough to fully implement the reforms, or when it fears the reforms will limit its own rent-seeking opportunities. Explaining the variety of African reform experiences, where some countries are “successful reformers” while others are “mixed reformers” or “non-reformers” (Devarajan et al., 2001), requires an investigation of the relation between reform incentives and coups.

My analysis focuses on a key point: by design, many reforms appear to reduce the rents available to office holders, and such rent-reducing reforms can deter coups if the rents to be “won” by the leaders of a successful coup attempt are sufficiently reduced. My model shows that, when the expected future rents of being in power are high and when the challenger is sufficiently strong, the regime will be willing to “ride out” attempted coups in hopes of surviving a challenge and reaping the high rents. Once expected rents drop, however, it is in the regime's interest to enact reforms that deter coups and lock in future, albeit lower, rents. Reforms may accordingly be more likely during a permanent economic crisis than a temporary crisis: a permanent crisis decreases future rent extraction capabilities, while a temporary crisis maintains high future rents. My conclusions add to the understanding of the Ghanaian and Nigerian reform experiences. The predictions of the model apply to SSA states characterized by high ethnic fractionalization, independent militaries, and primary good export dependence, since bargaining failure—a key assumption of my model—is then more likely.

Section 2 summarizes reform-related issues in SSA. Section 3 presents the basic model. Section 4 relates the main results to economic crises and reform limitations. Section 5 discusses the relation to existing literature and the Ghanaian and Nigerian reform experiences.

## 2. Background: rents and reforms in SSA

SSA governments have had mixed experiences with economic reforms. In the midst of severe economic decline in the 1980s, many SSA countries enacted reforms with financial support from the international financial institutions (IFIs)—the IMF and the World Bank. These reforms were intended to reduce macroeconomic fluctuations and restructure the relationship between the economy and the state through disciplined monetary and fiscal

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<sup>1</sup> See Nelson (1990), Haggard and Kaufman (1992), Bates and Krueger (1993), Frey and Eichenberger (1994), Haggard and Webb (1994), and Williamson (1994b). One strand of research uses formal models to examine reform implementation, and looks at delays in reforms, the dynamics of stabilization policies, trade liberalization, and the speed of reforms. For surveys of this literature, see Rodrik (1996), Tommasi and Velasco (1996), and Sturzenegger and Tommasi (1998).

<sup>2</sup> See Evans (1992), Widner (1994), Rowley (2000), La Ferrara and Bates (2001), van de Walle (2001), Easterly (2002), and Thompson (2004).

policies, targeted growth-enhancing measures, and reductions in the role of the state.<sup>3</sup> The so-called “Washington Consensus” outlined in Appendix A serves as a benchmark description of IFI-supported reforms. No single country ever achieved all of IFI’s goals, although some successfully implemented more reforms than others. For example, [Devarajan et al. \(2001\)](#) classified Uganda and Ghana as “successful reformers,” Nigeria and Democratic Republic of Congo (Zaire) as “non-reformers,” and Cote d’Ivoire, Kenya, and Zambia as “mixed reformers.”

Researchers cite various influences to explain the variation in SSA reform experiences. Domestic political factors appear to explain the timing and design of reforms and why some reforms succeeded when others failed ([Stallings, 1992](#); [Nelson, 1990](#); [Dollar and Svensson, 2000](#)).<sup>4</sup> One domestic influence frequently cited is the relation between reforms and political rents. IFI-backed reforms aim to reduce rent-seeking that inhibits economic growth ([Lewis, 1996](#)). For example, import liberalization eliminates rents obtainable through the sale and ownership of restricted import licenses, and restructuring state-owned enterprises eliminates jobs that can be distributed to political supporters. SSA regimes therefore dislike rent-reducing reforms (e.g., [Grosh, 1994](#); [Lewis, 1996](#); [Kurer, 1996](#)).

Why then do some regimes enact reforms if doing so is to their disadvantage? One possibility is that reforms do not greatly reduce rent extraction capabilities. Support for this claim is found in the fact that actual reform efforts often fell far short of the IFI’s goals. The general pattern is that stabilization has succeeded more often than structural adjustment ([van de Walle, 2001](#)). Stabilization involves changes in macroeconomic policies (e.g., devaluation, deficit reduction), while structural adjustment reforms involve institutional change (e.g., privatization, deregulation). Since financial crises as experienced by many SSA countries in the early 1980s require immediate attention to resolve balance of payments problems, stabilization provides short run relief while not greatly reducing long run rent extraction capabilities. Stabilization is easier to begin, and it is also easier to reverse, as evidenced by reform reversals in some countries, including Nigeria ([Herbst and Soludo, 2001](#)). Regimes therefore appear willing to accept limited reductions in rents in order to “ride-out” temporary crises, but then return to earlier practices that produce high rents once bad times pass. This reasoning, however, cannot explain why some regimes sustain significant reforms.

I examine this puzzle by relating reforms to political instability. In the initial decades after independence, coups<sup>5</sup> were the “primary form of regime change” in SSA ([McGowan and Johnson, 1984](#), p. 633). This affects a regime’s decision to implement reforms. A regime facing the threat of a coup will be unsure of how long it will retain power and thus heavily discount the long run gains from reforms. This makes the regime behave more like a roving rather than stationary bandit ([Rowley, 2000](#)). Since the economic benefits of large scale reforms (like structural adjustment) come in the long run, a roving bandit regime that

<sup>3</sup> See [Fearon \(1988\)](#), [Williamson \(1994b\)](#), and [Weaver \(1995\)](#).

<sup>4</sup> [Dollar and Svensson \(2000\)](#) discuss the limited impact of international aid on successful reforms. [Chauvet \(2002\)](#) studies the endogeneity of aid.

<sup>5</sup> A coup attempt is an illegal attempt (possibly successful) by a small group to overthrow the government that is speedy and involves the threat or actual use of violence ([Galetovic and Sanhueza, 2000](#)).

cares only about the short run will not implement reforms. Dollar and Svensson (2000) find that failed reforms and political instability are highly correlated, yet there is more to be understood since the presence of instability does not necessarily preclude successful reforms. Ghana, for example, enacted substantial reforms even though many people perceived an imminent coup attempt (Devarajan et al., 2001). The model below links reforms and instability in a new way to examine the incidence of each.

