

A Note on Redistributive Fairness and Economic Reform*

Anna Rubinchik[†], Ruqu Wang[‡]

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Abstract

To understand reasons for possible failures of ‘good’ economic reforms, we consider an institution which is always successful in making the best public decision from the utilitarian perspective. We show it is bound to introduce inequality if costs of a reform are privately known: the losers can not be always compensated. Thus, if equity is a primary concern then some reforms with positive aggregate net gain might not be undertaken. If the utilitarian welfare is the only guide for making public decisions, implementing a reform might require the ability to ignore the associated social costs of inequality.

Key words: economic change, common decision-making, equity, efficiency.

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[†]Anna.Rubinchik@colorado.edu, University of Colorado at Boulder, Department of Economics, UCB 256, Boulder, CO, 80309.

[‡]WangR@qed.econ.queensu.ca, Queen’s University, Department of Economics, Kingston, Ontario, Canada K7L 3N6.

1 Introduction

“Western countries said democracy would help economic reform in Africa. Its rulers said only authoritarian government could do it. Both were wrong... In Asia and Latin America, economic reforms had often been started by authoritarian regimes, but in Africa, where states are fragile, governments have had to carry out economic reforms and democratise at the same time.”¹

Not surprisingly, similar debates have emerged in economic literature. Omitting the review, we mention just two directly related contributions. Good reforms might not pass in some citizen-candidate equilibria, as Jain and Mukand (2003) have shown. Moreover, the probability of success of a reform might not be monotonic in the gains the reform brings. Fernandez and Rodrik (1991) demonstrate that individual-specific uncertainty regarding winning or losing in a reform can hinder good reforms, given that no transfers are allowed and the decision is made under a simple majority rule. This approach provides an important step in understanding the difficulties that reforming entails. However, picking one particular mechanism of implementing reforms and showing that it might fail sometimes, in general, is not sufficient to identify the driving force behind the obstacles a reformer might face. There are at least two reasons for that.

1. It is not clear whether it is the uncertainty (or asymmetric information) about individual attitudes towards the reform that causes the failure or it is the particular way the decision about the reform is made. Moreover, one may adopt a view that institutions (understood here as ways to make common decisions) are endogenous, and thus evolve (under mutual consent). In this case, blaming institutions for the failure provides a ‘short-term’ explanation, thus, potentially, concealing fundamental reasons that prevent good reforms.
2. A policy decision is rarely based just on an announced platform of a victorious politician. Mass media (sometimes taking a ‘strong’ stand), demonstrations, etc., might affect it as well. Hence, even from a positive perspective, one would want to analyze a wider range of possible ways a society to make common decisions.

¹The Economist, Sept 18th 1997, p.49.

To sum up, in order to find fundamental reasons for why reforms fail, one has to understand what is necessary to always implement ‘good’ reforms, and why the associated policies might be unacceptable. The basic lesson from this brief investigation is that the most efficient institutions are not always ‘fair’. They have to introduce unequal distribution of net benefits, even though after the reform there are enough resources to redistribute so that everyone’s welfare improves. If equity is a primary concern, and thus those who lose more have to be compensated more, then some good reforms might fail. If the aggregate net benefit is the only guide for making public decisions, undertaking a reform might require a substantial ‘political capital’ for its implementation.

2 Optimal Transfers

First we want to describe the optimal transfers (taxes/subsidies) that are needed to *always* implement a ‘good reform’ in the presence of asymmetric information about individual costs, i.e., incentive-compatible (IC) transfers. Next, we inspect the properties of these transfers and conclude that they inevitably introduce inequality.

2.1 How to Carry out Good Reforms

We want to stress that asymmetric information per-se does not necessarily prevent good reforms. To do so, we adopt a rather standard argument.² N risk-neutral individuals living in a country have to decide whether to make a reform. The status-quo payoff is zero to all. In case the reform is undertaken, each individual gets the same (normalized) benefit $a > 0$, but ‘personal’ costs of transition differ and those costs are only privately known. This formulation is a ‘reduced form’ of the models mentioned in the introduction. Moreover, it is closely related to the approach accepted in development economics.³ Alternatively, one can view both the benefit and the cost as privately known, thereby preserving the important feature of this model — asymmetric information about net benefits. We want to enable the ‘first-best’ decision-making procedure that maximizes the ex-ante utilitarian welfare, i.e., the one that prescribes the reform if and only if the

²See, e.g., d’Aspremont and Gérard-Varet (1979).

