Walk the Line:

Conflict, State Capacity and the Political Dynamics of Reform[*]

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Abstract

This paper develops a dynamic framework to analyze the political sustainability of economic reforms in developing countries. First, we demonstrate that economic reforms that are proceeding successfully may run into a political impasse, with the reform's initial success having a negative impact on its political sustainability. Second, we demonstrate that greater state capacity, to make compensatory transfers to those adversely affected by reform, need not always help the political sustainability of reform, but can also hinder it. Finally, we argue that in ethnically divided societies, economic reform may be completed not despite ethnic conflict, but because of it.

Keywords: Economic Reform, State Capacity, Politics, Redistribution, Compensation, Ethnic Conflict.

JEL classification: D72, O20, P16.

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1 Introduction

The past two decades have witnessed many episodes of economic reform across the developing world. Reforms across countries in Latin America, Africa and Asia were adopted with considerable popular enthusiasm. However, sustaining and completing these reform packages has turned out to be much more difficult, with policymakers having to 'walk the line' between success and failure.[1] On the one hand, in countries such as Brazil and India, economic reform has continued, albeit fitfully and incrementally, despite their slow progress (Bardhan, 2005 and Kohli, 2006). In contrast, despite being successful, economic reform has run into a political impasse in a number of other countries (Rodrik, 2008). In this paper we develop a unified framework that allows us to analyze the dynamic interaction between the progress of economic reforms and their political sustainability, in a world with imperfect state capacity. In doing so, we throw light on the varied experience with the sustainability of reforms across the developing world, to address three issues. First, why might reforms that are proceeding successfully run into a political impasse? Second, is it easier or more difficult to politically sustain economic reforms in countries where the fiscal capacity of the state is better? Third, we examine the relationship between ethnic polarization and the political sustainability of economic reforms. In doing so we ask: does ethnic discord intensify or mitigate the politics of economic reform?

The political sustainability of reform is directly relevant to the issue of economic growth and development. Hausmann, Pritchett and Rodrik (2005) conclude that the likelihood of sustained growth accelerations is significantly greater when fundamental economic reform is carried out. However, as Rodrik (2006) points out, "What is required to *sustain* growth should not be confused with what is required to *initiate* it". (Emphases in original). One of the striking aspects of the growth experience of many developing countries has been that the main difficulty lies not in their inability to initiate economic growth, but rather in sustaining it, with the result that "...their growth spurts eventually fizzle out" (Rodrik, 2006). And this 'fizzling out' may be precisely because of the political difficulties of sustaining reforms under distributional conflict, imperfect state capacity or even the onset of conflict on other dimensions (e.g. ethnic). Despite the long-recognized importance of these issues, (see Hoff and Stiglitz, 2001, for an overview), there has been little examination of the dynamic relationship between the unfolding of economic reforms and their political sustainability.

Accordingly, we develop a simple dynamic framework where a government may implement an economic reform that potentially generates economic benefits to the populace. We follow Fernandez

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[1]For an excellent early survey of the reform experience in developing countries see Rodrik (1996). A survey of the more recent experience is provided in Rodrik (2006).

and Rodrik (1991) in assuming that not only do reforms have distributional effects, but that there is individual specific uncertainty, so that an individual does not know whether he will be a 'winner' or a 'loser' from the reform. The main new feature in our framework is that both the implementation of the reform, as well as the resolution of uncertainty about the identity of winners and losers, is dynamic and revealed over time. At each stage, based on the outcome of the reform so far, the government in power has the option to discontinue any further reform. Governments also have the ability to tax winners to compensate losers (as in Jain and Mukand, 2003). The most crucial element of our framework is that we endogenize both the government's decision on the continuation of reforms *and* on redistribution, through a political equilibrium involving the winners and losers at each stage. The benefits that accrue to each individual at any stage derive both from his identity as a direct 'winner' or a 'loser', together with any redistributive compensation. The latter of course depends crucially on which group (the winners or the losers) is in political control, *and* on limitations in state capacity. Imperfect state capacity (as in Besley and Persson, 2011) places constraints on a government's ability to efficiently administer and implement policies that tax winners and compensate losers. Citizens may prefer to initiate or continue with a reform not just because of the direct benefits that may accrue but also its dynamic political implications. If a reform or its continuation alters the balance of political power, it may shift the government's incentive to tax winners to compensate losers. As we show, such considerations of the future effect of reforms can have important consequences for their public support (or lack thereof) in the interim and can lead to reforms stagnating.

While simple, our theoretical framework gives rise to a rich set of predictions. First, it throws light on the dynamic evolution of political support for economic reforms. Economic reform, by causing major structural changes, typically results in unemployment, dislocation and economic hardship for significant proportions of the affected populations. Not only economists, but most of the general public, probably understands this and still favors their adoption (see Przeworski (1993) for evidence on this in the Polish context). However, Stokes (2001) highlights a puzzling feature of the reform experience in many developing countries. Drawing on a series of case studies on the reform experience in Latin America, including Fujimori's Peru over the 90s (Stokes, 2001) and Argentina over the period 1989-1996 (Echegaray and Elordi, 2001), Stokes highlights that, in each of these cases, a relatively successful initial economic reform (as measured in real wages and increase in GDP) was accompanied by the emergence of political opposition to reform.Indeed, she begins her 'summary of results' by asserting that: "Our most startling result is that in every country people sometimes reacted to economic deterioration by supporting the government and its economic program more strongly. Conversely, they sometimes reacted to economic improvement

with pessimism and opposition" (Stokes, 2001, p.25). In other words, popular support for the government's economic reform frequently seemed to vary negatively with its performance. So the puzzle is why a majority of citizen-workers may change their mind about continuing with the very policies that they had supported, even though their initial impact is *favorable*. Our framework provides an explanation for why a reform, even though it may be initially successful and have positive future prospects, may still run into a political impasse.

In order to see why a political impasse may emerge, we begin by observing that at any stage, a citizen-worker's political backing of the reform depends on his expected benefits from its continuation. An important part of these benefits, especially for individuals who are *not* winners from the initial stages of reform, is the degree of compensation to be expected from the winners. The ability to extract this compensation through implementing redistributive taxation of course depends on retaining political control. We show that both the probability and the expected cost of losing political control is highest when the initial phase of reform has been successful, resulting in a relatively large number of winners. This gives rise to the result that the relative success of the initial phase of reform may actually decrease political support for continuation of the reform, even if such continuation is expected to raise overall income.

For reforms that enhance overall income to also be beneficial for all individuals, it is essential that the state have the capacity to tax winners from economic reform to compensate the losers (Acemoglu, 2003). However, as emphasized by Besley and Persson (2011), the state in most developing countries has imperfect capacity to administer and implement such transfers. The natural presumption is that improvements in state capacity for redistribution would typically increase political support for both the initiation of reform as well as its continuation. Somewhat strikingly, we show that this need not always be the case. In particular, countries with higher state capacity may find it *more* difficult to politically sustain successful economic reforms. The key insight is that in countries with relatively high state capacity, the group in political control finds it much easier to extract redistributive compensation by taxing winners. So in countries with high state capacity, there is a much higher prospective tax revenue at stake. Therefore, the potential costs of continuing with economic reform that may jeopardize their political control are much greater in countries with higher state capacity. Our theoretical framework also highlights a more subtle effect: whether greater state capacity hurts or helps the reform's political sustainability depends on the type of reform under consideration. In particular, greater state capacity has an adverse impact on the political sustainability of reform if the dynamic evolution of the reform resolves uncertainty about the identity of winners and losers relatively gradually, rather than quickly.

The results described so far have focused on the dynamics of reform and its sustainability in the

presence of distributional conflict between economic winners and losers. If the reform also results in winners (or losers) being concentrated in specific ethnicities, then ethnic political conflict provides a further reason that the sustainability of economic reform may be undermined.[2] However, the opposite has also been seen in some countries. India's experience with economic reform during the nineties provides one such puzzling counter-example. Bardhan (2005) cites data from the 2004 National Economic Survey to emphasize the paradox of an economic reform that persisted despite considerable unpopularity. In this context Ashutosh Varshney (1998) argues that

"... in so many multiethnic societies today, ethnic conflicts may enter mass politics more quickly than disputes over economic reforms. The relegation of reforms to a secondary political status, however, can work to the advantage of reformers, for *a mass preoccupation with ethnic issues provides political room to push reforms.* Given a multiplicity of salient political issues, even minority governments can press ahead with economic reforms." (Varshney, 1998, emphasis added)

In an extension of our benchmark model, we draw on Glaeser (2005) to show that by engaging in propaganda to deliberately increase the political salience of ethnicity relative to the economy, an incumbent politician who stands to gain from further reform may be able to sustain and complete it. Interestingly, we show that such a strategy, of using non-economic issues to ensure continuation, works only when the initial success with the reform is in an intermediate range. Therefore, for a range of moderately successful first-stage outcomes, economic reform may be continued not in spite of ethnic conflict, but rather because of it.

Related Literature: This paper is directly related to the literature on the politics of reform in developing countries (see Rodrik (1996, 2006) for surveys). Seminal contributions in the area include Alesina and Drazen (1991) who show how a 'war of attrition' between different groups can lead to costly delay, and Fernandez and Rodrik (1991) who emphasize the importance of individual-specific uncertainty in creating an inefficient bias against economic reform. Other channels that may inhibit or delay reform have been investigated by several papers (e.g. Rubinchik and Wang (2008), Jain and Mukand (2003)). Acemoglu and Robinson (2000) illustrate how elites may block economic or institutional reform if it may erode their political power. This idea of an anticipated loss of political control is also central to the analysis here. However, what is distinctive about our analysis is that we focus on the dynamics of political control and how it relates to the issue of political sustainability of reform, rather than its initiation (as most of the above papers have studied). Accordingly, we analyze the impact on a reform's sustainability of both how quickly the

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[2]Evidence of this can be seen in the history of economic reform in a wide variety of developing and transition countries, such as Kenya, Uganda, Armenia, Georgia and the former Yugosalavia (see Horowitz, 2005).

distributional impact of reform is revealed as well as the government's endogenous choice of whether or not to compensate losers.

Furthermore, we enrich the framework on the political economy of reform by explicitly incorporating two features that are present in a wide spectrum of developing countries, namely the issues of imperfect state capacity and the possibility of ethnic differences influencing politics. As we discuss in our analysis below, the impact of these two dimensions attains much more significance in a dynamic analysis of reforms, as we do here. Accordingly, our paper is also related to the nascent literature on state capacity and the political economy of reform, initiated by Besley and Persson (2011, especially chapter 7). In studying the interaction of ethnic issues and reform, our paper is also related to the recent literature on ethnicity and politics. Padro i Miquel (2007) shows how ethnic differences can contribute to the perpetuation of bad incumbents and inefficient policies. Glaeser (2005) analyzes when an incumbent politician may stoke hatred of a minority in order to further his re-election chances. On the other hand, Testa (2012) suggests that ideological polarization across political parties may not be an unmitigated negative, and that the median voter may be able to obtain better electoral accountability on economic issues when the ideological heterogeneity is large. Esteban and Ray (2008) investigate conditions under which ethnicity is likely to be the salient factor in conflict within society. Our paper contributes to this literature by analyzing the conditions under which reforms may be perpetuated due to ethnic considerations.

This paper is also related to the literature on the political economy of reform in the context of transition economies (see the papers mentioned in the two excellent surveys by Roland (2002) and Tommasi and Velasco (1996)). An important contribution of this literature has been its emphasis on the *design* of economic reform to overcome political constraints. For instance, Dewatripont and Roland (1992) underscore the optimality of 'divide-and-rule' tactics and partial reform in a world where worker layoffs have to be achieved through majority consent. In contrast to much of the transition literature, our paper does not explore the optimal design of reforms with a view of sidestepping political constraints. Rather it takes the political constraints arising from democratic politics as given, and explores how these constraints impinge on the sustainability of reform through a variety of channels that are relevant for developing countries – the (endogenous) compensation of losers, the role of state capacity, and identity politics.

The rest of the paper is organized as follows. The basic framework is presented in sections 2.1 and 2.2, and the equilibrium without and with politics is presented in subsections 2.3 and 2.4. The effect of state capacity is analyzed in section 2.5, while section 3 studies the impact of ethnic issues on reform. We conclude with a discussion in section 4.

