Gradualism versus Big Bang: Speed and Sustainability of Reforms

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Abstract. A beneficial reform may be blocked by a majority if it is implemented by a big bang, but the same reform may succeed with an optimally designed gradualist approach. A gradualist approach can sometimes split opposition force and is, in this sense, more politically sustainable. On the other hand, if both approaches are politically preferred to no reform, a big bang is often preferred to gradualism in terms of both political support as well as economic efficiency.

Etapisme vs big bang: vitesse et soutenabilité des réformes. Une réforme bénéfique peut être bloquée par une majorité si elle est mise en place avec un big bang, mais la même réforme peut réussir quand on utilise une approche étapiste optimalement dessinée. Une approche étapiste peut parfois diviser les forces de l'apposition et est donc, en ce sens, plus soutenable politiquement. D'autre part, si les deux approches sont politiquement préférées à une situation où il n'y aurait aucune réforme, l'approche en termes de big bang est souvent préférée à l'approche etapiste á la fois pour des raisons de support politique et d'efficacité économique.

'Yu su ze bu da' (More haste, less result)
> Lunyu (The Analects of Confucius): Chapter on Zhi Lu

I. INTRODUCTION

There is little debate on the need for centrally planned economies to be transformed into market-oriented ones. In contrast, countless debates have not resolved the issues

of an optimal speed and sequence to bring about such changes. A big-bang or shock therapy approach implements various reforms (on monetary policy, privatization, trade and exchange rates, and so on) quickly, in a concentrated time frame, whereas a gradualist approach spreads various reforms over an extended period.

At one level, the case for big bang is quite strong. Reforms in transition economies typically are widely perceived to be beneficial to the majority of the populace. This is demonstrated by the popular zeal in overthrowing old authoritarian regimes. If an opinion survey were conducted in those countries on whether they would like to turn their economies overnight into those of a Western European or North American style, an overwhelming majority would presumably express affirmation. On the other hand, actual reform programs are often delayed or derailed because of popular discontent with the programs. Theoretically speaking, it may not be surprising that a reform with few winners and many losers can be politically difficult to implement (see, e.g., Buchanan and Tullock 1962). But the economic reform programs in formerly planned economies are presumed to benefit a majority. It may seem puzzling that reforms with *many winners* and *few losers* are politically so difficult.[1] In this paper I demonstrate that the political difficulty may be related partly to the speed with which a reform is implemented.

Several arguments have been proposed in support of a big-bang approach to various types of reform. First, in the context of privatization, a big-bang approach provides a critical scale of privatized sector in the economy so that the privatized firms will be efficient (Roland and Verdier 1994). Second, a big bang may increase the credibility of a reform (Lipton and Sachs 1990a, 1990b). Third, the gradualist alternative gives time to reform opponents to organize themselves and thus invites a more formidable resistance (Krueger 1993). Fourth, in the context of price reforms, a gradual reform is undesirable because it may induce an intertemporal speculation (goods hoarding) (van Wijnbergen 1992). Fifth, if any reform program needs consensus approval, sequential plans may not work, owing to time-inconsistency (Martinelli and Tommasi 1995). Finally, a big-bang approach brings the benefits more quickly (World Bank 1991).

On the other hand, there are also supportive arguments for a gradualist approach to reform.[2] First, a gradualist approach may avoid excessive cost, especially for the government budget (Dewatripont and Roland 1992a, 1992b; Nielsen 1993). Second, it avoids an excessive reduction in living standards at the start of a reform (Wang 1992). Third, it allows trial and error and mid-course adjustment (World Bank 1991). Fourth, it helps a government to gain incremental credibility (Fang 1992).[3]

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1 Fernandez and Rodrik (1991) provided an argument, which this paper builds upon.

2 The earliest statement that I can find in favour of a gradualist approach is what Confucius said about twenty-five centuries ago in *Lunyu*, which is the epigraph of the paper.

3 The experience of Chinese reform during the 1980s is often interpreted as evidence supporting the superiority of a gradualist approach. For studies of Chinese reform, see Harrold (1992), Jefferson, Chen, and Singh (1992), Lin (1992), McMillan and Naughton (1992), Perkins (1992), Yusuf (1993), and Zou (1992). For a dissenting view on the implication of Chinese experience, see Sachs and Woo (1994).