### 3. Entry-detering reforms

#### 3.1. Model

Consider a political incumbent and a political challenger who interact in the following three-stage perfect information game:

1. The political incumbent chooses  $r \in [0, \bar{r}]$  and  $k_1 \geq 0$ . Variable  $r$  can be interpreted as expropriation opportunities such as institutions, policies, etc., that permit or limit rent expropriation, and  $\bar{r}$  is thus maximal rents.  $k_1$  represents the resources and effort spent by the incumbent on defending his power.
2. The challenger decides to either “challenge” or “not challenger” for power. Challenging (also called “entry”) costs the challenger  $k > 0$  whether or not his challenge succeeds.  $k$  represents the productive activities forgone, or effort and resources spent coordinating the coup attempt.
3. If the challenger enters in stage 2, then his attempt succeeds with probability  $p(k_1) = k / (\beta k_1 + k)$ ,  $\beta \geq 0$ , and the incumbent stays in power with probability  $1 - p(k_1)$ . If there is no entry, then the incumbent stays in power. The agent in power at the end of this stage receives rents  $r$ , and the other agent receives no rents.<sup>6</sup>

I consider the aggregate level of rents available to the incumbent regime.<sup>7</sup> A discrete coup success probability captures the notion that coup plotters hope a rapid strike to take power “will initiate a tipping process that produces wholesale defections within the regime or mass popular demonstrations,” thereby creating an all-or-nothing success technology so that “[e]ither the coup leaders succeed or they are crushed when the hoped-for tip fails” (Fearon, 2002, p. 20). The  $\beta$  parameter captures the strength of the incumbent. That the coup success probability depends negatively on  $k_1$  captures the notion that the incumbent can engage in costly defensive measures to increase the chances of maintaining power. In principle,  $p$  could also depend positively on the resources expended by the challenger. The

<sup>6</sup> Since unsuccessful captured coup plotters are likely to face severe punishments, a more realistic assumption would have unsuccessful challengers pay a large, negative cost. However, this addition does not affect the main result, so I omit it.

<sup>7</sup> Galetovic and Sanhueza (2000) make a similar simplification about rent expropriation. Fearon’s (2002) model does not interpret the prize as rents but instead as power over territory, and the analytics in his model and mine are similar.

intuition for the results is unchanged in such a setting. The analysis is simplified under the current set-up.<sup>8</sup>

Reforms occur when the  $r$  chosen by the incumbent is less than  $\bar{r}$ . A key assumption is that reforms are credible and irreversible.<sup>9</sup> Another key assumption is that the incumbent regime cannot successfully buy-out coup plotters (e.g., by distributing them rents in exchange for political support).<sup>10</sup> The fact that coups are ever attempted is evidence that bargaining can fail between regimes and coup plotters.<sup>11</sup> Since my focus is on reforms and instability, I will not focus on the underlying bargaining failures, although I will return to the issue of bargaining failure in Section 5.

### 3.2. Analysis

Backwards induction is used to find the subgame perfect equilibrium. The last choice made is by the challenger in stage 2. He enters if, given the incumbent's choice of  $r$  and  $k_1$ , his expected payoff of entering is greater than the expected payoff of not entering:

$$\begin{aligned} p(k_1)r - k &> 0 \\ \frac{k}{\beta k_1 + k} r - k &> 0 \\ k_1 &< \frac{r - k}{\beta} = \tilde{k}_1. \end{aligned}$$

<sup>8</sup> See Skaperdas (1996) and Clark and Riis (1998) for axiomatic characterizations of this contest success (probability) function (see Tullock, 1980 for an earlier usage).

<sup>9</sup> Credibility will be hard to justify in many contexts (e.g., Rodrik, 1989), yet assuming credibility can be justified. Some reforms, such as institutional change, will be harder to reverse, thereby eliminating some time-inconsistency problems that limit credibility. See Herbst (1993) for a discussion of how the Ghanaian reforms achieved credibility for this reason. Another dimension of this assumption is that the incumbent regime has the technical know-how to successfully implement reforms once it decides doing so is optimal. This assumption can be justified by the fact that many SSA countries have implemented some degree of reforms and that technocrats often recommend reforms only to have the advice rejected by political leaders. However, some researchers argue that feasible reforms in Africa are limited by low "state capacity," which is manifested as corruption, disregard for official policies, and poor administrative capabilities (see van de Walle, 2001).

<sup>10</sup> Fearon (1995) describes two reasons why bargains might not be reached: private information and commitment problems. Concerning private information, the regime and the coup plotters will each have different information about each other's positions of strength and identities, and each side will have difficulties credibly revealing its own information. Since plotters have the incentive to overstate their strength, the regime will doubt the credibility of plotters' claims about their own (plotters') strength (Fearon, 2002). Also, plotters in SSA often come from ethnic groups different from the incumbent's group, so even if the challenging group is known to be hostile, the exact identities of plotters within the group may be hidden from the regime. Furthermore, coups are illegal by definition, and the punishments to captured plotters are severe (e.g., execution). Potential challengers thus want to remain anonymous since revealing their identities could result in being captured, which would eliminate their bargaining position. In each case, bargaining can fail if neither side can credibly reveal its private information. Commitment problems also abound. The regime is willing to strike a deal if it is in a position of weakness, but the possibility of its strength returning in the future can limit the credibility of its offer since it will renege on its bargain in a future period of strength (Fearon, 2002).

<sup>11</sup> However, incumbents have actually attempted such buy-outs. General Babangida in Nigeria, for example, initiated large military spending increases in the early 1990s, such as building new barracks, buying new weapons, distributing special grants to improve officers' welfare, etc., to gain support from the military (Herbst and Olukoshi, 1994). These efforts did not prevent the participation of military officers in future coup attempts.

Note that since the challenger only enters if  $k_1 < \tilde{k}_1$ , the incumbent can “deter entry by strength” by choosing  $k_1 \geq \tilde{k}_1$ , or he can “deter entry by reforms” by choosing  $r \leq \beta k_1 + k$ .

To find the incumbent’s optimal decision, it will be useful to separate the incumbent’s choices of  $r$  and  $k_1$  into two decisions, with the incumbent first choosing  $r$  and then choosing  $k_1$ . Continuing the backward induction logic, I will first find the incumbent’s optimal choice of  $k_1$  given  $r$  and given the challenger’s optimal response. I then find the optimal  $r$  given the associated optimal  $k_1$  and optimal challenger response.