2 A Model of Economic Policy Reform

We now describe the details of our framework, where, in each period, an elected citizen-policymaker makes the decision of whether or not to initiate or continue economic reform. Individual citizen-workers face individual-specific uncertainty with respect to the consequences of economic reform, in which some will turn out to be winners and others will be losers. This uncertainty is resolved gradually, over time, as the reform proceeds in stages. In addition to making decisions about initiating and then continuing reforms, the elected citizen-policymaker can also choose a tax-transfer scheme so as to compensate the losers, by redistributing some of the gains from the winners. Below we describe a minimal framework that allows us to examine the consequences of the dynamic interaction of the trajectory of reform with the underlying politics.

2.1 The Economic Structure: Reform and Wages

Consider an economy with two sectors, A and M, each of which employs labor to produce traded goods. The productivity in each sector depends on a publicly supplied input, say infrastructure. There is a unit mass of citizen-workers, each of whom inelastically supply one unit of labor, and their wages in each sector are proportional to the productivity in that sector, which depends on the amount of government expenditure on infrastructure in that sector. Suppose that rising world demand for goods in sector M causes world prices in that sector to become much higher than in sector A. Hence, an economic reform is being considered, in which government expenditure is to be reallocated away from the less productive A sector and toward the more productive M sector.[3] Importantly, completion of this process takes time: for example, building infrastructure or realigning the government's administrative machinery to support a particular sector can require substantial time and several stages to be fully completed.[4] At each stage, the reform changes the returns to labor in the two sectors, with wages in the M sector rising, while those in the A sector

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[3]The two sectors could be, for example, the 'traditional' agricultural sector A and the 'modern' manufacturing sector M. Alternatively, one can think of the two sectors as being an import-competing sector and an exporting sector, where the latter can be promoted by the investment of government resources in ports and infrastructure, for example, or the setting up of Special Export Zones (SEZs).

[4]While we directly assume, for tractability, that reform requires (at least) two periods to complete, this assumption might also arise from a convexity in adjustment costs. A number of alternative formulations are possible: for example, the reform might comprise tariff reduction as part of a process of trade liberalization. Due to prohibitively high administrative costs of carrying out reform in all sectors all at once, it may be necessary to stagger their implementation over time. Again, the issue arises of whether the full set of reforms gets implemented eventually, or whether the process runs out of political support midstream.

fall. This results in some intersectoral labor reallocation, with workers who end up in the M sector gaining from the reform, and those who remain in the A sector losing, due to the fall in their wages. However, ex ante there is uncertainty both about the proportion of winners as well as their identity, in the sense that (at least some) workers cannot predict ex ante whether they personally will be part of the group of winners.[5]

More specifically, we model the reform as a two-stage process, in which each stage of the reform takes one period to implement. Initially, in period $T = 0$, the government faces the decision of whether to launch the (first-stage) reform. If the reform is launched, the government in power in the next period decides whether to continue the process of reform by implementing the second stage. For simplicity, and without loss of generality, suppose that at the beginning, all workers are employed in sector A. If the status quo is maintained, and there is no reform, then everyone earns the same wage, denoted by w. If the reform is launched, then in the first period, there is uncertainty about the ease with which workers can transition from sector A to M. We model this uncertainty as each citizen having an identical, independent probability $\widetilde{\alpha}$ of finding employment in sector M. Given the continuum of workers, this implies that a proportion $\widetilde{\alpha}$ of them find employment in sector M.[6] These are the "winners" – their wage goes up to $w(1+\theta)$, while the remaining proportion $1-\widetilde{\alpha}$

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[5] This individual-specific uncertainty might stem, for example, from the fact that workers in sector A, which is adversely affected by the reform, will have to retrain in order to move to the growing M sector. While workers may have some beliefs about how easy or difficult it may be for them to make the intersectoral move, they may not know for sure. Thus there is uncertainty regarding the extent of these retraining and relocation costs. This uncertainty can be both at an individual as well as at an aggregate level, the latter reflecting the aggregate costs to society from such a reallocation. For a fuller discussion, see Jain and Mukand (2003) and Fernandez and Rodrik (1991).

[6] We are grateful to a referee for pointing us to the technical inadequacies involved in applying the Law of Large Numbers to the continuum of i.i.d. random variables case (Judd, 1985). The main issue is that the integral $\int_{[0,1]} x_i di$ (where $x_i \in \{0,1\}$ is a random variable determining whether i is a winner or not) may not be defined and may not equal $\widetilde{\alpha}$. In the large literature on this issue, several approaches have been suggested to ensuring that the integral is defined and individual risk is eliminated in the aggregate (and thus the total proportion of winners equals $\widetilde{\alpha}$) (for a systematic yet succinct discussion of the four popular approaches, see Appendix III in Acemoglu and Jensen, 2012). One such approach is the "discretization of the continuum" idea of al-Najjar (1995) in which the integral can be interpreted as pathwise integration over sample paths and equals the sample average almost surely. More generally, much of the applied economics literature has also faced this problem (see Acemoglu et. al. (2012), Benabou and Tirole (2006), Bisin and Verdier (2001), Fong and Szentes (2005), to name only a few papers in different areas which face this issue). For simplicity these papers directly assume that an appropriate version of the law of large number holds for which the technical problems do not arise. In our case, we observe that our assumption of independence of random variables can be relaxed somewhat without altering the qualitative nature of our results. Accordingly, we follow Robson and Samuelson (2009) in observing that in this case it is possible to construct explicit probability spaces (see al-Najjar, 1995) that yield random variables with the properties that are important for our results - namely, so that the Law of Large numbers holds. This greatly simplifies the analysis, and accords with the sense that

who remain in sector A are "losers" with their wages decreasing to $w(1 - \delta\theta)$. The reform is thus characterized by two kinds of ex ante uncertainty. First, there is uncertainty about the aggregate outcome $\widetilde{\alpha}$ of the reform; this could represent uncertainty about the difficulty of reorganizing the economy through the reallocation of resources and labor from one sector to another. Specifically, ex ante $\widetilde{\alpha}$ is commonly believed to be distributed over $[0, 1]$ according to the cumulative distribution function $F(\widetilde{\alpha})$. Second, there is individual specific uncertainty in that the identities of the winners and losers are not known *ex ante*. As described above, we have assumed that in a given state $\widetilde{\alpha}$, everyone has the same ex ante chance $\widetilde{\alpha}$ of being a winner. At the end of the first period, the wages (and thus the specific identities of the winners and losers) are realized. The government in power in period $T = 1$ then decides on the taxation regime, and can choose to redistribute the gains and losses, a process that we describe in further detail below.

If the first stage of the reform is launched, then there is an opportunity to continue further, to a second (and final) stage of the reform in period $T = 1$. Alternatively, the government in power can choose to discontinue any further reform.[7] In the latter case, i.e. if the reform runs aground, there is no change to the realized wages from the first stage, i.e. the winners retain wages $w(1 + \theta)$ while the losers continue to earn $w(1 - \delta\theta)$. However if the government decides to continue with the reforms, we assume that wages in sector M increase to $w(1 + \theta(1 + a))$. Furthermore, among the $1 - \widetilde{\alpha}$ proportion of initial losers, each now has an independent probability α_2 of finding employment in sector M (at wage $w(1 + \theta(1 + a))$). Those who remain in the A sector see a further decrease in their wages, to $w(1 - 2\delta\theta)$, where $0 < 2\delta\theta < 1$. Thus, in the second stage of reform, there is no uncertainty about the fraction of winners and losers, although there is still *ex ante* uncertainty about their identity. The assumption of a known α_2 in the second stage not only simplifies the analysis, but also captures in a simple way the idea that there is usually much greater uncertainty about the appropriateness of reforms at the initial stages. Again, at the end of this period, wages are realized. The government in power in period $T = 2$ then decides on taxation to redistribute any gains and losses.

The context we are considering here is economies in which there is a lack of credible institutions that allow governments to pre-commit to execute compensatory transfers. As has been pointed out by Acemoglu and Robinson (2000) and Acemoglu (2003), there are many reasons why such

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$\widetilde{\alpha}$, the probability that any individual will emerge as a winner from the reform, can also be interpreted as the 'size' or 'performance' of the reform.

[7]While this is not the case that we systematically explore, we sketch out in footnote 18 the scenario under which reforms may be reversed. The available evidence suggests that reform reversal is not in fact a very empirically relevant case (Rodrik, 1996; Werner, 1999) - i.e., in practice, reforms tend to run aground, rather than being reversed.

instruments may be difficult to implement in developing countries. Secondly, we are also assuming that poorly functioning financial markets, together with liquidity problems, do not allow capital constrained citizens to obtain a diversified portfolio of shares across 'winning' and 'losing' sectors, and thereby to insure themselves against the effects of reform.

2.2   The Citizen-Government, Elections and Redistribution

In terms of the political structure, we adopt a framework in which elections take place at the beginning of each of the periods, $T = 0$, $T = 1$ and $T = 2$, where one of the citizens is elected to run the government. Following the standard assumption in 'citizen-candidate' models (Osborne and Slivinski, 1996, Besley and Coate, 1997), we assume that the elected politician cannot pre-commit to undertake a policy, and voters rationally expect him to take decisions according to his or her expected gains or losses from the decision. Furthermore, we assume in this section that there are no 'ego rents' from being in office (we relax this assumption in the next section), so the elected politician chooses policy to maximize his expected lifetime income. Anticipating the choices that will be made by each type of politician, each citizen-worker makes his voting decision to maximize his own expected income over the subsequent periods, net of taxes and transfers.[8]

At the beginning of period $T = 0$, since all workers are in the A sector and identical, the government is assumed to be drawn randomly from the citizens in that sector. This citizen-government makes the decision of whether to launch the reform ($R_0 = 1$) or not ($R_0 = 0$). The economic impact of this first stage of reforms is realized at the end of the period, after which elections take place to re-elect or replace the incumbent government. The government in power in period $T = 1$ makes two policy decisions. First, it chooses a tax-transfer scheme t_1 for the realized incomes so far, where the higher income 'winners' may be taxed to compensate the 'losers' from the economic reform so far. Second, in case the reform was launched, the government also makes the decision on the second-stage reforms i.e. whether to continue with further reform (in which case $R_1 = 1$) or halt it at the current level ($R_1 = 0$). Again, the economic impact of the reforms is realized at the end of the period, after which elections take place to re-elect or replace the incumbent government. The citizen-government in power in period $T = 2$ has only one policy decision, which is to determine the tax-transfer scheme, t_2, for the populace in that period. We assume that if there any ties in the elections, they are resolved in favour of sector A, and if governments are indifferent between

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[8]As will become clear in our analysis later, given two groups of voters at each election, the same outcomes would result even if voters were to vote directly on policies, rather than for a citizen-government which chooses policy. The usefulness of the citizen-candidate framework becomes apparent in section 3, when we introduce the politics of 'identity'.

implementing the reform or not, they do not implement it.[9,10]

Tax Structure and State Fiscal Capacity: We assume that a citizen-government's choice of the tax-transfer vector t_i in any period i, is constrained by the administrative capacity of the state to collect taxes and compensate losers. The argument for the importance of this fiscal capacity of the state has been made most comprehensively by Besley and Persson (2011), who argue that this capacity can differ across countries, due to differences in incomes, institutions and histories. Following Besley and Persson (2011), we assume that the equilibrium (proportional) tax rate t_i chosen by any citizen-government will be constrained by the maximal tax rate τ that can be implemented by the government, i.e. $0 \le t_i \le \tau \le 1$ for any period i, where a tax rate of t means that a given worker's post-tax wage is a weighted average, with weights $(1 - t)$ and t respectively, of his pre-tax wage and the average wage across the population as a whole. Thus a choice of $t = 1$ means full income equalization while, in contrast, $t = 0$ means no redistribution. We will examine the implications of differences in state capacity τ on both the initiation and continuation of reforms.

We impose some standard restrictions on the tax-transfer vector t_i: it must satisfy a balanced-budget requirement, and workers with identical wages cannot be taxed at different rates. Furthermore, we rule out a regressive tax on wages, and require that the tax-transfer scheme be (weakly) 'order-preserving', i.e. workers with higher pre-tax income cannot end up worse off, post-redistribution, than workers with lower pre-tax income.[11]

Having described the economic and political structure of the model, we summarize the timing of the game in Figure 1.

2.3   Equilibrium Analysis: Efficiency, and the Resolution of Uncertainty

Before analyzing decision-making with politics, we first establish a benchmark for economic efficiency – the first-best decisions which maximize aggregate income, ignoring politics. We begin by considering the second stage first. For a given realization $\widetilde{\alpha}$ of the outcome of the first-stage

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[9]This assumption is done only for brevity in the presentation of the results. Assuming any other tie-breaking rule will not affect the qualitative nature of the results regarding adoption or continuation of reforms since such ties constitute a zero-probability event.