In this paper I investigate the political economy of the choice of reform strate-
gies. I point out another possibility that could make gradualism politically preferred
to the big bang.[4] When the outcomes of reforms are uncertain to individuals, a
gradual or sequential approach splits the resistance force and can thus increase the
programs' chance of surviving attacks by special interests groups.[5]

Let me make clear that I am not proposing gradualism to be the better approach
in all circumstances. Rather, I simply point out one important implication of the
different reform speeds that has to be taken into account in deliberating alternative
reform strategies.

It is important to clarify the meaning of a gradualist approach, since different
people may well have different definitions in mind. I shall define a gradualist
approach to reform as a sequential implementation of minimum bangs (terminology
from Williamson 1991). A minimum bang is a simultaneous implementation of a
minimum set of reforms that can be implemented independent of other reforms
without failure. Conceptually, we can distinguish a gradualist from a piecemeal
approach. The latter simply implements different parts of a reform package in
many steps without regard to the possible 'strong interdependence' among them.[6]
In contrast, a gradualist approach assigns different parts of a reform program into
groups. Within each group, there is strong interdependence. Across groups, there is
no strong interdependence. Reforms within the same group are better implemented
simultaneously. For the type of massive and fundamental changes that have to take
place in the former centrally planned economies, there are likely many blocks of
reforms. Within each block there is "strong interdependence,' so that a minimum
bang is the best strategy. The appropriate context in which to place this paper is
that it is about the optimality of different strategies in implementing a set of blocks
or minimum bangs.

It is also important to note at the outset that, even across a set of minimum
bangs, a gradualist approach may not always be better than a big bang. In fact, as
I shall elaborate later, as long as a big bang is politically preferred to no reform,
it is preferred to gradualism both in terms of political support as well as in terms
of economic efficiency.

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4 Dewatripont and Roland (1992a, 1992b) also argue that, under the political constraint that a
  program needs a majority or unanimous support, a gradualist approach imposes less pressure
  on resource/government budget than a big bang. They do not discuss, however, whether one
  approach may be politically more sustainable than the other, which is the central focus of this
  paper. In terms of the structure of the models, they assume asymmetric information between
  the government and workers with respect to workers' ability. In contrast, in this paper I assume
  individual uncertainty on transition costs, but the government and workers have the same *ex ante*
  information. Wyplosz (1993) points out that there is a distinction between economic efficiency
  and political acceptability. See Tammasi and Velasco (1995) for an updated survey of relevant
  papers including the current one.
5 In a descriptive paper, Rodrik (1990) emphasizes the importance of a sustainable policy envi-
  ronment for an eventual success of structural adjustment programs. In a separate review paper,
  Rodrik (1993) forcefully concludes that an explicit understanding of political economy forces in a
  reform process is as important as the content of the reform package itself for its success.
6 For an exposition of some pitfalls of a piecemeal approach (partial reform), see Murphy, Shleifer,
  and Vishny (1992).

The basic message of the paper is demonstrated in a model pioneered by Fernandez and Rodrik (1991) for a different purpose. They show that a reform that would benefit a majority ex post can be blocked by another majority ex ante. The key to their result is that individuals do not know before a reform whether they will be winners or losers. Utilizing their framework, in this paper I focus on comparing different degrees of political difficulty for two implementation strategies of a given reform.

In the next section an intuitive overview of the argument is offered. A formal model is presented in section III. The paper is concluded in section IV.

II. AN INTUITITIVE ARGUMENT

The central message of the paper is that a 'good' reform program may not be able to overcome political resistance if it is implemented by a big bang, but it may become politically viable if it is implemented by a gradualist approach.

Consider a small open economy with three sectors. There are altogether ten people in the economy, with four in an export sector x, three in an import-competing sector y, and the remaining three in another import-competing sector z. Sectors y and z receive government tariff protection, so that their domestic prices are higher than the world market levels.