If  $r \leq k$ , there is no threat of entry, and the optimal  $k_1$  is 0. If  $r > k$ , the incumbent can deter entry by choosing  $k_1 \geq \tilde{k}_1$ . Clearly, his best  $k_1$  above  $\tilde{k}_1$  is to set  $k_1 = \tilde{k}_1$  since a higher  $k_1$  is a higher cost but no additional benefit. Instead of deterring entry, he could instead choose  $k_1 < \tilde{k}_1$  and hope to survive a coup attempt. His optimal  $k_1^*$  that is less than  $\tilde{k}_1$  can be found by maximizing his expected payoff given entry:  $k_1^* = \arg \max_{k_1} ((\beta k_1) / (\beta k_1 + k))r - k_1$ :

$$\frac{\partial}{\partial k_1} = \left( \frac{\beta}{\beta k_1 + k} - \frac{\beta^2 k_1}{(\beta k_1 + k)^2} \right) r - 1 = 0$$

$$k_1^* = \frac{\sqrt{kr} - k}{\beta}.$$

Notice that  $k_1^*$  is concave in  $r$  and is strictly less than  $\tilde{k}_1$  for all  $r > k$ . One final option for the incumbent is to choose  $k_1 = 0$  to, in effect, abdicate power.

To see which is optimal, we find which alternative yields a higher expected utility. His expected utility fighting it out is better than deterring by strength when  $U_1^{FT} = \frac{\beta k_1^*}{\beta k_1^* + k} r - k_1^* > U_1^{DTS} = r - \tilde{k}_1$ , which is true when  $r > (\beta + 1)^2 k$ . These expected utilities must also be compared to abdication, which yields expected payoff 0. Fighting the challenger is preferred to abdication when  $U_1^{FT} (\beta k_1^* / [\beta k_1^* + k]) r - k_1^* > U_1^{ABD} = 0 \Rightarrow r > \frac{k}{\beta^2}$ . Deterring by strength is preferred to abdication when  $U_1^{DTS} = r - \tilde{k}_1 > U_1^{ABD} = 0$ . If  $\beta < 1$ , this inequality becomes  $r < (k / (1 - \beta))$ , and if  $\beta > 1$ , the inequality holds for  $r > k$ .

From the above, it follows that:

**Lemma 1.** Given  $r$  and given the challenger’s optimal response in stage 2, the incumbent’s optimal choice of  $k_1$  is as follows. When  $\beta < \frac{1}{2}(\sqrt{5} - 1)$  (approximately 0.618), then:

- (a) If  $r < k$ , then choose  $k_1 = 0$  since there is NO THREAT.
- (b) If  $k < r < (k / (1 - \beta))$ , then DETER BY STRENGTH with  $k_1 = \tilde{k}_1$ .
- (c) If  $(k / (1 - \beta)) < r < (k / \beta^2)$ , then ABDICATE with  $k_1 = 0$ .
- (d) If  $r > (k / \beta^2)$ , then FIGHT with  $k_1 = k_1^*$ .

When  $\beta > \frac{1}{2}(\sqrt{5} - 1)$ , then:

- (a') If  $r < k$ , then choose  $k_1 = 0$ , since there is NO THREAT.
- (b') If  $k < r < (\beta + 1)^2 k$ , then DETER BY STRENGTH with  $k_1 = k_1^*$ .
- (d') If  $r > (\beta + 1)^2 k$ , then FIGHT with  $k_1 = k_1^*$ .

(a) and (a') follow trivially. For part (b), it can be shown that  $\beta < \frac{1}{2}(\sqrt{5} - 1)$  implies  $k/(1 - \beta) < (\beta + 1)^2 k$  and  $k/(1 - \beta) < k/\beta^2$ . Thus,  $k < r < k/(1 - \beta)$  implies  $U_1^{\text{DTS}} > U_1^{\text{FT}}$  and  $U_1^{\text{DTS}} > U_1^{\text{ABD}}$ . Increasing  $r$  appropriately yields (c) and (d) by similar expected payoff comparisons. If  $\beta > \frac{1}{2}(\sqrt{5} - 1)$ , then  $k/(1 - \beta) > (\beta + 1)^2 k$  and  $k/(1 - \beta) > k/\beta^2$ . (b') and (d') follow from expected payoff comparisons.

Fig. 1(a) depicts  $U_1(\text{opt } k_1|r)$ , the incumbent's expected utility given  $r$ , given his own optimal  $v$  from Lemma 1, and given the challenger's optimal response for when  $k=1$  and  $\beta = 0.4 < \frac{1}{2}(\sqrt{5} - 1)$ . The four different segments marked (a)–(d) correspond to parts (a)–(d) of Lemma 1. Segment (a) will always be sloped at  $45^\circ$  since the expected utility in that range is  $r$ . Segment (b) will always be a straight line with slope  $(\beta - 1)/\beta$ , since the expected payoff in the deter by strength range is  $r - \hat{k}_1 = ((\beta - 1)/\beta)r + (k/\beta)$ . With  $\beta < 1$ , the line is negatively sloped and intersects the horizontal axis at  $k/(1 - \beta)$ . Because segment (c) corresponds to abdication, it will always exist with  $\beta < \frac{1}{2}(\sqrt{5} - 1)$ , and it will always be a straight line along the horizontal axis from  $k/(1 - \beta)$  to  $k/\beta^2$ . Segment (d) corresponds to fighting and has expected payoff  $\frac{\beta k_1^*}{\beta k_1^* + k} r - k_1^* = r - \left(\frac{\beta + 1}{\beta}\right)\sqrt{kr} + \frac{k}{\beta}$ . By taking first and second derivatives with respect to  $r$ , we can see that (d) will always be a convex, upward-sloping curve going up from the horizontal axis at  $r = k/\beta^2$ .<sup>12</sup>

The figure also illustrates the incumbent's optimal choice of  $r$ . Fig. 1(b) adds a vertical line at  $\bar{r}=3$ . Since the segments plot the incumbent's highest expected payoff, and since  $r$  must be chosen from  $[0, \bar{r}]$ , the set of feasible  $r$  consists of the segments to the left of the  $\bar{r}$ -line and the shaded area under the segments to the left of the  $\bar{r}$ -line. With  $\bar{r}=3$ , the incumbent's highest feasible expected payoff is at  $r=k$  and  $k_1=0$ . This corresponds to the highest vertical point in the incumbent's feasible payoff area and is indicated by the arrow. Thus, the optimal choice involves entry deterrence by reforms. In fact, since segment (d) is upward-sloping and convex, there must exist some level of  $r$ , call it  $r'$ , with the following properties: if  $r=r'$ , the incumbent is indifferent between deterring reforms and fighting; if  $r > r'$ , the incumbent strictly prefers fighting with  $k_1^*$  to anything else; and if  $k < r < r'$ , the incumbent strictly prefers deterring reforms than anything else. Setting  $U_1^{\text{FT}} = k$  and solving for  $r$ , we obtain  $r'$  as follows:

$$r' = k \frac{\frac{3}{2}\beta - \frac{1}{2} + \frac{1}{2}\sqrt{(5\beta^2 - 2\beta + 1)} + \frac{1}{2\beta}(\beta + 1 + \sqrt{(5\beta^2 - 2\beta + 1)})}{\beta}.$$