³See Ray (2000) for an overview and examples of the relevant policies.

sum of the costs is below the total benefits. To elicit information about the costs, one has to provide proper incentives, say, to either compensate an individual with a monetary transfer $\tau > 0$, or tax (punish) him with $\tau < 0$. The transfers across individuals have to sum up to some number T , which reflects the resources available for carrying out the reform. If $T = 0$, we impose ‘a balanced budget’; if it is positive, there is an outside source of financing the reform; if it is negative, the reform must generate a given amount of wealth.

Assume that the uncertainty is ‘idiosyncratic,’ so that the costs incurred by individuals can be viewed as independent random variables. For example, those might be the costs of adapting to new ways of doing business, operating computerized data bases, tolerating a wider range of social norms, etc. For simplicity of exposition, assume all of them are drawn from the same distribution F with compact support $[\underline{c}, \bar{c}]$ and density $0 < f < \infty$ on $[\underline{c}, \bar{c}]$. Also, we consider only ‘interesting cases,’ in which the desirability of a reform is not clear ex-ante, i.e., $a \in [\underline{c}, \bar{c}]$.

We want to describe a decision-making procedure under which the right decision *can be* made.⁴ Hence, we can apply the revelation principle. Let us imagine that individuals ‘report’ their costs by dancing in the streets, burning tires, writing newspaper articles, etc. and they get taxed/compensated based on such a ‘report’ according to some ex-ante known rule, $\tau : [\underline{c}, \bar{c}] \rightarrow \mathbb{R}$. This rule is anonymous. Identical individuals are to be treated identically: the transfer is independent of ‘irrelevant’ individual characteristics, just the reported costs of transition come into play. As such, it is ‘horizontally’ equitable in the ex-post sense (after the costs are realized). And, of course, the reform goes ahead only if the sum of the reported costs is below Na , so that from the point of view of individual i reporting r , the probability that the reform happens, $Q(r)$, is just $\Pr\left(\sum_{j \neq i} c_j + r \leq Na\right) = F_{N-1}(Na - r)$, where F_{N-1} is the distribution of the sum of $N - 1$ random variables (costs incurred by others, $(c_j)_{j \neq i}$), each independently drawn from F .

Consider an individual whose cost is c and who reports r . His (interim) payoff is then

$$V(r|c) = Q(r)(a - c) + \tau(r)$$

To motivate a truthful report, the transfer should be chosen such that the ‘first order conditions’ are satisfied.⁵ So reporting true cost, $r = c$, is optimal

⁴Thus, we are interested in a ‘weak’ implementation.

⁵Sufficiency follows by the standard argument from monotonicity of Q .

for such an agent; i.e.,⁶

$$V'(c|c) = Q'(c)[a - c] + \tau'(c) = 0 \quad (1)$$

Condition (1) is incentive compatibility, and it is equivalent to

$$\tau'(c) = (c - a) Q'(c) \quad (2)$$

One can solve this equation for τ , by integrating both sides,

$$\tau(c) = \int_{\underline{c}}^c (x - a) dQ(x) + \tau(\underline{c}) \quad (3)$$

where the constant, $\tau(\underline{c})$, depends on (total expected budget) T through condition $E(\tau(c)) = T/N$. So by integrating equation 3 by parts,⁷

$$\tau(\underline{c}) = T/N + \int_{\underline{c}}^{\bar{c}} (1 - F(c))(a - c) dQ(c) \quad (4)$$

Clearly, equations (3,4) fully describe the incentive compatible transfer scheme.⁸ It enables eliciting true costs from individuals and adopting the reform iff the costs are below the benefits. So, again, *the presence of asymmetric information does not have to prevent good reforms from being undertaken*. What does then?

Individuals might be concerned about the distribution of net benefits. In a ‘fair’ world they might expect the ‘losers’ to be compensated, implying transfers should increase with costs. Besides, given that the total gain under a good reform is sufficient to fully compensate everyone, such redistribution should take place, as one would expect. However, these expectations might be inconsistent with the optimality.