[10]While the model/game that we analyze in the paper has a specific timing of events, it is worth pointing out that the crucial features that are required for the general structure of the analysis are the following: (i) the implementation of the entire reform requires a period of time greater than one electoral cycle, (ii) there is uncertainty about the identity of the winners and losers from reform, and this is revealed gradually over time, (iii) governments in power have the ability to change policies, both with respect to the reforms as well as taxes.

[11]Thus, for example, the majority cannot simply expropriate all income of the minority. Furthermore, the wages of all individuals are publicly observed; thus, there are no issues of private information in the redistribution here.
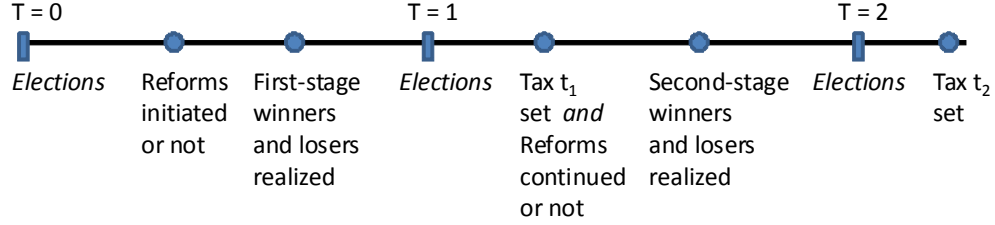
Figure 1: Timing of the game

reform, the decision of whether or not to carry out the second-stage reforms is based on balancing the expected gains with the expected losses, i.e., according to whether:

$$\widetilde{\alpha} a w \theta + (1 - \widetilde{\alpha})[\alpha_2(1 + a + \delta)w\theta - (1 - \alpha_2)\delta w\theta] \gtrless 0$$

The first part of the left-hand side captures the further increase in wages of the first-stage winners from the second-stage reform, while the second part gives the expected gains for the first-stage losers. Observe that, if $\alpha_2(1 + a + \delta)w\theta > (1 - \alpha_2)\delta w\theta$, i.e. the number of winners revealed in the second period is relatively large, then the second part of the above expression is positive and it is always optimal to continue. In the opposite case, continuation of the reforms is economically efficient only if the initial mass of winners $\widetilde{\alpha}$ is big enough i.e. if:

$$\widetilde{\alpha} \geq \frac{(1 - \alpha_2)\delta - \alpha_2(1 + a + \delta)}{a + [(1 - \alpha_2)\delta - \alpha_2(1 + a + \delta)]} = \alpha^* \text{ (say)}$$

As we will subsequently observe, these have very different implications for the policy sequences we may observe in a political equilibrium and are related to how individual prospects develop over the course of the reform. We denote these two cases by the following conditions.

Condition $1 : \alpha_2(1 + a + \delta)w\theta > (1 - \alpha_2)\delta w\theta$ i.e. $\alpha_2 > \frac{\delta}{1+a+2\delta}$ ("Positive future prospects")

Condition $1' : \alpha_2(1+a+\delta)w\theta < (1 - \alpha_2)\delta w\theta$ i.e. $\alpha_2 < \frac{\delta}{1+a+2\delta}$ ("Negative future prospects")

The two mutually exclusive cases relate to whether the probability α_2 is relatively high or low. Under condition 1, even the first-period losers expect to see an increase in their expected wage in the second period (because α_2 is relatively high), if the reform is continued. In a sense, the resolution of the uncertainty about which workers emerge as losers and winners is gradual: in this

11

case, even if a citizen is not a winner from the first stage of reform, the chances of him eventually emerging as a winner, at the end of the second stage of reforms, are relatively high. Thus, under condition 1, it is always economically efficient to continue with the second stage of reforms.

By contrast, in the second case, condition $1'$, anyone who is not revealed to be a winner at the first-stage sees their prospects diminish further in the later stages. Thus the resolution of the uncertainty about winners and losers is largely settled in the first stage of the reform itself. In this case, continuing the reform into the second period will further benefit the first-period winners, of course, but the expected returns to the first-period losers are negative, because α_2 is relatively low, i.e. very few new winners emerge in the second stage. Continuing with the second stage of reform can still be economically efficient if the additional gains to the first-stage winners are enough to outweigh the expected losses to those who were first-stage losers i.e. if $\widetilde{\alpha} \geq \alpha^*$.

Writing more succinctly, if the reform was initially launched, then in period $T = 1$, it is economically efficient to continue with the second-stage of reforms only if $\widetilde{\alpha} \geq \alpha_1^c$, where $\alpha_1^c = 0$ under condition 1 and $\alpha_1^c = \alpha^*$ under condition $1'$.

Going back to period $T = 0$, it will be efficient to start the reforms if the lifetime expected gains from it are positive i.e. if the following holds:

$$(1 + \beta)(\overline{\alpha}\theta w - (1 - \overline{\alpha})\delta\theta w) + \beta \int_{\alpha_1^c}^{1} \{\widetilde{\alpha}aw\theta + (1 - \widetilde{\alpha})[\alpha_2(1 + a + \delta)w\theta - (1 - \alpha_2)\delta w\theta]\}dF(\widetilde{\alpha}) > 0 \tag{1}$$

where $\overline{\alpha}$ is the expected value of $\widetilde{\alpha}$, and β is the discount factor for future payoffs.[12] The first part of the expression on the left-hand side gives the lifetime expected benefits from the first stage of reform, while the second part is the incremental expected gain from implementing (if warranted) the second stage of reform. Together, it is efficient to initiate the reforms only if the overall expected benefit is positive.

2.4 Economic Reform under Political Constraints

In analyzing the game with politics, we are interested in examining the *policy sequences* that can emerge in political equilibrium, which we define below. A policy sequence describes the sets of decisions taken by the government at each stage: for the $T = 0$ government, whether to launch the reform or not, $R_0 \in \{0, 1\}$; for the $T = 1$ government, the choice of a tax regime t_1 for the period, and if $R_0 = 1$, then whether or not to continue with the reform, $R_1 \in \{0, 1\}$; for the $T = 2$

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[12]If there was a non-zero cost K to launching the reforms, it would be incorporated into the right-hand side of the above inequality and the qualitative nature of the results would remain unchanged.

government, the tax regime t_2 for the period. The reform decision taken by each government also has implications for the probability distributions over the succeeding governments' policy choices. Thus, formally, a policy sequence is a triple $\{R_0, \pi_1(t_1, R_1; R_0, \widetilde{\alpha}), \pi_2(t_2; R_1, R_0, \widetilde{\alpha})\}$, where π_1 and π_2 denote the probability distribution over the subsequent governments' policy choices: about taxes, t_2, for the period-2 government, and about taxes, t_1, as well as the reform continuation decision, R_1, for the period-1 government.

As mentioned earlier, given our assumptions, each citizen-government chooses policies to maximize his expected income. Anticipating the choices that will be made by each type of politician in a political equilibrium, each citizen-worker makes his voting decision to maximize his own expected income over the subsequent periods, net of taxes and transfers.[13]

We now analyze the subgame perfect Nash equilibrium of our game with political constraints. We are mainly interested in examining the conditions under which equilibrium policy sequences involve full versus partial reform, i.e. whether economically efficient reforms can be politically sustained, or whether they may hit a political impasse and run aground.

The simplicity of the economic and political structure of our model makes the description of equilibrium, of the electoral game in each period, straightforward. To begin with, recall that at the start of the game, at $T = 0$, all workers are employed in sector A and are identical. Thus voters will be indifferent across any citizen-candidates that stand for election and will randomly choose among them. If the reform is enacted, then at the end of each period, two groups of voters emerge – the "winners" (i.e. those who have been able to move to sector M) and the "losers" (i.e. those who remain in sector A). Since politicians cannot credibly pre-commit to follow any particular policy, a citizen-candidate's political affinity is determined by his economic affiliation. Hence each citizen-worker would prefer a candidate drawn from his own sector. Thus in the elections at the beginning of period $T = 1$, all losers vote for any citizen-candidate from sector A (who is a loser like them) while the winners will vote for any candidate from sector M. A similar argument works for the elections at the beginning of period $T = 2$.

Given this voting behavior, we now derive the outcomes of the elections and policy decisions in periods $T = 1$ and 2 by backward induction. Consider possible outcomes at the end of the second stage of economic reforms. If the fraction of winners after the second stage of reform, $\widetilde{\alpha} + (1 - \widetilde{\alpha})\alpha_2$, are in a majority, then the citizen-candidate who will be elected into office for the last period will be

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[13]We should point out that the structure of government policy-making and of voting here is that of the citizen-candidate framework, as in Besley and Coate (1997), and Osborne and Slivinski (1996).They also analyze the issue of the slate of candidates who stand for election when voters' preferences are dispersed. In our case, with two groups of voters, this issue becomes particularly simple.

from this group, and he will choose *zero* redistribution. On the other hand, if $\widetilde{\alpha} + (1 - \widetilde{\alpha})\alpha_2 \le 1/2$ i.e. if $\widetilde{\alpha} \le \frac{\frac{1}{2} - \alpha_2}{1 - \alpha_2}$, the A-sector workers are in a majority, and thus a loser will be elected to office for period $T = 2$. He will set the maximal tax-transfer rates $t_2 = \tau$ so as to equalize incomes, as much as possible, between the winners and the losers.[14] This can be summarized as follows.

LEMMA 1: *At $T = 2$, there is maximal redistribution with $t_2 = \tau$ if the 'losers' are in a majority, and no redistribution otherwise.*

Moving sequentially backward, consider the scenario where the reforms have been initiated and at the end of period $T = 0$, the proportion of winners is $\widetilde{\alpha}$. Here we can have two cases – with the winners being in a majority or not.

If $\widetilde{\alpha} > \frac{1}{2}$, i.e., the winners are in a majority, then a citizen-candidate from this group (i.e. the M sector) will be voted into office in both periods $T = 1$ and $T = 2$. In this case, the government will choose to continue with the reforms and set zero taxes in both of these periods.

In contrast, if $\widetilde{\alpha} \le \frac{1}{2}$, the A sector retains its majority in this interim stage. Since the politician who will be elected into office for period $T = 1$ will be drawn from the A sector, he will choose maximal redistribution as the tax regime for that period. This government's decision on whether to progress further with the reforms ($R_1 = 1$), or not ($R_1 = 0$), will depend on the relative payoff, $V(R_1 = 1; \tau)$ versus $V(R_1 = 0; \tau)$, from these two actions, where $V(R_1; \tau)$ denotes the expected post-tax income for period $T = 2$ of an A-sector citizen from decision R_1, given the state capacity constraint of τ. This decision on whether to continue or halt the second-stage of reforms, together with the decision to initiate reforms in the first place, is analyzed in the proposition below.

PROPOSITION 1:

(A) *The unique equilibrium policy decision of the $T = 1$ government is given by:*

    (I) If $\widetilde{\alpha} \le \frac{1}{2}$, then there is maximal possible redistribution of income, i.e. $t_1 = \tau$.

    Reforms are continued, i.e. $R_1 = 1$, if

        (i) $\widetilde{\alpha} \le \max\{\alpha_m, \frac{\alpha_2(1 + a + \delta) - (1 - \alpha_2)\delta}{\tau(1 + \delta)}\}$ under condition 1; or

        (ii) $\widetilde{\alpha} \in (\frac{\alpha^*}{\tau}, \alpha_m]$ under condition 1'

        where $\alpha_m = \frac{\frac{1}{2} - \alpha_2}{1 - \alpha_2}$.

    Otherwise, the reform runs into a political impasse, i.e. $R_1 = 0$.

    (II) If $\widetilde{\alpha} > \frac{1}{2}$, then there is no redistribution and reforms are continued i.e. $t_1 = 0, R_1 = 1$.

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[14]This follows from our assumptions on the feasible tax-transfer vector: namely, symmetric treatment for individuals with identical wages, and non-regressivity. As in Dixit and Londregan (2005), this also follows from the simple structure of the model, in which voters maximize post-tax income ('homo oeconomicus', in the terminology of Corneo and Grüner, 2002), rather than other social objectives.