The  $k < \bar{r} < r'$  range always exists since segment (b) is always negatively sloped and (d) is always positively sloped. Extending this logic completes this example: if  $\bar{r} < k$ , then the incumbent clearly sets  $r = \bar{r}$  and  $k_1 = 0$ , and if  $\bar{r} > r'$ , then the incumbent's optimal strategy is to set  $r = \bar{r}$  and  $k_1 = k_1^*$ .

It is easy to see that the incumbent's optimal strategy will be similar for any  $\beta < \frac{1}{2}(\sqrt{5} - 1)$  since the segments take similar shape. If  $\frac{1}{2}(\sqrt{5} - 1) < \beta < 1$ , then the figure looks like Fig. 1(c), which uses  $\beta = 0.8$ . There is no abdication range because segment (c) no longer exists. The slope of segment (b) is higher in Fig. 1(c) than Fig. 1(a), but it is still

<sup>12</sup> The derivative with respect to  $\bar{r}$  is  $\frac{\partial U_1(\text{opt } k_1|r)}{\partial \bar{r}} = 1 - \frac{1}{2}\left(\frac{\beta + 1}{\beta}\right)\sqrt{\frac{k}{r}}$ . The slope at  $r = (\beta + 1)^2 k$  is  $1 - \frac{1}{2}\left(\frac{\beta + 1}{\beta}\right)\sqrt{\frac{k}{(\beta + 1)^2 k}} = 1 - \frac{1}{2\beta}$ , which is positive if  $\beta > 1/2$ . The second derivative is always positive:  $\frac{\partial^2(\text{opt } k_1|r)}{\partial r^2} = \frac{1}{4}\left(\frac{\beta + 1}{\beta}\right)\frac{\sqrt{k}}{r^{\frac{3}{2}}}$ .

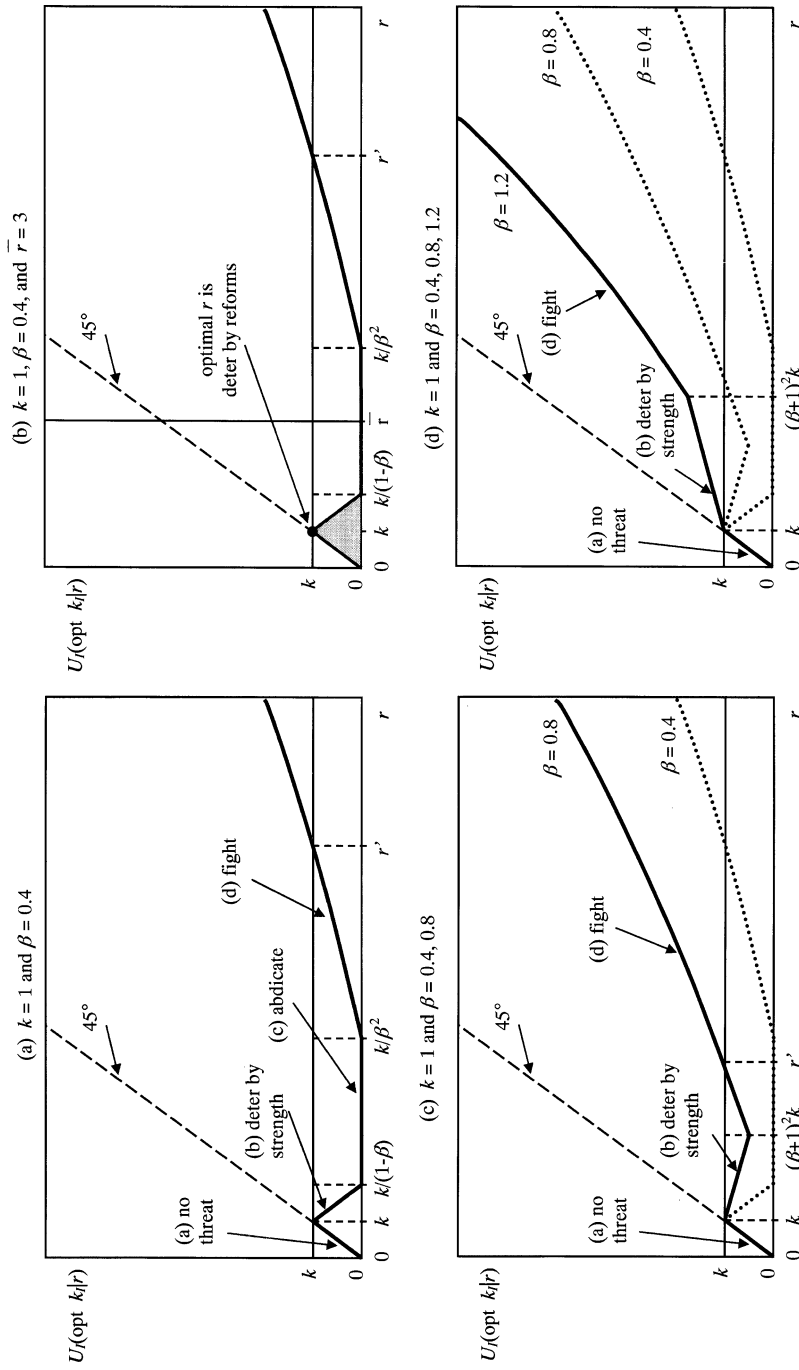


Fig. 1. Incumbent's expected utility given  $r$ , optimal  $k_i$ , and optimal challenger response.

negative since  $\beta < 1$ , and segment (d) shifts up to the left and also has its slope increase. Segments (b) and (d) now intersect at  $r = (\beta + 1)^2 k$ . Although the figure is slightly different than Fig. 1(a), the incumbent's optimal strategy is similar. That is, there again exists  $r'$  such that entry-detering reforms are optimal when  $k < r < r'$ . The reason is that the (b) segment is still negatively sloped, thus making entry-detering reforms better for the incumbent than deterrence by strength.