2.2 Optimal Transfers are Single-Peaked in Costs

First, we show that the optimal transfers have to decrease for high enough costs.

Claim 1 *The expected incentive compatible transfer τ is non-monotonic, it increases for $c < a$ and decreases otherwise.*

⁶This holds for all the values of the argument c for which the derivative of τ exists.

⁷The integrals are well defined as $Q' < \infty$ by our assumptions on F .

⁸This also implies $\tau(c)$ is unique and continuous.

Proof. Clearly, the higher is individual report, the lower is the chance the reform will go ahead, $Q'(c) = -F'_{N-1}(Na - c) < 0$. So the conclusion follows from (2). ■

We showed that the optimal transfer should be quasiconcave with the peak at $c = a$. There is no doubt that this rule is sensible: those with low costs (below a) view reform as desirable, and, in the absence of transfers, would want to increase the chance it happens, thus having a clear motivation to under-report the costs. To prevent that from happening, the transfers should increase with the reported costs to make sure reporting a smaller cost will also cause a reduction in compensation, and this reduction should be exactly equal to the benefit from an increased likelihood of the desired event. Similarly, those with higher costs ($c > a$) should not be interested in trying to prevent a reform by inflating their costs, as their compensation will decrease as a result.

It is important to understand that according to this rule those with costs above the gain (“opposition to the reform”) should expect to get smaller transfers than some of those whose costs are lower (say, individuals with costs comparable to the gain, a). Hardly a popular rule — whether individuals are aware of the personal cost to pay or not.

In the next section, we show that the single-peakedness of individual expected transfers is limiting the actual (ex-post) compensation, especially for a ‘big’ country.

2.3 Compensation Shrinks with the Number of Individuals

The next result implies that if the number of individuals is large enough, incentive compatibility prescribes the transfer scheme to be less sensitive to the cost reports, thereby decreasing the range of transfers to be distributed. As N approaches infinity, individual compensation becomes independent of costs.⁹ Let the range of expected transfers be denoted by $\Delta_\tau \stackrel{\text{def}}{=} \max_{x,y \in [\underline{c}, \bar{c}]} |\Delta\tau(x, y)|$, where $\Delta\tau(x, y)$ is the difference in transfers for individuals with costs $x, y \in [\underline{c}, \bar{c}]$, $x > y$.

⁹This is independent of what is the initial distribution of costs, F , and, therefore, applies to cases when no information about this distribution is available. Clearly, if the mean of the distribution is known, with N large enough, desirability of the reform can be determined without eliciting any information from the individuals.

Claim 2 *The range of expected transfers, $\Delta\tau$, narrows to zero when $N \rightarrow \infty$.*

Proof. Note that by characterization (3), $\Delta\tau(x, y) = \int_y^x (c - a) dQ(c)$, for $x, y \in [\underline{c}, \bar{c}]$, $x > y$. By the Central Limit Theorem, as N increases, F_{N-1} converges to Normal distribution with mean $(N-1)\mu_F$ and variance $(N-1)\sigma_F^2$, where μ_F and σ_F^2 are the mean and the variance of F correspondingly. This implies that for any finite $x, y : x > y$ the difference $F_{N-1}(x) - F_{N-1}(y)$ converges to zero as N increases, and therefore, so is $\int_y^x dQ(c)$. But the range of transfers is bounded by this expression times a constant, $|\Delta\tau(x, y)| = \left| \int_y^x (c - a) dQ(c) \right| \leq k \left| \int_y^x dQ(c) \right|$, $k = \max\{a, x\}$, so the result follows. ■

One can obtain a similar result if the number of individuals is sufficiently large (but fixed) (so that $F_{N-1}(x)$ is sufficiently close to the Normal distribution) by increasing the variance σ^2 of the original distribution of costs, F . As $Na - c$ belongs to the compact interval that contains the mean of $F_{N-1}(x)$ (recall that $a \in [\underline{c}, \bar{c}]$), one can make the density $F'_{N-1}(Na - c)$ arbitrarily low for $c \in [\underline{c}, \bar{c}]$ by increasing σ^2 . This, in turn, by (2), flattens the transfer function.