Suppose the objective of a reform program is to remove tariffs in the two import-competing sectors. I shall make assumptions to ensure that the reform is 'good' in the sense that it will benefit a majority of the population. Once the tariffs are gone, assume one person in each import-competing sector can successfully switch to sector x (after paying a small switching cost). The reform program will benefit unambiguously all four persons originally in the x sector, since the prices for goods y and z become lower. So all approve the reform. The two persons that have switched from y and z sectors also benefit from the reform, so they approve the reform too. In all, there will be six people approving the reform. Therefore, as long as the reform gets implemented, it would not be overturned by a majority vote ex post.

We are interested in comparing two possible strategies to implement the reform. A *big-bang* approach would remove the two tariffs at the same time. A *gradualist* approach would remove the two tariffs in two steps.

To simplify the story, suppose that every one in sections y and z is identical ex ante. That is, no one knows whether she will gain or lose from the reform. Furthermore, for any individual, the gain from a successful transition to the x sector and the loss from staying in the import-competing sector after the tariff removal are close in magnitude.

1. Big-bang approach: the two tariffs are lifted at the same time
Ex ante, everyone in the y and z sectors has a one-third chance to be a winner, but a two-thirds chance to be a loser. Therefore, all these people may (rationally) expect to be a loser. Consequently, they choose to vote against the reform. Thus,

an excellent reform program, one that will benefit a majority (six persons) ex post, could be blocked by another majority (six persons) ex ante.[7] Of course, if there exists a mechanism for the winners to compensate the losers after the reform, then any reform that enlarges the size of a pie will always be supported regardless of approaches. Typically, such compensation mechanism is not available, and thus it is ruled out here.[8]

2. A gradual approach

The reform is carried out in two stages. In the first stage, only the tariff on good z is lifted. In the second stage, the tariff on good y is lifted. Furthermore, the second reform will be put on the ballot in period two even if the first reform fails politically.

a. The first stage (removal of tariff on good z).

The prices of goods x and y are unchanged (tied down by the world market), but the price of good z is lowered. Everyone in sectors x and y benefits and thus supports this stage of the reform. Since people in these two sectors already constitute a majority ($4 + 3 = 7$, or 70 per cent of the population), this stage of reform would be voted in regardless of the opinion of the people in sector z. (Once the first part of the reform is implemented, the x sector will employ five workers, while the z sector will employ two.)

b. The second stage reform (removal of tariff on good y).

Now, everyone in sectors x and z benefits from a lower price on good y. Since they constitute a majority of the population ($5 + 2 = 7$), this stage of reform will also be carried out regardless of the opinion of the people in sector y. Hence, the gradualist approach helps the reform program to proceed successfully.

   The discussion is not complete if we do not ask the following question: why do the people in sectors y and z not act collectively in period one to block the entire reform program? In order for them to cooperate, people in sector z in period one have to promise and convince people in sector y that they will protect the interest of people y in the next period. But any such promise is not time-consistent, and in the absence of a commitment mechanism, it will not be easily trusted. Therefore, people in sectors y and z are not likely to collude. Towards the end of the next section, three other difficulties of cooperation will be discussed.

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7 This is the insight of Fernandez and Rodrik (1991). As they point out in that paper, it is just as easy to construct examples in which a bad program, one that will be opposed by a majority ex post, will be approved by a majority ex ante. Such program will be reversed once the uncertainty is resolved.

8 One reason that a compensation mechanism is not available is because it is not time consistent. That is, the realized winners of a reform will not want to compensate the losers after the reform. If winners constitute a majority, as is presumed for an economic transition program, an ex ante promise would not be credible.

III. A SIMPLE MODEL

Consider a three-sector perfectly competitive small open economy in which each sector produces a distinct, good, x, y, and z. The x sector is an export sector whose output price is tied down by the world market and set to be one. The y and z sectors are import-competing sectors that receive separate government tariff protection. The tariff-inclusive prices are P_y and P_z, respectively.

All the three sectors use labour as the only factor of production and have constant-returns-to-scale technology. Thus, using M_j to denote output in sector j,

$$M_j = \frac{L_j}{a_j},$$

and, using L to denote the size of the total labour force,

$$L_x + L_y + L_z = L,$$

where $a_j > 0$, $j = x, y, z$. For notational simplicity, we set $a_x = 1$.