The final case to consider is  $\beta > 1$ . Fig. 1(d) has  $\beta = 1.2$  and illustrates the shape for  $\beta > 1$ . Segment (c) again does not exist, but now the slope of (b) is positive since  $\beta > 1$ . In fact, as  $\beta \rightarrow \infty$ , segment (b) approaches the  $45^\circ$  line from below as its slope approaches 1 from below. Segment (d) is still positively sloped and concave, but it also shifts upward as  $\beta$  increases. Its slope also approaches 1 at all points as it, too, approaches the  $45^\circ$  line from below. Since the incumbent's expected utility is now always increasing in  $r$ , he will never enact reforms. Instead, he will always choose  $r = \bar{r}$ , and will deter by strength if  $k < \bar{r} < (\beta + 1)^2 k$  but fight if  $\bar{r} > (\beta + 1)^2 k$ . Proposition 1 summarizes these results.

**Proposition 1.**

- (a) If  $\beta < 1$ , then the equilibrium consists of the following:
- (i) If  $\bar{r} < k$ , then there will be NO ENTRY AND NO REFORMS. The incumbent chooses  $r = \bar{r}$  and  $k_I = 0$ , and the challenger does not enter.
  - (ii) If  $k < \bar{r} < r'$ , then there will be ENTRY-DETERRING REFORMS. The incumbent chooses  $r = k < \bar{r}$  and  $k_I = 0$ , and the challenger does not enter.
  - (iii) If  $\bar{r} > r'$ , there will be ENTRY AND NO REFORMS. The incumbent chooses  $r = \bar{r}$  and  $k_I = k_I^*$ , and the challenger enters.
- (b) If  $\beta > 1$ , then the equilibrium consists of the following:
- (i) If  $\bar{r} < k$ , then there will be NO ENTRY AND NO REFORMS. The incumbent chooses  $r = \bar{r}$  and  $k_I = 0$ , and the challenger does not enter.
  - (ii) If  $k < \bar{r} < (\beta + 1)^2 k$ , then there will be DETERRENCE BY STRENGTH AND NO REFORMS. The incumbent chooses  $r = \bar{r}$  and  $k_I = \tilde{k}_I$ , and the challenger does not enter.
  - (iii) If  $\bar{r} > (\beta + 1)^2 k$ , there will be ENTRY AND NO REFORMS. The incumbent chooses  $r = \bar{r}$  and  $k_I = k_I^*$ , and the challenger enters.

These results establish the conditions for entry-detering reforms. First, the challenger must be sufficiently strong so that there is a range of rents wherein an increase in rents increases the marginal cost of deterrence more than the marginal benefit of rent maximization. This occurs in the model when  $\beta < 1$  (which implies negatively sloped segment (b)). Second, potential rents must not be too high. If potential rents are too high, then deterrence by strength is too costly and the incumbent is willing to trade off the low rents he would obtain with probability 1 by enacting reforms for the chance at obtaining the large potential rents. Thus, potential rents must be sufficiently small so that obtaining the "sure-thing" post-reform rents is better, in expectation, than the chance of obtaining the potential rents. Of course, they cannot be too small or else there is no threat to induce reforms.

Fig. 2 illustrates Proposition 1 in  $(r, \beta)$  space. As  $\beta$  increases from near 0 to close to 1, the deter by reform range shrinks from above (and is fixed below at  $k$ ) since  $r'$  decreases.

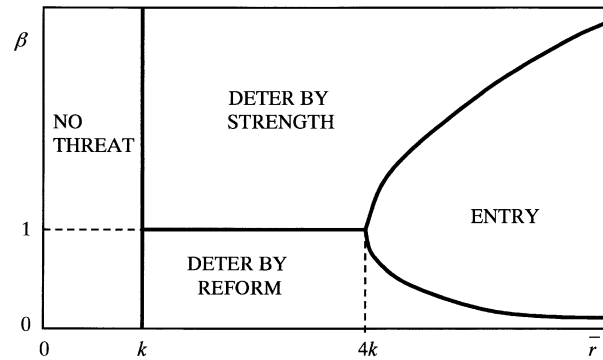


Fig. 2. Equilibrium actions by  $\bar{r}$  and  $\beta$ .

The increasing strength of the incumbent increases the chance of a coup attempt since he will be more willing to fight a challenger than deter. Once  $\beta$  goes above 1, there is no reform range, but there is a deter by strength range. This range increases since  $(\beta + 1)^2 k$  increases as  $\beta$  increases. Thus, increasing the incumbent’s strength will now decrease the chances of a fight.

#### 4. Crises and other considerations

It has been claimed that permanent crises have different effects on the reform decision than do temporary economic crises.<sup>13</sup> Grosh (1994) argues that reforms in an SSA country are more likely to follow permanent than transitory crises because permanent crises break down current and future rent extraction capabilities, thereby reducing the costs (in terms of rents forgone or loss of political support) of reforms. My model above does not describe the nature of economic crises, but it does add to this discussion.

The three-stage game can be thought of as occurring during an economic crisis where the threat of a coup is stronger. For example, normally  $\beta$  is very large (e.g., much greater than 1), so there is effectively no challenger, but during a crisis, the challenger has an opening in which to attempt a coup. It is during this window that the game is played. If the crisis is temporary or transitory, it can be thought of as causing a temporary drop in  $\beta$  below 1 while not adversely affecting potential rents  $\bar{r}$ . A permanent crisis, however, can be seen as also causing  $\bar{r}$  to drop to  $\bar{r}' < \bar{r}$ . In the African context, for example, this drop in potential rents could be due to a permanent drop in the world price of the export commodity (oil, groundnuts, cocoa, etc.) from which rents are obtained. To tie this into the model, suppose there is a “stage 0” in which nature chooses the type of crisis (i.e., nature chooses potential rents to be either  $\bar{r}$  or  $\bar{r}'$ ). In this setting, Proposition 1 suggests a conclusion similar to that of Grosh but with a different logic. If  $k < \bar{r}' < \bar{r}' < \bar{r}$ , then a permanent crisis leads to reforms, while a temporary crisis leads to a coup attempt but no reforms. In effect, a permanent crisis leads to reforms not because of a decrease in the

<sup>13</sup> See Drazen and Grilli (1993), Gasiorowski (1995), and Drazen and Easterly (2001).

political costs of reforms but because the drop in rents has decreased the benefits of risking everything in a fight.