(B) *At $T = 0$, reforms are initiated if*

$$(1 + \beta)(\overline{\alpha}\theta w - (1 - \overline{\alpha})\delta\theta w) + \beta \int\limits_{\widetilde{\alpha} \in I_c(\tau) \cup (\frac{1}{2}, 1]} \{\widetilde{\alpha}aw\theta + (1 - \widetilde{\alpha})[\alpha_2(1 + a + \delta)w\theta - (1 - \alpha_2)\delta w\theta]\}dF(\widetilde{\alpha}) > 0 \tag{2}$$

> *where $I_c(\tau) = [0, \max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{\tau(1+\delta)}\}]$ under condition 1,*
> *and $I_c(\tau) = (\frac{\alpha^*}{\tau}, \alpha_m]$ under condition 1'.*

PROOF: (A) The equilibrium policy decision at $T = 2$, and at $T = 1$ in the case of $\widetilde{\alpha} > \frac{1}{2}$ has already been derived above: the 'winners' are in the majority, so reform continues into the second stage, and there is no redistribution.

When $\widetilde{\alpha} \leq \frac{1}{2}$, the 'losers' are in a majority at the end of period $T = 0$ and thus a representative from this group will be elected into office for period $T = 1$. He will choose the maximal tax-transfer rate, $t_1 = \tau$, so as to equalize, as much as possible, incomes between the winners and the losers in period $T = 1$.

He also faces the decision on whether to continue with the second-stage reforms, or not. On the one hand, by stopping the reform, the A-sector workers (the 'losers') retain their current majority in the next period, so that the tax-rate that will be implemented then is the maximal one i.e. $t_2 = \tau$. Hence, the payoff to the A sector workers from stopping further implementation of the reform is given by:

$$V(0; \tau) = (1 - \tau)w(1 - \delta\theta) + \tau[\widetilde{\alpha}w(1 + \theta) + (1 - \widetilde{\alpha})w(1 - \delta\theta)] \tag{3}$$

In other words, the period $T = 2$ post-tax income of an A-sector worker is a weighted average, with weights being $(1 - \tau)$ and τ respectively, on the pre-tax wage of an A-sector worker, and the average income of the population as a whole, after the first stage of the reform.

On the other hand, if he chooses to continue with the reform, two possibilities arise.

(a) If $\widetilde{\alpha} \leq \frac{\frac{1}{2} - \alpha_2}{1 - \alpha_2} = \alpha_m$, then A sector workers will continue to be in a political majority in the future and the maximal possible redistribution τ is assured at the end of the second period. Comparing the expected payoffs from $R_1 = 1$ versus $R_1 = 0$ in this case, a first-stage loser will choose continuation

15

of the reforms only if[15]:

$$V(1;\tau) - V(0;\tau) = w\theta[\tau\widetilde{\alpha}a + (1 - \tau\widetilde{\alpha})\{\alpha_2(1 + a + \delta) - (1 - \alpha_2)\delta\}] > 0$$

$$\text{i.e. if } \widetilde{\alpha} > \frac{(1 - \alpha_2)\delta - \alpha_2(1 + a + \delta)}{\tau[a + (1 - \alpha_2)\delta - \alpha_2(1 + a + \delta)]} = \frac{\alpha^*}{\tau} \tag{4}$$

Note that if $(1-\alpha_2)\delta < \alpha_2(1+a+\delta)$, i.e. under condition 1, the above inequality is always satisfied, implying that, with $\widetilde{\alpha} \leq \alpha_m$, a first-stage 'loser' will always prefer to continue with the reform. (b) If $\widetilde{\alpha} > \alpha_m$, the continuation of reforms will result in a shift of political power towards the M sector, resulting in zero redistribution at the end of the second stage. Again, anticipating the expected future payoff from continuing with the reform $V(1;\tau)$, an A-sector worker will prefer the reforms to continue only if[16]:

$$V(1;\tau) - V(0;\tau) = w\theta[\alpha_2(1 + a + \delta) - (1 - \alpha_2)\delta - \tau\widetilde{\alpha}(1 + \delta)] > 0$$

$$\text{i.e. if } \frac{\alpha_2(1 + a + \delta) - (1 - \alpha_2)\delta}{\tau(1 + \delta)} > \widetilde{\alpha} \tag{5}$$

Note that the the left-hand side of (5) is negative under condition 1'. Thus in this case, the first-stage losers will never vote to continue with the reforms when $\widetilde{\alpha} > \alpha_m$.

Combining the analysis of the two cases, thus first-stage losers will only choose to continue with the reform if $\widetilde{\alpha} \leq \max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{\tau(1+\delta)}\}$ under condition 1, and if $\widetilde{\alpha} \in (\frac{\alpha^*}{\tau}, \alpha_m]$ under condition 1'.

At each sub-game, the outcome is uniquely defined. Hence overall the equilibrium is unique.

(B) See Appendix A. ∎

Together with lemma 1, the above proposition describes the entire set of policy sequences that may arise in a political equilibrium to the game. To focus on the effect of politics on the trajectory of reform, we first consider the case of perfect state capacity i.e. $\tau = 1$, when the government can equalize incomes if it chooses, and compare the above trajectory with the set of efficient choices

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[15]In this case,

$$V(1;\tau) = (1 - \tau)[\alpha_2 w(1 + (1 + a)\theta) + (1 - \alpha_2)w(1 - 2\delta\theta)]$$
$$+\tau[(\widetilde{\alpha} + (1 - \widetilde{\alpha})\alpha_2)w(1 + (1 + a)\theta) + (1 - \widetilde{\alpha})(1 - \alpha_2)w(1 - 2\delta\theta)]$$

[16]In this case,

$$V(1;\tau) = \alpha_2 w(1 + \theta(1 + a)) + (1 - \alpha_2)w(1 - 2\delta\theta)$$
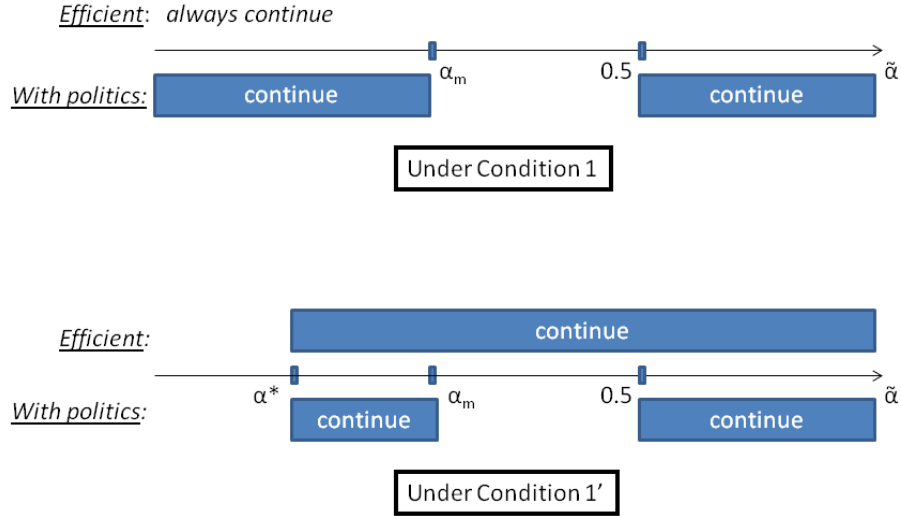
16

Figure 2: Reform continuation decisions with and without politics

described in the previous section. This reveals two kinds of inefficiency, which are highlighted in the corollary below.

COROLLARY 1: *In the political equilibrium with $\tau = 1$, (i) the reform is inefficiently discontinued when $\widetilde{\alpha} \in (\max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}\}, \frac{1}{2})$ under condition 1, and when $\widetilde{\alpha} \in (\alpha_m, \frac{1}{2})$ under condition 1' ; (ii) there exist values of $\widetilde{\alpha}$, say $\widetilde{\alpha}_L$ and $\widetilde{\alpha}_H$ with $\widetilde{\alpha}_L < \widetilde{\alpha}_H$, such that the reform is continued when $\widetilde{\alpha} = \widetilde{\alpha}_L$ but not when $\widetilde{\alpha} = \widetilde{\alpha}_H$; (iii) the parameter sub-space for which the reform is launched at $T = 0$ is smaller than economically efficient.*

PROOF: See Appendix A. ∎

The first source of inefficiency is related to the dynamic continuation of reforms, and is characterized in figure 2.[17] While 'very successful' first-stage reforms (i.e. those where $\widetilde{\alpha} > \frac{1}{2}$) automatically find support for continuation, because the winners form the majority, it is the reforms with 'middling' levels of success that face the danger of running aground – so that we end up in an equilibrium with partial reform. This is particularly stark under condition 1, when the reforms are efficient even on a 'stage-by-stage' basis, i.e. individual prospects from further reform are positive even for the first-stage losers, thus making it economically optimal to always continue with the reforms.

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[17]Figure 2 is drawn for the case where $\alpha_m = \frac{\frac{1}{2}-\alpha_2}{1-\alpha_2} > \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}$ so that $\max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}\} = \alpha_m$.

17

However, as part (i) of the corollary shows, even with positive future prospects, the majority may prefer discontinuation of the reforms over a wide range.

The above corollary emphasizes the key role of political constraints, embodied in the trade-off that is faced by citizen-workers who are losers at the end of the first stage of reforms. On the one hand, continuation results in efficiency benefits from the second-stage reforms. However, continuation of the reform has a potentially negative "political control" effect in the sense that after the second stage of reforms, the winners may be in the majority. This prospect of losing political control is important, since in that case the current majority group of losers from the first stage of reform will lose the political power to extract compensation from the winners at the end of the second stage. The danger of losing political control is particularly acute when the fraction of first-stage winners is relatively high (i.e. $\widetilde{\alpha} > \alpha_m$), so that together with the second-stage winners they may form the majority group in period $T = 2$. Thus, paradoxically, as highlighted by part (ii) of the corollary, less successful first-stage reforms (i.e. $\widetilde{\alpha} \leq \alpha_m$) may find political support for continuation while more successful ones may run aground.[18] This is despite the fact that (as under condition 1) all citizens may share a positive view of the future prospects of further reform. Thus an appealing aspect of the above equilibrium policy sequence is that it captures, in a very simple framework, the emergence of a political impasse as a natural dynamic implication of the reform process. It helps to throw light on a large empirical literature that has long puzzled over the finding that public opinion about the reform process, and about the particular government implementing the reform, frequently varies *negatively* with the performance of the reform.

Corollary 1(iii) points out that there is a second source of inefficiency that arises in political equilibrium, which has to do with the initiation of the reforms. As mentioned before, comparing condition (2) with (1), one can see that in the presence of political constraints, the condition for initiating reforms is harder to satisfy. Again, this is related to the dynamic considerations of the problem. The first part of the expression on the left-hand side of (2) gives the lifetime expected benefits from the first-stage reform, while the second part is the incremental gain from implementing the second stage of reform. As efficient continuation of the reforms (and thus the realization of the

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[18]While we do not consider the possibility of a complete reversal in reforms in period $T = 1$ (to the initial status-quo), it can be incorporated into the model in a fairly straight-forward fashion. In that case, if the winners are in political control in period $T = 1$, obviously they will never choose to reverse. On the other hand, if the losers are in control of the government in period $T = 1$, under condition 1, continuation always leads to a rise in aggregate income. Thus, in this case, their decisions in Proposition 1 are unchanged even given the possibility of reversal. Under condition 1′ however, reversal is optimal for very low values of $\widetilde{\alpha}$. In this case, when the losers are in control in period $T = 1$, they will wish to reverse the reform for $\widetilde{\alpha}$ below a certain cutoff i.e. when $\widetilde{\alpha}\theta w - (1 - \widetilde{\alpha})\delta\theta w < 0$. The intuition behind the political impasse of Proposition 1, however, is still valid.

incremental gain) is less likely in the future, the expected value of reforms is lower under political constraints. This reduces the incentive to launch them in the first place.