Labour's initial distribution among the sectors, (L_x^o, L_y^o, L_z^o), is given by history. Perfect competition in the labour market ensures that

$$w_j = \frac{p_j}{a_j} \qquad j = x, y, z.$$

Assume that the tariffs are such that the initial prices of the goods are $P_y^o = a_y$, and $P_z^o = a_z$. Therefore, the initial wages in the three sectors are $w_x^o = w_y^o = w_z^o = 1$.

It is costly to relocate labour between the sectors. Let c_{jki} denote the individual-specific cost for person i to switch from j-sector to k-sector, where $j, k = x, y, z$. The individual-specific cost c_{jki} is revealed when and only when the reform starts.[9] However, the probability density function, $f_{jk}(c)$, for c_{jki}, is known to everyone before the reform. For simplicity, we assume $c_{jki} = c_i$. That is, for a given individual i, the cost is the same regardless of the origin and destination of a switch.

The ultimate objective of the reform program in this economy is to remove the tariffs in the two import-competing sectors. After the reform, the wages in the y and z sectors fall necessarily as the prices of goods y and z fall. The reform program (reduction of the two tariffs) can be implemented in two ways: either by a big bang or by gradualism. To compare the two approaches meaningfully, the minimalist set-up is a two-period framework. A big-bang approach removes simultaneously the two tariffs in period one, while a gradualist approach removes them in two steps (removing the tariff on good z in period one and then the tariff on good y in period two).

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9 This is a simplification from the set-up of Fernandez and Rodrik (1991), in which individuals have to take a general investment before learning their sector-switching cost.

Suppose the initial labour allocation is such that the sum of workers in any two sectors is greater than that in the third one; that is,

$$L_j^o < \frac{1}{2}L \equiv \frac{1}{2}(L_x^o + L_y^o + L_z^o),$$

where $j = x, y$, and z. These conditions can be satisfied if, for example, each sector employs one-third of the population.

Suppose individuals' preferences (indirect utility functions) are identical, risk neutral, and given by

$$U(P_1, I_1) + \beta U(P_2, I_2),$$

where

$$U(P, I) = V(P_y, P_z)I = \frac{I}{P_y^\delta P_z^\tau}.$$

I is the individual's income level, β is her subjective discount factor, $0 < \delta, \tau < 1$, and $\delta + \tau < 1$.

1. ex post situation

For simplicity, we assume that, immediately after the reform, the values of the individual-specific sector-switching cost are revealed, regardless of whether they switch in the first or second period.[10] An individual i will not regret the reform if one of the three conditions is met:

$$(1 + \beta)V(P_y'', P_z'')w_y'' > (1 + \beta)V(P_y^o, P_z^o)w_y^o$$

or

$$V(P_y'', P_z'')[w_y'' + \beta w_x'' - c_i] > (1 + \beta)V(P_y^o, P_z^o)w_y^o$$

or (inequality 1)

$$V(P_y'', P_z'')[(1 + \beta)w_x'' - c_i] > (1 + \beta)V(P_y^o, P_z^o)w_y^o.$$

The right-hand side of all three inequalities is the lifetime utility for an individual in sector y without the reform. The left-hand side of the first inequality is the post-reform lifetime utility of staying in sector y. The first inequality corresponds to the case in which everyone in sector y unambiguously gains from the reform because of the lower prices. In this case, the reform will be carried out regardless of the

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10 The possibility of delaying the sector-switching cost by switching in period two would bring in more cases to discuss without altering the basic message of the paper.

implementation strategy. To make the discussions more interesting, we shall from now on focus on cases when this is not true.

The left-hand side of the second and the third inequalities are post-reform utility when individual i switches to sector x at $t = 2$ and $t = 1$, respectively. When we compare the two strategies of switching, it is clear that she will never switch at $t = 2$, since that is dominated by the strategy of switching at $t = 1$. To summarize, an individual i in sector y will approve the reform if and only if inequality 1 is satisfied.