We can extend the analysis further. Suppose the incumbent can only credibly eliminate  $\delta > 0$  in rents so that the incumbent chooses  $r \in [\bar{r} - \delta, \bar{r}]$  in stage 1. If  $\delta$  is sufficiently large (i.e.,  $\delta$  close to  $\bar{r}$ ), then the equilibrium described in Proposition 1 does not change. However, if  $\delta$  is small, then the incidence of reforms will change. With  $\beta < \frac{1}{2}(\sqrt{5} - 1)$ , reforms are only possibly optimal if  $\bar{r} \in [k, k/(1 - \beta) + \delta]$ . By similar logic, if  $\beta \in (\frac{1}{2}(\sqrt{5} - 1), 1)$ , then reforms are only possibly optimal if  $\bar{r} \in [k, (\beta + 1)^2 k + \delta]$ . Clearly, as  $\delta$  decreases, the range for reforms decreases. In fact, the range for political instability increases since it may now be optimal for the incumbent to maximize rents and fight when  $\bar{r}$  is close to  $r'$  even if below it. This occurs in Fig. 1(a), for example, if  $\bar{r} \in [k/\beta^2 + \delta, r']$ , or in Fig. 1(c) when  $\bar{r} \in [(\beta + 1)^2 k + \delta, r']$ .

This last result establishes a new insight into the way in which limited credibility and low state capacity can affect the incidence of reforms and instability. The limitations have two negative effects. First, they prevent the initiation of economic reforms. Knowing that entry-detering reforms are not possible and that they will face challenges, regimes maximize short run rents while they have power. Second, because the entry-detering reforms are no longer feasible, the chance of instability increases.

We can also combine the findings on permanent crises and reform credibility. If a permanent crisis that reduces potential rents is necessary for reforms, then as  $\delta$  decreases, an even larger reduction in  $\bar{r}$  (i.e., a deeper permanent crisis) will be necessary for reforms to be enacted. This follows directly from the logic above.

Before discussing these results in more detail, I mention a few other considerations. Konrad (2002) focuses on an incumbent's investment decision when the incumbent must fight to retain the returns on that investment, and McGuire and Olson (1996) study how the incumbent's behavior relates to the extensiveness of the incumbent's interest. Under certain conditions on the size of the incumbent's encompassing interest, the value of the investment, and the impact of the rent extraction on productivity, entry-detering reforms can still be optimal. Thus, the entry deterrence logic still holds in these more complicated strategic environments.

Another modification allows for private information about crucial parameters of the game. Private information about the incumbent's strength is one reason why bargaining can fail between regimes and challengers. The entry deterrence logic can still hold even after allowing for incomplete information about  $\beta$ , although there can be a richer set of outcomes. Suppose the regime believes its strength to be  $\beta$ , while the challenger believes it is  $\beta' < \beta$ .<sup>14</sup> Then the regime might set  $r$  at, say,  $\bar{r}$ , which it thinks will deter entry, but the challenger actually has an entry cutoff below  $\bar{r}$ . In this case, the regime reduces rents in hopes of deterring entry, but the rents are not reduced sufficiently to deter entry. Thus, private information about  $\beta$  may result in a failure of some deterrence attempts.

<sup>14</sup> More precisely, the incumbent draws  $\beta$  from some commonly known distribution  $F_\beta$ , and while the incumbent knows its draw, the challenger only knows the distribution.

## 5. Discussion

### 5.1. Relation to literature

My results suggest new insights into SSA reforms. First, rent-reducing reforms actually decrease political instability by altering the incentives of coup plotters. This stands in contrast to the conventional belief that regimes dislike unpopular reforms because they create instability in the form of social unrest. SSA regimes appear only partially responsive to public sentiment, and more concerned with the reforms' effects on elites within the regime (Rowley, 2000; van de Walle, 2001). With this premise, my model shows that publicly unpopular reforms can be to the regime's political advantage by deterring coup attempts.

Second, the variation in SSA reform experiences can be explained in part by differences in commodity specialization. If the world price of a commodity falls temporarily and is expected to rebound, then a regime whose rents derive from that commodity may choose to not sustain reforms but ride out the crisis in hopes of reaping high future rents—even when facing an imminent coup attempt. A regime whose rents come from another commodity with a different price path may instead choose reforms. This also relates to the so-called “resource curse” (e.g., Robinson et al., 2002). Regimes will be less likely to enact growth-enhancing reforms when the resources generate sufficiently high expected rents.<sup>15</sup>

Third, prolonged crises may increase political stability. This prediction is somewhat surprising. The key logic is that a prolonged crisis may be necessary to reduce rents sufficiently to make entry-deterring reforms preferred behavior.<sup>16</sup>

Fourth, low state capacity and limited reform credibility, thought to be a large impediment to sustained reforms, may also help explain high political instability in SSA. Previous research describes how low state capacity prevents implementation of reforms (e.g., Evans, 1992; Lewis, 1996). I connect state capacity with coup threats and economic crises. If low state capacity restricts the amount that rents can be reduced through reforms, then the rents must drop substantially (assuming they are initially high) in order to make entry-deterring reforms even possible. Thus, countries with low state capacity may require a severe crisis before reforms are implemented.

This paper is not the first to formally consider political entry deterrence.<sup>17</sup> Caselli and Morelli (2004) examine how poor-quality incumbents decrease the benefits of office to high-quality potential candidates, thus effectively deterring entry. Przeworski and Wallerstein (1982) describe a Marxian class compromise whereby both capitalists and workers agree to reductions in their own immediate material benefits in order to maintain peace, thereby allowing each group to gain in the long-run from cooperation between the classes. Acemoglu and Robinson (2000, 2001) show democratization and asset

<sup>15</sup> Verwimp (2003) describes a similar relation between regime stability and commodity prices in Rwanda.

<sup>16</sup> Note that I am referring specifically to deterring coup attempts and not other forms of political instability, such as strikes, which may arise as a result of crises.

<sup>17</sup> A number of papers examine (in non-SSA contexts) endogenous political entry without entry deterrence, although entry deterrence follows logically. See Osborne and Slivinski (1996), Besley and Coate (1997), Milesi-Ferretti and Spolaore (1994), Milesi-Ferretti (1995), and Palfrey (1984).

redistribution to be types of political and economic reforms that can deter revolutions. [Konrad \(2002\)](#) describes how an incumbent might not invest in a project when the winner of the political contest reaps the benefits of the reward. My model is the first in the coups literature (e.g., [Sutter, 2000](#); [Galetovic and Sanhueza, 2000](#)) to consider the deterrence effect of reforms.