It is worth emphasizing an implication of part (ii) of the above corollary: political support for reforms may be negatively correlated with its performance. To see this, observe that under condition 1, while future prospects are always positive, they are higher when the first-stage income is higher i.e. $\widetilde{\alpha}$ is bigger. Under condition 1′, although a first-stage loser's expected gain from continuing reform is negative (in the absence of compensation), reforms with a high $\widetilde{\alpha}$ in the first stage still have the prospect of raising total social welfare in the future. Thus, in this case, it is reforms which are "doing well" (i.e. have a high $\widetilde{\alpha}$) that are expected to be beneficial if continued into the future. However, as the corollary suggests, it is precisely these 'well-performing' reforms that face a (*greater*) danger of being discontinued. This is entirely consistent with the empirical puzzle documented by Stokes (2001), that in many instances, political support for the reform process seemed to go down with an economic upturn e.g. in Peru, Argentina and Poland. For example, in Fujimori's Peru, "when GDP rose, the proportion of respondents who opposed the reform rose, relative both to the proportion of supporters and to people with no opinion" Stokes (2001, p.165). She goes on to estimate that an increase in GDP, from its minimum to its maximum over this period of reform, would have resulted in a 30 percent increase in public opinion *opposed* to continuation of the reform. Examining public opinion in Argentina, Echegaray and Elordi (2001) find that an increase in average real-wages reduced public support for continuation of the reforms.[19] Similarly, as Stokes (1996), Remmer (1991) and Graham and Sukhtankar (2004) document for a variety of mostly Latin American countries, the evolution of public opinion about the reform process, and about the government implementing that reform, frequently varies *negatively* with the performance of the reform.[20] Elsewhere, Przeworski's (1993) analysis of the dynamics of public support over the economic reform process in Poland in the nineties finds that finds that "Continuation of reforms is threatened when the economy shows the first signs of recovery".

In explaining this puzzling dynamic to the evolution of support about reforms (at least in some instances), previous explanations have tended to attribute the results to irrationality on the part

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[19]In our model, under condition 1, prospects from further reform are always positive, regardless of the realization of $\widetilde{\alpha}$ in the first period. Under condition 1′ (provided α_2 is not too close to 0), a rise in first-period average wages implies positive prospects for future reform and economic efficiency calls for its continuation. Yet, under political constraints, the majority may oppose it.

[20]Stokes (1996, p. 515) summarizes some findings of Remmer's (1991) empirical analysis of the political impact of economic crisis in 12 Latin American countries from 1982-1990: "[I]ncumbent parties suffered larger losses at the polls when inflation went down (significant), the incumbent party's share of the vote was larger when inflation rose and when GDP fell".

of voters. Przeworski (1993) suggests that his "findings suggest individual myopia", while Stokes (1996) argues that the public's responses frequently suggest that they hold "...the belief that if things get worse they will later get better... [I]f the economy improves early on, the public may believe that reforms are failing and turn against the government" (p. 505).

By contrast, our mechanism emphasizes the importance of rational political calculus in determining public opinion. In a democracy, the distribution of winners and losers over the reform process affects not just public opinion but also potentially affects *political* support for the incumbent government. If continuation with the reform implies that political power will shift to the economic 'winners', then low wage workers may rationally be worried about whether the government will tax these winners to compensate the losers. In contrast, so long as the reform provides overall gains, autocratic governments' decision-making about redistribution is likely to be less sensitive to (shifts in) the political balance between winners and losers. In other words, the credibility of redistributive promises in non-democratic countries may be higher, and hence support for reform (even amongst potential losers) remains high. Thus, the main driving force of our mechanism should be more applicable for democratic than relatively autocratic countries. In line with this mechanism, Denisova et. al. (2009) find that there is no difference in public opinion between potential winners (i.e. high skill workers) and losers (i.e. low skill workers) on whether to continue with or reverse economic reforms in autocracies. Furthermore, they find that as the level of democracy increases there is an increasing gap in the public opinion in favor of continuation of the reform between higher and lower skill workers. Similarly, it may seem at first glance that the Mexican experience with reforms during 1988-1997 is very different, with Mexican public opinion for or against reform a monotonic reflection of its ongoing economic performance (Laredo, 2001). However, this too is consistent with our framework: during this period, Mexico was close to a one-party state with the PRI so firmly entrenched in power that the populace did not worry that the government might be replaced or may go back on its redistributive promises. Accordingly, we argue that there is evidence to support the key mechanism underlying Proposition 1, namely, that the power to redistribute may shift over the reform process.

2.5 Imperfect State Capacity and Economic Reforms

In this sub-section, we examine the effect of the state's fiscal capacity constraints on the decision to initiate reforms as well as on their trajectory. As discussed earlier, following Besley and Persson (2011), we have modeled the state's capacity as the maximum tax-rate $\tau \leq 1$ that can be implemented by the government. How do differences in state fiscal capacity affect the political incentive

to continue with an ongoing economic reform, as well as its initiation? This can be determined by analyzing the effect of τ on the equilibrium policy sequence in proposition 1. This is contained in the following corollary.

COROLLARY 2: *Under condition* 1, *higher state capacity* τ *makes it less likely that reforms are continued in period* $T = 1$, *and contracts the size of the parameter space over which reforms are initiated in the first place. The opposite is true under condition* $1'$.

PROOF: See Appendix A.

This corollary suggests that state fiscal capacity can affect the political sustainability of reform in unexpected ways. An important factor affecting the analysis is the nature of the evolution of individual prospects over the reform process (i.e. whether the reform is characterized by condition 1 or $1'$). To understand the intuition behind the results, we consider each of these scenarios in turn.

I. *Economic Reform under condition* 1: Recall that, under condition 1, even the first-stage losers expect their wages to rise if the reform is continued to a second stage. Thus, even in the absence of any redistribution in period $T = 2$ (as would happen if state capacity was very low or if the losers were to lose political control), first-stage losers would expect to gain from continuing the reform. This implies that if they knew that they would maintain political control in the next stage, then they would surely prefer to continue with the reforms as it would increase both their (expected) personal income as well as the redistributed income. Hence, the marginal reforms under consideration in this case are those in which the first-stage losers stand to lose political control from continuation.

In such a scenario, how does their expected future income (with zero compensation) compare with their income from discontinuing the reform, in which case they maintain their first-stage political control and enjoy the redistributed income from the first-stage winners? When state capacity is low, this latter benefit is negligible. Hence they will be inclined to vote for continuation of the reforms, gambling on an increase in their personal wages rather than remaining losers for sure, with little compensation to boot. Now consider the impact of an increase in state capacity. The first-stage losers can now acquire much more compensation (when they are in political control) from the first-stage winners. In other words, the economic benefit from retaining political control becomes much more important. Thus, they will now be less keen to continue the reform which may jeopardize this political control (and the corresponding redistributive benefits). In this case, better state capacity can thus be inimical to the continuation of reforms.

II. *Economic Reform under condition* $1'$: Recall that, under condition $1'$, continuation of reform is likely to identify relatively few new winners and prospects for first-stage losers are negative. Most of

the efficiency benefits from continuation accrue through even larger gains (in the form of increased wages) to those who had already benefited from the first stage of reforms. Meanwhile, the wages of the first stage losers are likely to decrease (in expected terms) from continuation. Thus, citizens affiliated with the losing sector in period $T = 1$ will never want to continue with the reforms if they anticipate losing political control in the future as a result. This is because in such a case their personal (expected) wages will decrease, and in addition, they will lose the ability to force redistributive transfers from the majority.

This implies that the marginal reform being considered for continuation in this case is one in which the first-stage losers maintain their political control in the future. Greater fiscal capacity on the part of the state means that the losers will be able to obtain a bigger share of the increased gains of the first-stage winners that continuation will bring. Thus in this case, as state capacity increases, the first-stage losers are more likely to decide in favor of continuation of the reform.

A related question is how differences in state capacity affect the prospects for the *initiation* of economic reform. Two considerations need to be kept in mind. First, observe that at the beginning of period $T = 0$, all citizen-workers have ex ante identical prospects from economic reform. In other words, they are equally likely to be winners or losers. Given risk-neutrality, this implies that in computing the expected gains from reform, the anticipated tax-rate drops out of the calculations (shown formally in the proof of proposition $1(B)$) i.e. this expected payoff is independent of the ability of the state to tax winners to compensate losers. However, differences in state capacity have an impact on the continuation of reforms. Thus, any effect that moves the continuation decisions closer to the efficient ones will improve the overall gains from the reform and thus encourage its initiation in the first place. Hence, the differential impact of state capacity on continuation of reforms is also present in the initial decision to begin reforms or not. Reforms which involve an increasing degree of compensation over time (i.e. satisfying condition $1'$) require a higher degree of fiscal capacity on the part of the state in order for the citizens to agree to their initiation. On the other hand, for reforms in which the second stage gains are assured even without any compensation (i.e. satisfying condition 1), the fear of reforms inefficiently running aground in higher capacity states may make citizens more hesitant in initiating them.

3   Identity Politics and the Dynamics of Reform

In the previous section we saw that distributional conflict between winners and losers can reduce the political sustainability of economic reform. As a number of observers have pointed out, ethnic

divisions can also undermine economic reform (see Hoff and Stiglitz, 2001, for a discussion). For instance, if initial winners (or losers) are concentrated in specific ethnicities, then this may catalyze ethnic conflict that can jeopardize the continuation of further reform (Bangura and Gibbon, 1992). This has been observed in the history of economic reform in countries such as Kenya, Uganda and other parts of Africa and also in Armenia, Georgia and the former Yugoslavia (see Horowitz, 2005).[21] It is perhaps not surprising that economic reforms may run into a political impasse if its distributional effects occur along ethnic lines, and thus spark ethnic conflict.

Less noticed, but perhaps more remarkable, are the instances where economic reform seems to proceed despite the contemporaneous presence of ethnic conflict. This is illustrated in its most striking form in the Indian experience with the politics of reform in the past couple of decades. As pointed out by Kohli (2006), political campaigns in India during this period coincided with voter mobilization on an ethnic-caste basis "instead of the less volatile interest-oriented appeals". This, he argues, may not have hurt the political sustainability of economic reform. Relatedly, Varshney (1998) argues that India's political elite managed to push through economic reform by exploiting the caste and religious dimensions of mass politics. Indeed, in his survey on the politics of India's economic reform, Kumar (2008) summarizes the views of a variety of observers as: "Atul Kohli, Ashutosh Varshney and Jeffery Sachs suggest that the aggressive politics – affirmative legislation in favor of the backward classes and the rise of [Hindu nationalism] – had so formed the template of political India that identities rather than economic reforms continued to dominate the language as well as the rhetoric deployed at the ground level. Mass politics, already aroused by passions, they argue, "far outweighed reform politics"."

Our benchmark model has demonstrated that distributional conflict may politically undermine the continuation of economic reform. This makes it particularly well suited to examine whether or not non-economic factors (such as ethnicity), and the potential for conflict that they engender, can also affect the political sustainability of reform. Accordingly, we extend our benchmark model to allow for the possibility that citizen-voters care about another dimension in addition to the economic one – namely, identity. Our extension adapts Glaeser (2005) to examine conditions under which the incumbent has an incentive to stoke ethnic or sectarian tensions in order to increase the likelihood of remaining in power. In particular, in addition to his income, each citizen-worker has an identity-characteristic X or Y, which can be race, caste, religion, language or ethnicity. A

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[21]For example, President Museveni's attempt to reform the land tenure system in Uganda was crippled by ethnic conflict, because the adverse distributional consequences of this reform were concentrated on the Baganda (Green, 2006). Similarly, according to Lehman (1992), reform in Kenya could not be politically sustained due to the (ethnically) uneven incidence of benefits and costs from further land reform.

fraction n_j of the population has characteristic j, where $j \in \{X, Y\}$. We will assume that group X is in the majority i.e. $n_X > \frac{1}{2} > n_Y$.[22] We assume that the economic gains from reform (i.e. the probability of being a winner at each stage) are identically distributed across these two groups, thereby deliberately ruling out the scenario where political conflict arises from the differential gains from reform across the two ethnic groups. To simplify the analysis, in this section, we assume that state capacity is perfect i.e. $\tau = 1$.

In each period T the citizen-government chooses a policy a_T that determines the nature of a non-economic public good (which can be, for example, government patronage of culture, language or religion). There is uncertainty about the degree of congruence in preferences across the two groups over this public good. In particular, the gap in preferences Δ across the two groups on this non-economic dimension can either be small, $\Delta = 0$ (congruent preferences), or large $\Delta = 1$ (i.e. incongruent preferences). If $\Delta = 0$, then both groups benefit in the same way from a given policy a_T on the non-economic dimension. On the other hand, if $\Delta = 1$, their benefits are diametrically opposed i.e. if group X benefits from a particular policy a_T, it must mean that group Y gets harmed and vice-versa.Initially, all citizens share the same beliefs about this degree of congruence in preferences across the two groups; this is denoted by $\text{Prob}(\Delta = 1) = \varepsilon$. We assume that ε is 'small' so that ex-ante, the perceived differences across the two groups are negligible and thus initially, politics is based only on the economic dimension. However, if the citizens become sufficiently convinced that the underlying state of the world is $\Delta = 1$, citizen-voters of all types would prefer the citizen-government to be affiliated with their own ethnicity.