An analogous inequality describes the condition for an individual j in sector z to support the reform ex post.

2. Big-bang reform

With a big-bang approach to the reform, everyone knows that the price vector will be (P_y'', P_z'') in both periods. Consider individual i in sector y. She can stay in sector y, or she can switch to another sector. She has eight ways of switching sectors including (a) switching to sector z at $t = 1$ and staying there at $t = 2$, (b) staying in sector y at $t = 1$ and switching to sector z at $t = 2$, (c) switching to sector x at $t = 1$ and staying there at $t = 2$, (d) staying in sector y at $t = 1$ and switching to sector x at $t = 2$, and (e) various detours at $t = 1$ before switching to sectors x, y, and z at $t = 2$.

We note, first, that if she ever switches, she would switch only to sector x, since P_x'' is strictly greater than both P_y'' and P_z'', and the switching costs are the same across the sectors. Second, for the same reason, if she ever switches, she would switch at $t = 1$ without delay. Therefore, her options now narrow down to two: either staying in sector y for both periods or incurring a cost c_i, switching to sector x at $t = 1$ and staying there at $t = 2$.

She would take the second option if and only if her utility of doing so is greater than that under the first option. That is, she switches to sector x if

$$(1 + \beta)W_x'' - c_i > (1 + \beta)w_y''$$

or

$$c_i < c_y^* \equiv (1 + \beta)(w_x'' - w_y'').$$

Similarly, an individual j in sector z will switch to sector x if and only if her switching cost $c_j < c_z^*$, with c_z^* analogously defined.

Ex ante, people in sector y would vote against the big-bang reform, if the expected utility after the reform is lower than the utility under the status quo. That is, the reform is not supported if (inequality 2)

$$V(P_y'', P_z'') \left\{ F(c_{y^*}) \left[w_x'' - \int_{c_L}^{c_{y^*}} \frac{cf(c)}{F(c_{y^*})} dc \right] + [1 - F(c_{y^*})]w_y'' \right\}$$

$$+ \beta V(P_y'', P_z'') \{ F(c_{y^*})w_x'' + [1 - F(c_{y^*})]w_y'' \} < (1 + \beta)V(P_y^o, P_z^o)w_y^o,$$

where $F(\cdot)$ is the (unconditional) cumulative distribution function for the sector-switching cost.

We now want to demonstrate that there exist cases in which a reform that would be supported by a majority ex post will be blocked by another majority ex ante if it is implemented by the big-bang approach. That is, we shall find cases in which inequalities 1 and 2 are satisfied simultaneously.

By the definition of c_{y^*},

$$w_y'' = w_x'' - \frac{c_{y^*}}{1+\beta}$$

Hence,

$$P_y'' = a_y \left(w_x'' - \frac{c_{y^*}}{1+\beta} \right) = P_y^o \left(1 - \frac{c_{y^*}}{1+\beta} \right).$$

Similarly,

$$P_z'' = a_z \left(w_x'' - \frac{c_{z^*}}{1+\beta} \right) = P_z^o \left(1 - \frac{c_{z^*}}{1+\beta} \right).$$

Inequality 1 (ex post approval by a majority) becomes

$$c_i < (1+\beta) - (1+\beta) \left(1 - \frac{c_{y^*}}{1+\beta} \right)^\delta \left(1 - \frac{c_{z^*}}{1+\beta} \right)^\tau.$$

Inequality 2 (ex ante opposition to the big bang by a majority) becomes

$$(1+\beta)\{F(c_{y^*}) + [1 - F(c_{y^*})]w_y''\}$$

$$- \int_{c_L}^{c_{y^*}} cf(c)dc < (1+\beta) \left(1 - \frac{c_{y^*}}{1+\beta} \right)^\delta \left(1 - \frac{c_{z^*}}{1+\beta} \right)^\tau.$$

As an example, let us assume, following an example in Fernandez and Rodrik (1991), that c_i follows a uniform distribution on $[0, c^u]$. Hence, the density function $f(c) = 1/c^u$, and $F(c^*) = c^*/c^u$. There are many sets of parameter values such that inequalities 1 and 2 are satisfied simultaneously. $\beta = 0.9$, $\delta = \tau = 0.3$, $a_y = a_z = c^u = 1$, and $P_y''/P_y^o = P_z''/P_z^o = 0.8$ is one such example.