Now let us consider the implications of the range of expected transfers being limited by, say, $\varepsilon > 0$. Assume for now there are no outside funds, i.e., $T = 0$. How should the transfer scheme look like under the two scenarios: if the reform goes ahead and if it is decided against?

Let τ_A (τ_B) be the transfer scheme in case of reform (no reform). To fully compensate the losers $\tau_A(c)$ has to be increasing. By quasiconcavity (claim 1), the range of the expected transfer, $\tau(c)$ on $[\underline{c}, \bar{c}]$ is the biggest of the differences $H \stackrel{\text{def}}{=} \tau(a) - \tau(\bar{c})$ and $L \stackrel{\text{def}}{=} \tau(a) - \tau(\underline{c})$. We will focus on L . Let $\Delta Q \stackrel{\text{def}}{=} Q(\underline{c}) - Q(a) > 0$, $\Delta\tau_s \stackrel{\text{def}}{=} \tau_s(a) - \tau_s(\underline{c})$, $s \in \{A, B\}$, which implies $L = Q(a)\Delta\tau_A + (1 - Q(a))\Delta\tau_B - \Delta Q(\tau_A(\underline{c}) - \tau_B(\underline{c}))$. Then, if $Q(a)\Delta\tau_A > \varepsilon$, so that the transfer scheme is increasing sufficiently fast (or the range is small enough), the rule implies that either $\Delta\tau_B < 0$ or $\tau_A(\underline{c}) - \tau_B(\underline{c}) > 0$ or both. The first inequality implies *the tax for a higher reported cost, $a > \underline{c}$, is higher in case of no reform*. The second inequality requires the transfer to the highest potential beneficiary from the reform, in case it is decided against, should be *lower* than in case the reform is initiated. In particular, if $\tau_A(\underline{c}) < 0$, i.e., she is taxed if a reform is undertaken, then $\tau_B(\underline{c}) < 0$, and she should also be taxed if no reform is undertaken. Therefore, the proponents of a reform, too, are ‘punished’ in case the reform does not start at all.

Hard to imagine a victorious politician running on a platform supporting such transfers.

Another way to implement an incentive transfer scheme in this case, of course, is to adopt a rather flat τ in both cases (reform or not). This clearly limits re-distribution of gains, and therefore shares the same problem.

In general, the results presented so far imply that, as a consequence of even considering a reform, the distribution of net benefits becomes more unequal as compared to the status-quo. Recall that the required transfers depend on potential costs, and if the costs are beyond individual control (say, related to innate ability), the resulting distribution would be based on a ‘pure luck’ as viewed by a citizen. If such ‘ex-ante’ horizontal equity considerations are important, good reforms with aggregate benefits above total costs will not be undertaken.

Instead of considering the whole distribution of the after-transfers (net) benefits, one can consider another “Rawlsian” equity criterion which in this case is the well-being of the individual with the highest cost.

2.4 The Least-Fortunate Might Lose

Under the incentive-compatible transfer rule, a person with cost \bar{c} has the lowest expected utility, making him ‘the least-fortunate’ in the country. To see that, let $U : [\underline{c}, \bar{c}] \rightarrow \mathbb{R}$ be an expected utility of an agent who reports his true cost c , given the rest of the agents report their true costs as well. Then $U(c) = Q(c)(a - c) + \tau(c) = V(c|c)$. Using first order condition (1), we get the (by-now) textbook characterization,

$$U'(c) = -Q(c) \Rightarrow U(c) = U(\bar{c}) + \int_c^{\bar{c}} Q(x) dx \quad (5)$$

which implies that U , the after-transfer expected utility, is strictly decreasing in cost c .

The next claim assures that reforms with bigger gains make everyone (including the least-fortunate individual) better off. Immediate also from (4) and (3) that increasing ‘the outside sources of financing the reform’, T , has the same effect. By the way, it also implies that a ‘bigger pie’ should make reforms easier, as one would expect, and contrary to the finding by Jain and Mukand (2003), who rely on a particular decision-making mechanism.