My model is consistent with the formal literature on the political economy of policy reform (see [Rodrik, 1996](#); [Sturzenegger and Tommasi, 1998](#)). This research ranges from models examining more general reasons for delays in reform ([Fernandez and Rodrik, 1991](#); [Alesina and Drazen, 1991](#)) to models of the dynamics of inflation, stabilization, and fiscal deficits ([Mondino et al., 1996](#)). My paper adds to this literature by formalizing in a simple manner some stylized features of SSA countries, by postulating that reforms can deter coups, and by studying an unexplored relationship between crises, coups, and reforms.

## 5.2. Cases

I now briefly consider the reform experiences of Ghana and Nigeria. These countries have a common colonial heritage (British) and similar geographic location (west Africa, neither is landlocked), yet have very different reform and coup experiences.

### 5.2.1. Ghana

From independence in 1957 up to the mid-1980s, Ghana was plagued by a combination of growth-inhibiting economic policies and persistent political instability. During this period, Ghana experienced at least five distinct macroeconomic crises, and ended the period with one of the lowest per-capita incomes in the world, even though it began the period as a lower–middle income country (with per-capita income equal to that of South Korea). Coups followed most of these crises. In fact, during this period, Ghana had more military coup events<sup>18</sup> than any other country in Africa, and every regime basically continued the same market-interfering and growth-retarding economic policies. This period stands in stark contrast to the experience since the mid-1980s. During this later period, Ghana has been arguably the strongest implementer of World Bank-supported structural adjustment reforms in all of SSA, and, since 1984, it has not experienced any attempted coups ([McGowan, 2002](#)).<sup>19</sup>

My analysis suggests that a drop in the expected future rents in the 1980s explains the timing of the reforms and the respite from coup attempts. Before the 1980s, conditions

<sup>18</sup> A coup event is defined as a coup, an attempted coup, or a plotted coup ([McGowan, 2002](#)).

<sup>19</sup> According to [McGowan's \(2002\)](#) classification, there were no successful coups or attempted coups from 1986 on, but there was one plotted coup in 1989. We cannot, however, treat a plotted coup the same as we do an attempted or successful coup for the following reasons. First, since the coup was not actually attempted, we do not know that it would actually have ever been attempted. Second, so-called plots may be manufactured by the government to justify some coercive action. Nonetheless, the fact that [McGowan \(2002\)](#) reports there was a plotted coup in 1989 gives the plot some credibility and can be a weakness in the argument that power was no longer worth fighting for. The alleged reason for this plot, however, was not economic in origin. If the motive truly was not economic in nature, my explanation based on the economic motives behind power struggles would not apply in the case of this 1989 plot.

were such that large rents were available to political leaders ( $\bar{F} > r'$ ), and those not in power had the incentive to contest for power. The main source of these rents was the cocoa sector. Cocoa was purchased by the Cocoa Marketing Board (CMB) from domestic producers at prices set well below the world price and then sold on the world market, thus generating huge rents to those with ties to the CMB. The sale of cocoa on the world market was also the largest source of foreign exchange, and holders of import licenses with access to this foreign exchange took advantage of overvalued exchange rates to buy imports at reduced prices and sell them at higher prices domestically, thus acquiring rents. Incumbents designed economic policies to maintain these rents, and repeated coups occurred as different factions vied for the rents.

Over time, the potential rents shrank as economic decline wore down the cocoa sector. The decline reached its greatest depth during the prolonged economic crisis of the 1980s, which was caused in part by a large drop in the world price of cocoa that was perceived (accurately) to be permanent (World Bank, 1983). Since cocoa revenue was the primary source of rents, the permanent price drop implied a drop in expected future rents, akin to  $\bar{F}$  dropping below  $r'$ . While still providing a reduced source of export earnings by 1983, the cocoa sector's contribution to government revenue in the early 1980s was minuscule (Donkor, 1997), and the economy was devastated. In the face of a continued threat of a coup ( $\bar{F} > k$ )—a threat manifested by coup attempts in 1983 despite the drop in rents—the political regime enacted a series of reforms in the mid-1980s that credibly lowered rents for the present and the future. The CMB experienced internal reforms, and, in 1986, the foreign exchange auction effectively liberalized imports (the Sachs–Warner index of openness listed Ghana as an open economy after 1986 but as a closed economy before 1986) (Tsikata, 2001). The economy experienced an upsurge as the reforms proceeded throughout the 1980s, and despite some macroeconomic instability in the mid-1990s, fundamental reforms held up, and Ghana has not experienced an attempted coup since the mid-1980s. Although earlier work has connected the reforms to the crisis, my model deepens our understanding of the Ghanaian experience by relating the crisis and the reforms to improved political stability.<sup>20</sup>

### 5.2.2. Nigeria

Nigeria's history cannot be broken into distinct periods like Ghana's. Nigeria has witnessed and continues to witness economic difficulties which, despite abundant natural resources, have led to it being ranked as one of the poorest countries in the world in per-capita income terms, with per-capita income lower today than at independence. Researchers identify oil and patronage practices as the key driving factors of Nigerian political economy (e.g., Herbst and Olukoshi, 1994). The government makes policy decisions based on the mitigation of ethnic tensions and the accumulation of political support. Such patronage practices worsened with the oil boom of the early 1970s because

<sup>20</sup> The most common explanation for the reforms is that the severity of the crisis and its effects on rents necessitated changes in economic practices. Leith and Lofchie (1993) note that the breakdown in rent production caused by the crisis made the reforms easier. For a discussion of other factors in the reform decision, such as a sense of national duty, the political skills of the regime, and the development of neoclassical theories, see Rothchild (1991), Petchenkine (1993), Jeong (1998), and Tsikata (2001).

“control of the state became exceptionally valuable and the explosion of oil revenue fueled the creation of ever larger and more elaborate patron–client networks” (Herbst and Soludo, 2001, p. 649). Oil booms are transitory, however, and economic crises have been a part of the Nigerian landscape. World oil prices collapsed in the early 1980s, and revenue from oil exports continue to fluctuate. Political instability has also been a problem. From independence in 1960 to the mid-1980s, Nigeria experienced numerous military coups, and the respite from coups did not end in the mid-1980s as it did in Ghana. Since the mid-1980s, Nigeria has experienced multiple coups and attempted coups, and its reform efforts have been uneven and frequently reversed. Whereas the currency was devalued and many import licences were abolished when reforms began under General Babangida in the mid-1980s, new tariffs and import bans were also introduced, export bans were placed on certain primary commodities in 1987, a fixed exchange rate was introduced in 1994, and patronage practices mushroomed as oil prices increased due to the Gulf War in the early 1990s (Herbst and Soludo, 2001). In fact, the reform successes have been so few that Nigeria was recently classified as a “non-reformer” (Devarajan et al., 2001).