The overall utility for a citizen is given by the sum of his economic payoff and his non-economic payoff $G(k, e; \Delta)$, where $k \in \{0, 1\}$ denotes whether the voter is of the same ethnic group as the citizen-government; and $e \in \{0, 1\}$ denotes the 'experience' of the politician. We set $e = 1$ for an incumbent who is re-elected, and $e = 0$ for a first-term government. Thus, $G(1, e; \Delta)$ denotes the utility to a citizen on the non-economic dimension from having in office a politician of the same ethnicity, and experience e when the state of the world is Δ. The corresponding utility when the politician in power belongs to the opposite ethnicity is given by $G(0, e; \Delta)$. Following the discussion above, we assume that the ethnicity of the politician in power matters to voters only if the state is $\Delta = 1$, in which case all citizens prefer a person of their own ethnicity to run the government. If $\Delta = 0$, the ethnicity of the politician does not matter:

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[22]We should point out that the model that we present can be considered to be a special case of a more general multi-dimensional framework, where the choice of which dimension to emphasize can be a decision of the incumbent government. A politically vulnerable government might prefer to make that dimension politically salient which maximizes the probability of its re-election.

Assumption $1 : G(1, e; 1) > G(0, e; 1)$ and $G(1, e; 0) = G(0, e; 0)$.

We also assume that experience matters: *ceteris paribus*, the incumbent has an advantage over an otherwise identical challenger, perhaps because over time the incumbent becomes more efficient both at producing the publicly provided good, and also at funneling this good to his own group:

Assumption $2 : G(1, e = 1; \Delta) > G(1, e = 0; \Delta)$.

The two assumptions together imply, in particular, that if the state is $\Delta = 1$, then on the non-economic dimension, all citizens prefer an experienced person of their own ethnicity to run the government.

'Incidents' and Propaganda: There is a possibility of a violent 'incident' $\nu = 1$, which could be a local clash between two individuals who belong to different castes or ethnicities. The cause of the 'incident' can be prior personal differences between the two individuals unrelated to their ethnicity, or it may arise as a by-product of larger differences in preferences arising from their different ethnicities. The chances of such 'incidents' between members across these two communities are higher when their preferences differ than when they are congruent. Accordingly, we assume that the probability of such clashes when $\Delta = 1$ is greater than when $\Delta = 0$, i.e. $c_1 \equiv P(\nu = 1 | \Delta = 1) >> c_0 \equiv P(\nu = 1 | \Delta = 0)$.

Initially, as ε is small, ethnic identity does not play a role in determining citizen-voters' preferences over candidates. However, if they learn about clashes or riots between individuals of the two groups, citizens will update their prior beliefs about the differences between the two groups. These violent 'incidents', if they occur, are local events, and are unobserved by the wider populace. However, the government can choose to use government machinery to broadcast this 'incident' to the wider populace. An incumbent may find it to his advantage to engage in this political propaganda, if it enhances his prospects of continuing in office, in which case he reaps further 'ego-rents', which we denote by R. For simplicity, we assume that if the incumbent politician spends resources $r(i)$ on such propaganda, news about the occurrence of the violent incident reaches a fraction i of the population.[23] Glaeser (2005) terms such propaganda as 'hatred', as such a supply of 'negative stories' serves to enhance negative feelings of one ethnic group towards another.

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[23]In order to keep things simple, we follow Glaeser (2005) in allowing only the political incumbent to engage in propaganda. In other words, the challenger is assumed to lack the machinery to investigate the 'incident' and/or broadcast it to the wider populace. This is of course a simplification. The general argument would hold so long as the incumbent government had better access to information about violent incidents, and was better able to disseminate this information.

Secondly, we assume that the incumbent can only enhance public awareness about an incident that actually occured. He cannot 'manufacture' evidence.

The timing of the game is the same as before, except for the following addition. At the end of period $T = 0$, after the distributional effects of the first stage of reforms have been realized and the identity of the incumbent (in terms of representing the 'winners' or 'losers') been revealed, the incumbent politician makes a decision on whether to use the government machinery to engage in political propaganda and broadcast news of a violent 'incident' (if any has occurred) to the wider populace. As before, we are interested in examining the policy sequences (in terms of continuation and stoppage of reforms) that can emerge in a political equilibrium here.

Before embarking on the formal analysis, we intuitively examine the issue under consideration. The point of departure from the earlier analysis occurs in the case when $\alpha_m < \widetilde{\alpha} < \frac{1}{2}$, so reform continuation would run into an impasse, but the incumbent politician of period $T = 0$ is revealed to be an economic winner from the reform. In this case, the economic losers (those left behind in the A sector) are in a majority, and if they were to vote based only on the economic dimension, they would oust the incumbent and instead elect an A sector worker to office for the next period. Anticipating this, can the incumbent (whose economic affiliation is now with the winners i.e. those in the M sector) still win re-election? If he can successfully raise the political salience of ethnicity by using political propaganda to exploit any ethnic divisions, then he stands to gain not only from continuing in office, but also from continuing the reform, which would otherwise grind to a halt in his absence.

The following analysis of the subgame perfect Nash equilibrium of this game examines: (i) under what conditions would such a strategy of ethnic propaganda be successful, and (ii) when is it worthwhile for the incumbent to incur the costs of adopting such a strategy?

Demand side of Ethnic Politics: We first examine the conditions under which a citizen prefers to vote on the basis of his ethnicity rather than his interest on the economic dimension. In particular, consider an individual who receives information on the occurrence of an 'incident' between individuals belonging to the different groups. Upon receipt of such information, this individual updates his belief that the state of the world is $\Delta = 1$ to $\text{Prob}(\Delta = 1 | \text{news of incident}) = \frac{\varepsilon c_1}{\varepsilon c_1 + (1-\varepsilon)c_0}$, which is higher than ε. Given that such clashes are relatively rare when $\Delta = 0$ as compared to when there are large differences in preferences between the groups i.e. $\Delta = 1$, the news of any random clash will cause individuals to update their beliefs about there being large differences between the groups to beyond ε. Upon receiving such information, the question is whether this individual will vote based on his ethnic or economic proclivity. Those who do not receive any new information keep their beliefs about Δ unchanged.

If the incumbent at the end of the first period is a 'winner' from group X, then all winners from

(the majority) group X will choose to vote for him because of their alignment on both dimensions. The question is whether the losers from group X will wish to continue to support this 'winner' incumbent from their own group. The most stringent condition for their support will occur if the challenger at this stage is a 'loser' from the same ethnicity X. If they support the incumbent in this case, they will do so in all other cases as well. So, when does their benefit on the non-economic dimension outweigh the economic gains from having a 'loser' in office?

On receiving information about an incident $\nu = 1$, a group X citizen-voter will prefer an incumbent 'winner' from his own group to a 'loser' so long as the following inequality holds:

$$[G(1, e = 1; \Delta = 1) - G(1, e = 0; \Delta = 1)]\frac{\varepsilon c_1}{\varepsilon c_1 + (1 - \varepsilon)c_0} > S(\tilde{\alpha}) \qquad (6)$$

where $S(\tilde{\alpha})$ is the relative economic gain from having a 'loser' in office, and is described below. Citizen-voters who belong to group X and who are also first-stage losers face a dilemma. If they were to choose based solely on the economic gains (given by the right-hand side of the above inequality), they would strictly prefer the challenger, who is also an 'economic loser' and also belongs to group X. However, if the benefits from experience in efficiently transferring the ethnic goods (given by the left-hand side of (6)) are large enough, they may choose to vote for the 'winner' incumbent.[24]

As we show in Appendix A, this economic gain $S(\tilde{\alpha})$ from choosing a 'loser' government versus a 'winner' comes from two sources: (i) the difference in tax-rates set by the two kinds of governments in period $T = 1$, and (ii) differences in their reform continuation strategies. The crucial feature is that $S(\tilde{\alpha})$ is increasing in $\tilde{\alpha}$. In other words, the economic loss from re-electing the incumbent is bigger when the proportion of first-stage winners $\tilde{\alpha}$ is higher. Thus a strategy of using ethnic differences to sway voters will only work when $\tilde{\alpha}$ is relatively small. This can be seen from condition (6) which, given that $S(\tilde{\alpha})$ is increasing in $\tilde{\alpha}$, only holds for $\tilde{\alpha}$ below a certain cutoff, denoted by α^c.

Supply side of ethnic politics: The analysis so far has studied whether a strategy of amplifying ethnic clashes to foment ethnic sentiments may work for the electoral benefit of an incumbent who would otherwise be unseated. There is still the question of whether the incumbent is willing to incur the costs of this amplification. Recall that if he spends resources $r(i)$, then fraction i of the population receive news of the clash. Among those voters (from either ethnic group) who do not receive any news, there will be no update in their belief ε about the distance between the groups, and they will vote based on economic considerations only. In order to see how the incumbent's

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[24]We should emphasize that we have chosen this particular formulation only for simplicity. There are other scenarios which will give rise to similar incumbency effects. See Padro i Miquel (2007) for an elegant explanation of why a group may continue supporting an incumbent from its own group despite large losses in economic welfare.

share of the vote varies as a function of his expenditure on amplification, $r(i)$, we consider the two groups of voters in turn. Among the voters from ethnic group X, those who emerge as 'winners', numbering $n_X \widetilde{\alpha}$, will vote for the incumbent (since he is aligned with them on both the economic and ethnic dimensions). Among the 'losers' from this group X, only those that receive news about the clash, numbering $n_X(1 - \widetilde{\alpha})i$, will do so (and only if condition (6) is satisfied). All voters from group Y who receive news about the clash will analogously choose not to vote for the incumbent, but of those group Y voters who do not hear the propaganda, the incumbent will draw support from the economic winners, numbering $n_Y \widetilde{\alpha}(1 - i)$.

Thus the share of the votes for the incumbent will be $n_X \widetilde{\alpha} + n_X(1 - \widetilde{\alpha})i + n_Y \widetilde{\alpha}(1 - i)$, which needs to exceed $\frac{1}{2}$ for the incumbent to win. Hence the minimum i required for winning the election is given by $\frac{\frac{1}{2} - \widetilde{\alpha}}{n_X(1 - \widetilde{\alpha}) - n_Y \widetilde{\alpha}}$. Given that the rents from being reelected to office are R, the incumbent will be willing to adopt this strategy only if:

$$R > r(\frac{\frac{1}{2} - \widetilde{\alpha}}{n_X(1 - \widetilde{\alpha}) - n_Y \widetilde{\alpha}}) \qquad (7)$$

In the absence of any amplification the only voters who will vote for the incumbent are the winners i.e. a fraction $\widetilde{\alpha}$ of the population. Note that $\frac{\frac{1}{2} - \widetilde{\alpha}}{n_X(1 - \widetilde{\alpha}) - n_Y \widetilde{\alpha}}$ is decreasing in $\widetilde{\alpha}$, since $n_X > \frac{1}{2}$ and $\widetilde{\alpha} < \frac{1}{2}$ here. Intuitively, the amount of propaganda needed in order to assemble a majority is lower, the higher is the proportion of winners, $\widetilde{\alpha}$, who are economically aligned with the incumbent. This implies that condition (7) only holds for $\widetilde{\alpha}$ high enough. In other words, there exists a cutoff value of $\widetilde{\alpha}$, say α^{cc}, above which the politician will be willing to adopt the strategy of using ethnic manipulation to further his tenure in office and also continue with the reforms.

Together, the demand and supply conditions lead to the following proposition, which characterizes parameters under which ethnic differences can aid the continuation of reform. While the focus of the proposition is on equilibrium policy sequences that involve this specific type of continuation, its proof characterizes the entire equilibrium policy sequence.

PROPOSITION 2: *For $\varepsilon > \underline{\varepsilon}$, there exists an interval $[\alpha^{cc}, \alpha^c]$ such that when $\widetilde{\alpha} \in [\alpha^{cc}, \alpha^c]$, in equilibrium a group X incumbent from sector M invests $r(i)$ in propaganda that makes ethnic group identity politically salient in the elections at the beginning of period $T = 1$. In this case, the incumbent is re-elected and continues with the economic reform in period $T = 1$ with no redistributive tax-transfers to compensate the losers from the first stage of economic reform.*

PROOF: See Appendix A.