3. Gradualist approach to reform

We first make explicit one assumption in our following discussion. The government will put the second reform on the ballot regardless of whether the first one passes the ballot. With a gradualist approach, the price vector will be (P_y^o, P_z'') for $t = 1$ and (P_y'', P_z'') for $t = 2$, respectively. As before, whenever individual i in a sector

wants to switch sectors, she would want to switch only to sector x and to do so at $t = 1$. Therefore, she would switch to sector x if and only if

$$V(P_y^o, P_z'')(w_x'' - c_i) + \beta V(P_y'', P_z'')w_z'' > V(P_y^o, P_z'')w_y^o + \beta V(P_y'', P_z'')w_y''$$

or

$$c_i < c^{**} \equiv \beta(w_x'' - w_y'') \frac{V(P_y'', P_z'')}{V(P_y^o, P_z'')}.$$

A subscript y is omitted in c^{**}, since the discussion here is focused on individuals in sector y only. For a later discussion, we shall also need to know individual i's decision rule on sector switching when the tariff on good y is lifted in the second period but the tariff on good z is never removed. That is, the price vector evolves as (P_y^o, P_z^o) at $t = 1$ and (P_y'', P_z^o) at $t = 2$. Again, individual i would switch only to sector x at $t = 1$ if she ever wants to switch at all. She would switch to sector x if and only if

$$V(P_y^o, P_z^o)(w_x'' - c_i) + \beta V(P_y'', P_z^o)w_x'' > V(P_y^o, P_z^o)w_y^o + \beta V(P_y'', P_z^o)w_y''$$

or

$$c_i < c^{\#} = \beta(w_x'' - w_y'') \frac{V(P_y'', P_z^o)}{V(P_y^o, P_z^o)}.$$

Since

$$\frac{V(P_y'', P_z'')}{V(P_y^o, P_z'')} = \left(\frac{P_y^o}{P_y''}\right)^{\delta} = \frac{V(P_y'', P_z^o)}{V(P_y^o, P_z^o)},$$

we have

$$c^{\#} = c^{**}.$$

To see how the gradualist approach works, let us start from $t = 2$. At the beginning of this period, people will be asked about their opinion on the elimination of a tariff on good y. As before, everyone in sector x will be in favour of the tariff reform. It is important to note that people in sector z will also be in favour of it, since a lower price on good y unambiguously increases the utility of people in sector z.

Can people in sectors y and z act collectively to oppose the tariff reform on either good y or good z? The answer is negative for an important reason. Even if sector-z people promise to oppose a removal of tariff on good y in the second period in exchange for y-sector peoples' similar action in the first period, such a promise is not time-consistent. In other words, regardless of what people in sector y have done at $t = 1$, it is always ex post optimal for people in sector z to support

the removal of tariff on good y in the second period. Furthermore, each sector in a real economy is likely to have a large number of people, so that any such promise will be difficult to enforce. Consequently, any such promise by people in sector z will not be believed by people in sector y.

Now let us consider $t = 1$ when people are asked about their opinions on removing the tariff on good z. For an individual i in sector y, her life-time utility when the tariff on z is removed would be

$$
V(P_y^o, P_z'') \left\{ F(c^{**}) \left[w_x'' - \int_{c_L}^{c^{**}} \frac{cf(c)}{F(c^{**})} dc \right] + [1 - F(c^{**})]w_y'' \right\}
$$

$$
+ \beta V(P_y'', P_z'') \{ F(c^{**})w_x'' + [1 - F(c^{**})]w_y'' \}
$$

Her utility when the tariff on good z is not removed, will be

$$
V(P_y^o, P_z^o) \left\{ F(c^{\#}) \left[w_x'' - \int_{c_L}^{c^{\#}} \frac{cf(c)}{F(c^{\#})} dc \right] + [1 - F(c^{\#})]w_y'' \right\}
$$

$$
+ \beta V(P_y'', P_z^o) \{ F(c^{\#})w_x'' + [1 - F(c^{\#})]w_y'' \}
$$

The last two expressions have taken into account the fact the price of good y will be P_y'' at $t = 2$. Since $V(P_y^o, P_z'') > V(P_y^o, P_z^o)$, $V(P_y'', P_z'') > V(P_y'', P_z^o)$, and $c^{\#} = c^{**}$, everyone in sector y will always prefer to remove the tariff on good z at $t = 1$.