My analysis suggests that, as long as expected oil rents remain high, sustained rent-reducing reforms are unlikely and political instability will continue.<sup>21</sup> Although oil prices undergo large fluctuations, incumbents will prefer to risk attempted coups occurring in temporary bad times in hopes of surviving the attempts and reaping the benefits of the future high oil prices. Although incumbents may implement minor reforms to sustain their rule through temporary crises, they will still continue many policies that are economically detrimental to society at large but politically and personally profitable. These predictions match the Nigerian experience. The works cited in the previous paragraph connect the lack of sustained reforms in Nigeria to rent-seeking practices. My analysis complements this literature by connecting Nigeria’s reform experience with its political instability.

### 5.2.3. *Generalizing to other countries*

Proposition 1 could, in principle, be directly tested using an ideal data set of political and economic variables from SSA countries, but many difficulties hinder such an approach. We cannot directly measure a regime’s rent opportunities (e.g., many rents are obtained illegally). Natural resources potentially serve as a good proxy for the level of rent opportunities, but since recent work suggests that proper institutions can weaken the resource curse (Robinson et al., 2002), a simple measure of resource abundance would only be a good proxy given certain institutional environments. Measuring limited reform credibility and state capacity is also difficult. Moreover, while the permanence of a crisis is only proven after the fact, what matters is the perception of the permanence, and it is not clear what data should be used to proxy for these perceptions.

These difficulties suggest that looking at specific cases, like Ghana and Nigeria above, may provide a better initial assessment of the theory because they can account for difficult-to-measure, qualitative, country-specific factors. However, my model will not apply so

<sup>21</sup> Easterly (2002) discusses the difficulties of development faced by less-developed countries in general. See Hillman (2002) for a review of Easterly’s observations and policy responses of the IFIs.

readily to all countries (whether in or out of SSA). One key issue is whether or not incumbents and political challengers can successfully bargain a power- or rent-sharing agreement. Consider the non-SSA example of Columbia. Like Ghana, Columbia has been highly dependent on cocoa, but its political instability is in the form of insurgency and not coup attempts. Indeed, power-sharing between liberals and conservatives has led to relative stability at the top. Thus, there should be no entry-detering aspect to reforms, and reforms would not necessarily be connected with economic crisis—two predictions that match the Columbian experience (Ocampo, 1993; Williamson, 1994b).

This example suggests that my results will apply more readily to countries that experience bargaining failure between regimes and challengers. In terms of SSA, three particular political economy features will likely relate directly to bargaining failure: high ethnic fractionalization, independent militaries, and primary good export dependence. Credible bargains are more difficult across ethnic groups with histories of conflict. Moreover, coup attempts are easier if rival groups—ethnically based or not—can use the military's operational and organizational resources to their advantage (Snyder, 1992), which is akin to a low  $\beta$  in my model. Empirical work supports the notion that coups are more pervasive in environments with ethnic fractionalization and independent militaries.<sup>22</sup> Work on the resource curse justifies the mention of primary good export dependence (Robinson et al., 2002; Sala-i-Martin and Subramanian, 2003). Regimes use public institutions to extract large rents (i.e., a high  $\bar{r}$ ) during the exportation of primary goods, and control over these rents comprises a huge prize to be won in a coup. Export dependence also makes a country particularly susceptible to economic crises as world commodity prices fluctuate widely and rapidly (i.e.,  $r$  may go up or down). Countries that experience crises resulting from these price swings will have greater social unrest and more opportunities for coup attempts. Thus, export dependence should affect the cost and the level of expected future rents. In short, countries that exhibit these three features will be more likely to have bargaining failure, and my model's predictions will be more appropriate for these countries and less so for others.

## 6. Conclusion

This paper has examined how rent-reducing reforms can deter political entry. My model shows how the incidence of such reforms depends on rent extraction opportunities, the nature of economic crises, and the limitations on the set of feasible reforms. I have related the Ghanaian and Nigerian reform experiences. The model applies more so to countries in which bargaining fails between the regime and challengers. Future research on SSA reforms should continue bringing the theory of reforms closer to African realities. Such work has the potential to provide key insights into our understanding of the prospects for sustained economic reforms and political stability in sub-Saharan Africa.

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<sup>22</sup> For empirical research on coups, see Longdregan and Poole (1990), Jenkins and Kposowa (1992), O'Kane (1993), and Kposowa and Jenkins (1993).

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### **Appendix A. The Washington Consensus**

The following is a paraphrased list from pp. 26–28 of [Williamson \(1994a\)](#).

#### *A.1. Fiscal discipline*

Budget deficits should be small enough to be financed without recourse to the inflation tax.

#### *A.2. Public expenditures priorities*

Public expenditures should be redirected from politically sensitive areas, like administration, defense, and subsidies, toward neglected areas with high returns and the potential to improve income distribution, like primary health and education and infrastructure.

#### *A.3. Tax reform*

The tax base should be broadened and marginal tax rates should be cut.

#### *A.4. Financial liberalization*

Interest rates should be determined by the market, but an interim objective is the abolition of preferential interest rates for privileged borrowers and the achievement of a moderately positive real interest rate.

#### *A.5. Exchange rates*

Countries should have a unified exchange rate at a competitive level to induce growth in non-traditional exports, and such rates should be managed and maintained in the future.

#### *A.6. Trade liberalization*

Quantitative trade restrictions should be rapidly replaced by tariffs, and these should be progressively reduced until a uniform low tariff is achieved.

*A.7. Foreign direct investment*

Barriers impeding the entry of foreign firms should be abolished.

*A.8. Privatization*

State enterprises should be privatized.

*A.9. Deregulation*

Governments should abolish regulations that impede the entry of new firms or restrict competition, and ensure that all regulations are justified by such criteria as safety, environmental protection, or prudential supervision of financial institutions.

*A.10. Property rights*

The legal system should provide secure property rights without excessive costs, and make these available to the informal sector.

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