Therefore, we may have a scenario where political reform continues not despite ethnic conflict, but rather because of it. Interestingly, such a strategy of using non-economic issues to ensure re-

election (and thereby continuation of the reforms without compensation for the losers) works only when the initial success with the reform, $\widetilde{\alpha}$, is in an intermediate range. If the reforms are very unsuccessful i.e. generates a large proportion of losers, it is very costly for a 'winner' incumbent to persuade enough of them to vote for him in order to get reelected. On the other hand, when the reforms are sufficiently successful i.e. $\alpha^c < \widetilde{\alpha} < \frac{1}{2}$, the losers would prefer to have political control by having a 'loser' politician in power. This would ensure them compensation from the winners, the level of which is high when $\widetilde{\alpha}$ is high. In such a situation, they would not be swayed by ethnic considerations in their voting decision and would be influenced by economic factors alone. However, for a range of moderately successful first-stage reforms, ethnic conflict can be strategically used to reduce the possibility of political impasse that may otherwise arise (as in Proposition 1).

4 Conclusion

This paper has developed a simple framework that allowed us to throw light on different aspects of the political sustainability of economic reform in developing countries. When economic reforms give rise to distributional conflict, the initial success of reform can in fact give rise to a political backlash. Indeed our framework shows that, *pace* Przeworski (1993) and Stokes (2001), the often-puzzling dynamics of public opinion over the course of large-scale economic reform may not be due to some kind of myopia or irrationality on the part of voters, but rather a result of rational political calculus on the part of the interim majority. A large literature has emphasized that political reforms are easier to adopt and sustain if losers can be compensated. Accordingly, a natural presumption may be that greater capacity on the part of the state in taxing winners to compensate losers will increase the political sustainability of reform. However, our analysis suggests a note of caution: depending on the type of reform being considered, greater state capacity can help or hinder both the initiation and political sustainability of reform. Finally, we throw light on the presumption that ethnic conflict is typically likely to undermine economic reform. In a simple extension of our benchmark model, we suggest that this need not always be the case. Indeed, a politician may increase the political sustainability of economic reform, precisely by making ethnicity (or other non-economic dimensions) politically salient.

However, we should emphasize that there are several facets of our framework that warrant future exploration. First, our framework took a state's fiscal capacity to tax and redistribute as exogenously given over the duration of the reform. However, given that state capacity can plausibly be improved by investment choices made by governments, it would be interesting to examine the politics of investment in state capacity over the course of economic reforms. Second, our analysis

on the effects of introducing a non-economic dimension on the political sustainability of reform had several simplifying conditions. It would be useful to develop a richer framework with an endogenous media sector that could either facilitate or hinder government propaganda, thereby reinforcing or undermining the government's ability to politically sustain economic reform (see Stromberg, 2004). Third, we do not consider here the issue of workers' incentives to invest in furthering their chances of moving to the growing sector. In the context of land reforms, Ghatak and Mookherjee (2011) look at the incentives of tenants to invest in the quality of land, anticipating their share of compensation from future sale of the land. In our context, it would be of interest to study the two-way interaction of these incentives with the dynamic politics of reforms.

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Appendix A

PROOF OF PROPOSITION 1(B): Moving to decision making in period $T = 0$, the incumbent citizen-government initiates the economic reform only if the expected gains from it, anticipating the politics in periods $T = 1$ and $T = 2$, is positive.

Under condition 1′, consider an individual's ex-ante expected two-period gain from initiating the reform, anticipating the continuation decisions and tax-rates at $T = 1$ and $T = 2$. The expected gain for period $T = 1$ is given by:

$$
\begin{aligned}
E[\widetilde{\alpha}\{(1-\tau)\theta w + \tau(\widetilde{\alpha}\theta w - (1-\widetilde{\alpha})\delta\theta w)\} \\
+(1-\widetilde{\alpha})\{-(1-\tau)\delta\theta w + +\tau(\widetilde{\alpha}\theta w - (1-\widetilde{\alpha})\delta\theta w)\}] \\
= \quad E[\widetilde{\alpha}\theta w - (1-\widetilde{\alpha})\delta\theta w]
\end{aligned}
$$

It is thus independent of the state capacity parameter τ. Similarly under condition 1.

Again from an ex-ante individual perspective, the period $T = 2$ gains under condition 1′ are given by :

$$
\begin{aligned}
\widetilde{\alpha}(1+a)\theta w + (1-\widetilde{\alpha})\{\alpha_2(1+a)\theta w - (1-\alpha_2)2\delta\theta w\} \quad &\text{if } \widetilde{\alpha} > \frac{1}{2} \\
(1-\tau)\{\widetilde{\alpha}(1+a)\theta w + (1-\widetilde{\alpha})(\alpha_2(1+a)\theta w - (1-\alpha_2)2\delta\theta w)\} \\
+\tau\{\widetilde{\alpha}(1+a)\theta w + (1-\widetilde{\alpha})(\alpha_2(1+a)\theta w - (1-\alpha_2)2\delta\theta w)\} \quad &\text{if } \widetilde{\alpha} \in (\frac{\alpha^*}{\tau}, \alpha_m] \\
\widetilde{\alpha}\theta w - (1-\widetilde{\alpha})\delta\theta w \quad &\text{otherwise}
\end{aligned}
$$

In the first case, the winners are in a majority and set the tax-rate $t_2 = 0$; thus the gains are independent of state capacity. In the third case, reforms are not continued, and thus the gains are the same as in period $T = 1$, which we have shown before is independent of τ. In the second case, when $\widetilde{\alpha} \in [\frac{\alpha^*}{\tau}, \alpha_m]$, the expression simplifies to:

$$
\widetilde{\alpha}(1+a)\theta w + (1-\widetilde{\alpha})(\alpha_2(1+a)\theta w - (1-\alpha_2)2\delta\theta w)
$$

which is again independent of τ.

Similarly, it can be shown that under condition 1 as well, the ex-ante expected gains at $T = 2$ are independent of the state capacity parameter τ in each case.

Combining these two gains, the decision on whether to launch the reform or not depends on if:

$$
(1+\beta)(\overline{\alpha}\theta w - (1-\overline{\alpha})\delta\theta w) + \beta \int_{\widetilde{\alpha} \in I_c(\tau) \cup (\frac{1}{2}, 1]} \{\widetilde{\alpha}aw\theta + (1-\widetilde{\alpha})[\alpha_2(1+a+\delta)w\theta - (1-\alpha_2)\delta w\theta]\}dF(\widetilde{\alpha}) > 0
$$

where $I_c(\tau) \cup (\frac{1}{2}, 1]$ denotes the range of $\widetilde{\alpha}$ over which reforms are continued when the state capacity is τ. From part (A), $I_c(\tau)$ is given by $I_c(\tau) = [0, \max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{\tau(1+\delta)}\}]$ under condition 1, and $I_c(\tau) = (\frac{\alpha^*}{\tau}, \alpha_m]$ under condition 1'.

PROOF OF COROLLARY 1: The first part of the corollary follows directly from comparing the reform continuation decisions with and without political constraints. For part (ii), note that under condition 1, $R_1 = 1$ for $\widetilde{\alpha} \leq \max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}\}$ while $R_1 = 0$ for $\widetilde{\alpha} \in (\max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}\}, \frac{1}{2})$. Under condition 1', $R_1 = 1$ for $\widetilde{\alpha} \leq \alpha_m$, and $R_0 = 0$ for $\widetilde{\alpha} \in (\alpha_m, \frac{1}{2})$. Thus under both conditions, such $\widetilde{\alpha}_L$ and $\widetilde{\alpha}_H$ can be found with $\widetilde{\alpha}_L < \widetilde{\alpha}_H$, such that the reform is continued when $\widetilde{\alpha} = \widetilde{\alpha}_L$ but not when $\widetilde{\alpha} = \widetilde{\alpha}_H$. For (iii), note that $I_c(1) \cup (\frac{1}{2}, 1]$ is smaller than the interval $[\alpha_1^c, 1]$, under both conditions 1 and 1'. Thus the condition (2) for the initiation of reform in the political equilibrium is harder to satisfy than the efficiency condition (1). For example, there exist β and $\overline{\alpha}$ which satisfy (1), but not (2), implying that political considerations can lead to economically efficient reforms not being launched.

PROOF OF COROLLARY 2: From proposition 1, under condition 1, a first-stage loser will choose continuation of the reforms at $T = 1$ only if:

$$\frac{\alpha_2(1 + a + \delta) - (1 - \alpha_2)\delta}{\tau(1 + \delta)} > \widetilde{\alpha}$$

Note that as state capacity τ increases, the cutoff for continuation falls, thus making the decision for adopting $R_1 = 1$ more stringent. In this case, better state capacity makes the continuation of reforms less likely.

On the other hand, under condition 1', an A-sector worker will prefer to continue with the reforms at $T = 1$ only if:

$$\widetilde{\alpha} > \frac{(1 - \alpha_2)\delta - \alpha_2(1 + a + \delta)}{\tau[a + (1 - \alpha_2)\delta - \alpha_2(1 + a + \delta)]} = \frac{\alpha^*}{\tau}$$

Note that as τ increases, the right-hand side of the inequality decreases, thus making the decision for adopting $R_1 = 1$ less stringent. Here, better state capacity makes the continuation of reforms more likely.

The reform initiation decision R_0 is given by whether condition (2) is satisfied or not. As shown above, the set $I_c(\tau)$ contracts with an increase in τ under condition 1 and expands under condition 1'. This affects the second term on the left-hand side of (2), which gives the incremental (positive) gain from continuing with the second-stage of reforms. Hence the overall gain from reform falls due

to a rise in τ under condition 1 and makes it harder to satisfy the above inequality. The opposite holds under condition 1$'$.

PROOF OF PROPOSITION 2:

Firstly, in the election at the beginning of period $T = 0$, all candidates are identical with respect to their preferences over reform. Thus each citizen will vote solely based on their ethnic alignment. Since group X is in a majority, the candidate selected will be from this group.

The main difference in the equilibrium here, as compared to the previous proposition, lies in the analysis of the election at the beginning of period $T = 1$. Suppose the incumbent at this stage has been realized as a 'winner' from group X. If no 'incident' has occurred, the game proceeds as before and the equilibrium policy sequence is as before, in proposition 1. The interesting case is when there has been an 'incident'. Will the incumbent find it worthwhile to foment ethnic discord by spreading propaganda about this incident, and will the electorate be willing to vote based on the non-economic dimension? If $\widetilde{\alpha} > \frac{1}{2}$, then the winners are in a majority and so the 'winner' incumbent (from group X) will get a majority of the votes and win without having to resort to any ethnic propaganda. Thus in this case, the equilibrium policy sequence is unchanged from that derived in proposition 1.

If however $\widetilde{\alpha} < \frac{1}{2}$, the 'winner' incumbent would be ousted from power on economic considerations alone as the economic losers are in a majority. So the question is whether condition (6) holds so that the losers' economic loss $S(\widetilde{\alpha})$ from reelecting the 'winner' incumbent is compensated by their gain on the ethnic front. $S(\widetilde{\alpha})$ has two components:
(i) The redistributive (tax) benefit in period $T = 1$, from choosing a 'loser' government versus a 'winner', which is given by:

$$T(\widetilde{\alpha}) = \{\widetilde{\alpha}w(1 + \theta) + (1 - \widetilde{\alpha})w(1 - \delta\theta)\} - w(1 - \delta\theta) = \widetilde{\alpha}w\theta(1 - \delta)$$

where the first term, in curly brackets, represents the average income after a first-stage reform, and the second term represents the wage of a loser, with no redistribution, after a first-stage reform.
(ii) The difference in the continuation decision for the two types. Here we will need to consider a few cases. Under condition 1, when $\widetilde{\alpha} \leq \max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}\}$, the losers would prefer the reforms to continue. Thus, reelecting the 'winner' incumbent only entails the redistributive loss $T(\widetilde{\alpha})$, but no change in the reform continuation decision. If however $\frac{1}{2} > \widetilde{\alpha} > \max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}\}$, a 'loser' government will not allow reforms to continue beyond the first-stage, while a 'winner' would prefer to do so. Calculating the gains in the two cases gives $S(\widetilde{\alpha})$ below.