Therefore, the two-stage reform will always have a majority support in each stage.

4. Robustness to the two-period assumption

Does the result depend on the two-period framework? Technically, the two-period assumption is important only because it permits us to do backward inductions. The same type of backward inductions can be carried out in a multiple-period model with a known terminal date, Such an extension will not change the result.

In principle, in an infinite horizon environment (or a finite model with uncertain terminal date), there exists the possibility of collusion by people in sectors y and z collectively to block the reform. However, three reasons may make the collusion more difficult. First, most governments probably do not offer the same set of programs time and again in the future. Second, a real economy is not that of ten people, as in our example in the previous section, but that of 1 million people or more. Consequently, the numbers of people in the real-life equivalent of sectors y and z are large. Collusion involving a huge number of people is difficult.[11]

11 In a matured democracy, the existence of well-organized lobby groups partially solves the problem, since coordination among a small number of lobby groups, political parties, or parliament members is easier than it is among numerous individuals. In a transition economy where composition of a parliament, political parties, or organized interest groups are in infancy and typically are unstable, coordination is likely to be harder.

Third, we could introduce uncertainty about government stability, because either the same government may change its mind or a different government may be in power in future. If people place a positive probability on the event that the next-stage reform may not be carried out, then it works the same way as lowering people's subjective discount factor. This will also make collusion more difficult, since a high discount factor is required for collusion to occur in an infinite horizon model.

5. The virtues of a big-bang approach

To complete our argument, we now point out that, even in the context of this model, a big-bang approach, or simultaneous implementation of many minimum bangs, can be preferred to a gradualist approach under a range of circumstances.

First, whenever both big bang and gradualism are politically feasible (i.e., either in the absence of a status quo bias in a democratic setting or in a benevolent-dictator setting), the big bang is economically more efficient because it brings the benefits more quickly.[12]

Second, whenever status quo bias can be overcome (i.e., big bang is preferred to no reform), the big bang is in fact politically preferred to alternative reform strategies. By being 'politically preferred,' I mean that if the big bang is compared in a pairwise way with any of the following, it will win a majority support: (a) gradualism A (reforming y at $t = 1$ and reforming z at $t = 2$); (b) gradualism B (reforming z at $t = 1$ and reforming y at $t = 2$); (c) partial reform A (reforming sector y only); (d) partial reform B (reforming sector z only).

To see why the big bang is preferred to the alternatives, we note first that the most preferred reform by everyone in sector x is the big-bang. In comparing gradualism A (reforming y first and z next) with the big bang, people in sector y also prefer a big bang to delaying the benefit of removing tariff on z. Therefore, a majority (people in sectors x plus y) would support the big bang. Similar reasoning applies to other pairwise comparisons.

IV. CONCLUDING REMARKS

One important feature of reforms is that, ex ante, people are not sure whether they are necessarily gainers or losers. This paper argues that, in the presence of this uncertainty, a gradualist approach may be politically more sustainable than a big-bang strategy, because it splits the resistance force and allows an uninterrupted political support for the reform.

On the other hand, if popular support for the reform program is strong at the start, then a big-bang approach is better both because it brings the benefits faster and because it is politically preferred to various schemes of partial or gradual reforms.

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12 As a counter example, Lian and Wei (1996) constructed a multi-sector model in which a big bang reform can sometimes be dominated by a gradual one even on the efficiency ground.

One important question that this paper does not address is: when gradualism is the better strategy (relative to a big bang), what determines an optimal sequencing? There are serious works on the subject (see Edwards 1990; McKinnon 1991), but how political constraints might alter the optimal sequence has not been explicitly considered. Such will be an important extension to the current paper.

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