Claim 3 *The expected utility $U(c)$ grows with a .*

Proof. Follows from (5) by noting that $Q(x) = F_{N-1}(Na - x)$ is increasing in a . ■

It is clear then a lower gain (a) or a tighter budget (T) might push the utility of the highest-cost individual below zero.¹⁰ Thus it is below the ‘status-quo’ level, i.e., the payoff in the absence of a ‘reform institution’ (either embodied as a ruler who commits to the first-best transfer scheme, or a set of rules to be agreed upon by the individuals residing in a country, say, a ‘law’). This, in particular, implies that the least-fortunate will be either under-compensated in case the reform is initiated or taxed in case it does not, or both. It is then not surprising that some individuals are reluctant to ‘sign up’ to such a law (or support such a reformer), even if at that time they are still uncertain about their costs (as in Fernandez and Rodrik (1991)).

3 Conclusions

Reforms might generate differentiated benefits, see for example a recent study by Topalova (2005) evaluating effects of 1991 trade liberalization in India. At least to a certain extent, we show, the ‘equity-efficiency’ dilemma facing a reformer is unavoidable: the optimal transfers supporting good reforms in the presence of asymmetric information about personal costs of transition have to introduce some inequality.

These observations echo the findings in the recent literature on endogenous inequality studying the effect of “market mechanisms” on distribution of incomes (see Matsuyama (2000) and Mookherjee and Ray (2007)): individual incentives, naturally, are crucial, though the mechanism itself in those models is different.

There are many reasons why equity considerations might be important in public decision-making. It is not uncommon, for example, to observe ‘unfair’ transfers imposed in the course of large-scale reforms. As an illustration consider Soviet industrialization during the period of 1927-1941. With any form of opposition violently suppressed, the reforms went through, accompanied by the stagnation of agriculture (till 1956),¹¹ a hierarchical rationing

¹⁰This is an indirect implication of the impossibility of implementing first best under ‘individual rationality’ constraint ($U(\bar{c}) = 0$) coupled with budget balancedness ($T = 0$). See, for example, Myerson and Satterthwaite (1983), Mailath and Postlewaite (1990), Rob (1989).

¹¹Allen (2003, p. 109) also documents the “concentration of resources on heavy industry

of food and most of the consumer goods (1928-1935),¹² and in the shadow of the forced contribution of ‘convicted’ labor.¹³ It is hard to even speculate whether total benefits outweighed the costs in that case, as constructing a convincing counterfactual scenario is close to impossible. However, one could argue that a political system that disregards equity considerations and ignores the problems of benefits equalization could easily slip into adopting reforms with negative total net gain, neglecting also the ‘potential compensation test’, i.e., the utilitarian criterion.

One might want to embed equity concerns into a social objective and look for the decision rule and transfers that maximize it, or, at the very least, constrain the ex-post distribution of net benefits (as measured, say, by the Gini index). However, under such rules, *some* reforms generating positive net gain ($Na - \sum_i c_i$) will not be carried out, thus ‘leaving money on the table.’ Same applies if one is to adopt the ‘Rawlsian’ constraint of protecting the least fortunate.¹⁴

We do not offer a resolution to the ‘equity-efficiency’ trade-off, though its formulation might provide an explanation why, as noted by Rodrik (1996, p. 10) in his overview of economic reforms (1960-1980) around the world, “...the implementation of good economic policy is often viewed as requiring ‘strong’ and ‘autonomous’ (not to say authoritarian) leadership.”¹⁵

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to the detriment of agriculture”. See Jasny (1961, p.419) for evidence of artificially low prices of agricultural products in later years of the industrialization.

¹²See Davis and Hlevnuk (1999, p. 88)

¹³Allen (2003) provides a variety of estimates ranging from 23% to 2% of the workforce provided by the inmates during that period.

¹⁴These implications are independent of the probability distribution which generates individual costs of transition, as long as they are independent. Allowing for some form of interdependency, as Neeman and Lehrer (2000) show, does not resolve the trade-off: when the number of individuals grows, requiring the reform to have unanimous support (assuring a positive expected net payoff to all) leads to failure of accepting any changes. Other forms of correlation in costs might help to assure first-best with non-negative expected payoff to all (see McAfee and Reny (1992)), but the ex-post (actual) net payoffs are not guaranteed to be positive.

¹⁵See also Harberger (1993), Velasco and Tommasi (1996) for similar accounts.

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