Under condition 1,

$S(\widetilde{\alpha}) =$

$$\widetilde{\alpha}w\theta(1-\delta) \quad \text{if } \widetilde{\alpha} \leq \max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}\}$$

$$\text{and} \quad \widetilde{\alpha}w\theta(1-\delta) + \beta w\theta\{\widetilde{\alpha}(1+\delta) - \alpha_2(1+a+\delta) - (1-\alpha_2)\delta\} \quad \text{otherwise}$$

where the second term in the second line represents the (discounted) difference between $\widetilde{\alpha}w(1+\theta) + (1-\widetilde{\alpha})w(1-\delta\theta)$, the average income after a first-stage reform which has run aground, and $\alpha_2 w(1+\theta(1+a)) + (1-\alpha_2)w(1-2\delta\theta)$, the expected wage (for a first-stage loser) from the second-stage reform, with no redistribution. From the above expressions, we can clearly see that $S(\widetilde{\alpha})$ is increasing in $\widetilde{\alpha}$. A similar derivation under condition 1′ also shows that $S(\widetilde{\alpha})$ increases with $\widetilde{\alpha}$. (The only difference is the range of $\widetilde{\alpha}$ over which the first expression in $S(\widetilde{\alpha})$ above holds - the rest is unchanged).

Thus under each condition, there exists an upper bound α^c on $\widetilde{\alpha}$ such that (6) holds for all $\widetilde{\alpha}$ below α^c, where α^c is given by $\alpha^c = S^{-1}([G(1,1;1) - G(1,0;1)]\frac{\varepsilon c_1}{\varepsilon c_1 + (1-\varepsilon)c_0})$. In this case, the losers from group X will prefer to vote for the incumbent 'winner' rather than a 'loser' from their own group.

Thus, the possibility of ethnic politics can change the equilibrium voting behavior only if $\widetilde{\alpha} \leq \alpha^c$.

On the other hand, whether or not the incumbent 'winner' will in fact be willing to use the strategy of using ethnic propaganda or not depends on his payoffs, which is given by the condition (7). As noted before, this condition holds when $\widetilde{\alpha}$ exceeds the lower bound α^{cc}, given by $\alpha^{cc} = \frac{1-2n_X r^{-1}(R)}{2(1-r^{-1}(R))}$.

To ensure that $\alpha^{cc} < \alpha^c$, we need:

$$S[\frac{1-2n_X r^{-1}(R)}{2(1-r^{-1}(R))}] < [G(1,1;1) - G(1,0;1)]\frac{\varepsilon c_1}{\varepsilon c_1 + (1-\varepsilon)c_0}$$

Note that the right-hand side of this inequality is increasing in ε. Thus this inequality is satisfied for ε higher than a cutoff-value $\underline{\varepsilon}$.

Combining the analysis of the supply and demand for ethnic propaganda, we see that for $\varepsilon > \underline{\varepsilon}$, the equilibrium policy sequence now changes from a political impasse of $R_1 = 0$ to $R_1 = 1$ if $\widetilde{\alpha} \in (\alpha^{cc}, \alpha^c)$ *and* $\widetilde{\alpha} \in (\max\{\alpha_m, \frac{\alpha_2(1+a+\delta)-(1-\alpha_2)\delta}{1+\delta}\}, \frac{1}{2})$ under condition 1, or if $\widetilde{\alpha} \in (\alpha^{cc}, \alpha^c)$ *and* when $\widetilde{\alpha} \leq \frac{\alpha^*}{\tau}$ or $\widetilde{\alpha} \in (\alpha_m, \frac{1}{2})$ under condition 1′.

In all other cases, the equilibrium policy sequence is the same as derived in Proposition 1 (with $\tau = 1$).

Appendix B [Online appendix; Not intended for publication]

To check the robustness of the basic results, we consider an alternate formulation of the model with a more direct focus on the proportion of winners realized early versus later i.e. the speed of realization of uncertainty from the reforms. We retain the same structure of the model in terms of the sequence of decision-making and politics, but change the structure of the resolution of uncertainty in the following manner: If the government decides to initiate reforms i.e. $R_0 = 1$, then the state of the world $\widetilde{\alpha}$ is realized, which gives the total proportion of winners from the reform. In period $T = 0$, each individual has probability $s\widetilde{\alpha}$ of being a winner i.e. finding employment in sector M; their wages go up to $w(1 + \theta)$ while those of the losers go down to $w(1 - \delta\theta)$. If reforms are continued in period $T = 1$ i.e. $R_1 = 1$, then among the initial losers, each has probability $\frac{(1-s)\widetilde{\alpha}}{1-s\widetilde{\alpha}}$ of becoming a winner, with wages going up to $w(1 + \theta(1 + a))$, while that of the losers goes down to $w(1 - 2\delta\theta)$. Hence, the mass of winners in the first phase of reforms is $s\widetilde{\alpha}$, while that in the second phase is $(1 - s)\widetilde{\alpha}$. Thus, the speed of resolution of uncertainty in this case is captured directly by the variable s; a high value of s denotes the case where most of the uncertainty is resolved early on i.e. reforms are speedy in determining eventual winners versus losers.

The rest of the model remains the same: elections at the end of periods $T = 0$ and $T = 1$; the government in power in period $T = 1$ decides on the degree of redistribution $t_1 \leq \tau$ and on continuation of the reforms R_1; and the government in period $T = 2$ decides on $t_2 \leq \tau$.

Analyzing efficient decision-making in this case, reforms in period $T = 1$ should be continued only if:

$$s\widetilde{\alpha}aw\theta + (1 - s)\widetilde{\alpha}w\theta(1 + a + \delta) - (1 - \widetilde{\alpha})\delta w\theta > 0$$

$$\text{i.e. if} \quad \widetilde{\alpha} > \frac{\delta}{\delta + a + (1 - s)(1 + \delta)} = \alpha^{**} \text{ (say)}$$

Incorporating politics, we again use backwards induction to analyze the subgame perfect Nash equilibrium of the game. The tax decisions in periods $T = 1$ and 2 remain the same as before: if a 'loser' is in power, he implements maximal redistribution while if a 'winner' is in power, he chooses zero redistribution. As before, the primary focus here is on the reform-continuation decision R_1 in period $T = 1$.

If the realized $\widetilde{\alpha}$ in period $T = 0$ is such that $s\widetilde{\alpha} > \frac{1}{2}$, then the 'winners' are in political control at $T = 1$ and will clearly choose to continue with the reforms. At the other extreme, if $\widetilde{\alpha} < \frac{1}{2}$, then not only are the 'losers' in control at $T = 1$, they realize that they will retain control also in the next period even if the reform is allowed to continue. Thus, their decision to allow continuation of the reform at $T = 1$ will depend on their individual gains taking into account the compensation

they can obtain from the winners i.e. choose $R_1 = 1$ if:

$$0 < \tau w\theta[s\widetilde{\alpha}a + (1-s)\widetilde{\alpha}(1+a+\delta) - \widetilde{\alpha}\delta]$$

$$+(1-\tau)w\theta[\frac{(1-s)\widetilde{\alpha}}{1-s\widetilde{\alpha}}(1+a+\delta) - (1 - \frac{(1-s)\widetilde{\alpha}}{1-s\widetilde{\alpha}})\delta]$$

$$\text{i.e. if } \frac{\delta}{\widetilde{\alpha}} < (1+a+2\delta)\frac{1-s}{1-s\widetilde{\alpha}} - \tau s(1+\delta) + \tau\frac{s(1-\widetilde{\alpha})}{1-s\widetilde{\alpha}}(1+a+2\delta) \qquad (8)$$

The expression on the left-hand side is decreasing in $\widetilde{\alpha}$, while the right-hand side is increasing in $\widetilde{\alpha}$; thus for a given level of state capacity τ, there will be a unique cutoff value $\underline{\alpha}(\tau)$ such that in the case of $\widetilde{\alpha} < \frac{1}{2}$, the 'losers' in period $T = 1$ will choose to continue with the reforms only if $\widetilde{\alpha} > \underline{\alpha}(\tau)$. Furthermore, $\underline{\alpha}(\tau)$ is decreasing in τ meaning that as state capacity τ increases towards 1, the continuation cutoff moves towards the efficient value of α^{**}.

In the intermediate case when $\widetilde{\alpha} \in [\frac{1}{2}, \frac{1}{2s}]$, the first-stage losers are in political control, but realize that if they allow the reforms to continue, they will lose their political power and consequently the ability to redistribute in the future. In this case, comparing their expected payoffs in the two cases, they will support continuation of the reforms i.e. $R_1 = 1$ only if:

$$(1-\tau)w(1-\delta\theta) + \tau[s\widetilde{\alpha}w(1+\theta) + (1-s\widetilde{\alpha})w(1-\delta\theta)]$$

$$< \frac{(1-s)\widetilde{\alpha}}{1-s\widetilde{\alpha}}w(1+\theta(1+a)) + (1 - \frac{(1-s)\widetilde{\alpha}}{1-s\widetilde{\alpha}})w(1-2\delta\theta)$$

$$\text{i.e. if } \quad \frac{\delta}{\widetilde{\alpha}} \quad < \quad \frac{1-s}{1-s\widetilde{\alpha}}(1+a+2\delta) - \tau s(1+\delta) \qquad (9)$$

The left-hand side of the above inequality is decreasing in $\widetilde{\alpha}$, while the right-hand side is increasing. Hence, for a given level of state capacity τ, there will be a unique cutoff value $\overline{\alpha}(\tau)$ such that in the case of $\frac{1}{2} \leq \widetilde{\alpha} \leq \frac{1}{2s}$, the 'losers' in period $T = 1$ will choose to continue with the reforms only if $\widetilde{\alpha} > \overline{\alpha}(\tau)$. Furthermore, $\overline{\alpha}(\tau)$ is increasing in τ meaning that as state capacity τ is enhanced, continuation becomes less likely i.e. inefficiency increases.

Summarizing, in this alternate version of the model, when the 'losers' are in political control in period $T = 1$, they will only vote for continuation of the reforms if $\widetilde{\alpha} \in [\underline{\alpha}(\tau), \frac{1}{2}] \cup [\overline{\alpha}(\tau), \frac{1}{2s}] = I(\tau)$ (say). Hence there are cases of $\widetilde{\alpha} > \alpha^{**}$, where it is efficient to continue with the reform, but it runs aground due to political considerations. Greater state capacity enhances efficiency at the lower end of the interval by decreasing $\underline{\alpha}(\tau)$, while it reduces efficiency at the upper end of the range by increasing $\overline{\alpha}(\tau)$. The model here thus captures both the effects of state capacity as discussed in the basic model. How does the speed of resolution of uncertainty of the reforms affect which effect dominates?

Note that if $\overline{\alpha}(\tau) > \frac{1}{2s}$, then the upper segment of I is not present, and in this case the effect of greater state capacity would be to enhance efficiency by lowering the cutoff value $\underline{\alpha}(\tau)$ towards α^{**}. The condition under which $\overline{\alpha}(\tau) > \frac{1}{2s}$ can be deduced by setting $\widetilde{\alpha} = \frac{1}{2s}$ in the inequality (9) and checking whether the left-hand side exceeds the right-hand side i.e. $\overline{\alpha}(\tau) > \frac{1}{2s}$ if:

$$s > \frac{2(1 + a + 2\delta)}{2(1 + a + 2\delta) + 2\delta + \tau(1 + \delta)} = \widehat{s} \text{ (say)}$$

Thus the conclusion here is similar to Corollary 2 in that *greater* state capacity makes it *more likely* for efficient reforms to continue when much of the uncertainty is resolved in the initial stages i.e. s is high enough so that $s > \widehat{s}$.

On the other hand, if $\underline{\alpha}(\tau) > \frac{1}{2}$, then the lower segment of I is not present, and in this case the effect of greater state capacity is to reduce efficiency by raising the cutoff value $\overline{\alpha}(\tau)$ for continuation of the reform. The condition under which $\underline{\alpha}(\tau) > \frac{1}{2}$ can be deduced by setting $\widetilde{\alpha} = \frac{1}{2}$ in the inequality (8) and checking whether the left-hand side exceeds the right-hand side i.e. $\underline{\alpha}(\tau) > \frac{1}{2}$ if the following holds:

$$(1 + a)[2 - s(2 - \tau)] + \delta[2 - s - 2s(1 - \tau)] - \tau s(2 - s)(1 + \delta) < 0$$

Since the left-hand side is decreasing in s, there exists a cutoff value $\widehat{\widehat{s}}$ over which this inequality holds. Thus over the range $s \in (\widehat{\widehat{s}}, \widehat{s})$, *greater* state capacity *reduces* the chances of continuation of efficient reforms.

When s is below $\widehat{\widehat{s}}$, both of the effects of state capacity are present, and which one dominates depends on how a change in τ affects the size of the interval $I(\tau)$. More precisely, it is determined by the effect of τ on $F(\frac{1}{2s}) - F(\overline{\alpha}(\tau)) + F(\frac{1}{2}) - F(\underline{\alpha}(\tau))$, which depends on the shape of the particular distribution for $\widetilde{\alpha}$.