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Incentives, Institutions, and Development Assistance

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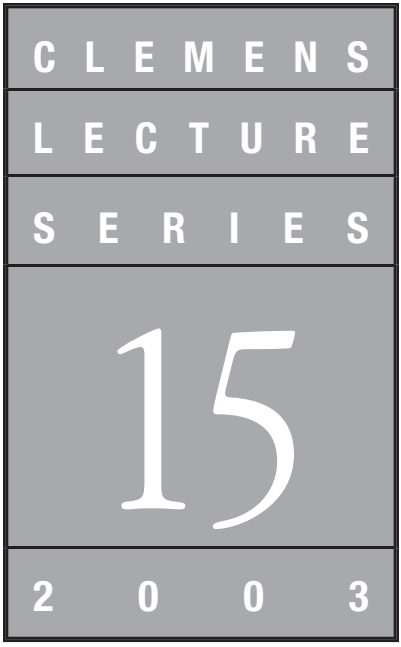

Incentives, Institutions, and Development Assistance

Lecture by
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Dr. Michael Kremer received his Ph.D. from Harvard University in 1992 and is currently Professor of Economics at Harvard and Senior Fellow at the Brookings Institution. Dr. Kremer previously served as a teacher in Kenya (1985-86), founded WorldTeach, a non-profit organization which places one hundred volunteer teachers annually in developing countries (1986-89), and taught at both the University of Chicago and the Massachusetts Institute of Technology. He has been a National Fellow at the Hoover Institution at Stanford University (1994-95), and a recipient of both a MacArthur "genius" fellowship and a Presidential Early Career Award for Scientists and Engineers. Dr. Kremer's recent research includes work on the evaluation of health and educational programs and incentives for research and development on malaria, tuberculosis, HIV and other diseases affecting developing countries.

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Introduction

The development community now appreciates the importance of institutions and the incentives they create. Indeed, the most recent *World Development Report* opens with the following quote from Douglass North: "We must create incentives for people to invest in more efficient technology, increase their skills, and organize efficient markets. Such incentives are embodied in institutions."[1]

Much work examines the impact of institutions and incentives within developing countries. In particular, I will discuss two cases, each identifying a problem of perverse incentives created by current institutions, and then discusses a potential alternative set of institutions that might address the problems. The first concerns pharmaceuticals and the second the debts of dictators.

1. Incentives for R&D on Diseases of the Poor

Many development assistance institutions are organized on a country basis. This institutional structure leads to an under-emphasis on assistance for global public goods. One such global public good is knowledge; since many countries share its benefits, no single country or development assistance institution has sufficient incentive to encourage knowledge development. We will look at the consequences of the under-provision of the global public good of knowledge on the health problems of developing countries.

Given that development of a malaria or AIDS vaccine would be a global public good in which no single country has adequate incentive to invest, R&D focused on vaccines seems like a natural candidate for development assistance. However, the world currently lacks appropriate institutions to encourage research and development on vaccines for diseases of the poor.[2]

The World Health Organization (2001) estimates that malaria, tuberculosis, and the strains of HIV prevalent in Africa kill over five million people each year, overwhelmingly in poor countries. Yet in spite of to this enormous burden, very

little research is directed towards cures for these diseases, especially towards vaccines. Potential developers of vaccines that would be appropriate for poor countries fear that they would not be able to sell enough of their product at a sufficient price to recoup their research investments. This is both because these diseases primarily affect poor countries and because vaccine markets are severely distorted and current institutions provide inadequate incentives to overcome the distortions. Let us consider the reasons for underinvestment in vaccine R&D, the problem with incentives under existing institutions, and the potential for a purchase commitment to address the joint problems of providing access to products and incentives for the development of needed products.

Many developing countries have historically provided little or no intellectual property-rights protection for pharmaceuticals. This is in part because once drug companies have sunk resources into developing vaccines, governments find it attractive to use their powers as regulators, major purchasers, and arbiters of intellectual property rights to obtain products at prices which cover manufacturing costs, but not research costs. The recent debate over pricing AIDS drugs in Africa provides an example of this dynamic.

Moreover, since research and development on vaccines for malaria, tuberculosis, and HIV/AIDS is a global public good that benefits many small countries, no single country has an incentive to encourage research by offering higher prices. Consequently, there is a huge gap between the low returns that potential vaccine developers could expect and the high benefits the vaccine, if developed, would provide for society. Indeed, most vaccines sold in developing countries sell for a fraction of their social value. A malaria vaccine would be worth about $40 per person immunized relative to other developing country health programs.[3] The gap between the $40 at which a vaccine would be cost-effective and the $1 or $2 that the historical record suggests a vaccine developer would be likely to obtain implies that, under current institutions, potential vaccine developers would not have incentives to pursue socially valuable research opportunities.

In practice, very little research is oriented toward diseases that primarily affect poor countries, which include tropical diseases such as malaria and tuberculosis. Of the 1,233 drugs licensed worldwide between 1975 and 1997, only 13 were for tropical diseases. Two of these were modifications of existing medicines, two were produced for the U.S. military, and five came from veterinary research. Only four were developed by commercial pharmaceutical firms specifically for tropical diseases of humans.

Even if development assistance is reoriented towards the global public good of encouraging R&D on problems of developing countries, the form such support takes will be critical. Institutions to encourage vaccine development could take

two broad forms. "Push" programs subsidize research inputs ahead of time, for example through R&D tax credits or grants to researchers, while "pull" programs reward the development of an actual vaccine after it is proven effective. Economic theory suggests that push programs allow people seeking research funding and even those within funding institutions to hide relevant information or alter their behavior for personal gain. Under a system of grant-financed research, researchers may have incentives to report overly optimistic assessments to their superiors or to devote effort to other activities, such as publishing articles, rather than to focus on development of the desired product.

These problems with push programs are illustrated by the U.S. Agency for International Development's (USAID) efforts to develop a malaria vaccine. USAID overcame the problem of being focused exclusively on individual countries and correctly identified one of the most pressing needs of the developing world, but the incentive structure it adopted was not suited to the goal of developing a marketable vaccine. In 1984 the agency claimed that there had been a "major breakthrough in the development of a vaccine against the most deadly form of malaria in human beings. The vaccine should be ready for use around the world, especially in developing countries, within five years."[4] During the USAID program, external evaluators suggested that additional funding should not be provided to two of the three research teams on which USAID's funding efforts focused. However, as a result of over optimistic information provided by the project director, USAID provided substantial new resources to all three teams and was sufficiently confident that vaccines would be developed that it even arranged to purchase monkeys with which to test a vaccine. Monitoring difficulties also manifested themselves in the form of corruption. Two of three researchers transferred grant funds into private accounts and the project director received kickbacks for the contract to purchase monkeys. By the end of the project, USAID had spent $60 million on its malaria vaccine effort with few results. Though the criminal activity is unusual, this example illustrates the vulnerability of push programs in general to unrealistic optimism and monitoring problems. A pull approach would better align researchers' incentives with USAID's goals.

Under pull programs, some public organization promise to pay for a successful drug but pays nothing unless a viable product is developed. These programs have several attractive features relative to traditional push programs for encouraging the later stages of vaccine development. They give researchers incentives to self-select projects with a reasonable chance of yielding a viable product rather than to oversell their research prospects to research administrators and the public. They allow politicians and the public to be confident that they are paying for an actual product rather than supporting a development effort that might not be warranted

scientifically. Pull programs also provide strong financial incentives for researchers to focus on developing a marketable product rather than pursuing other goals, such as publishing articles. Finally, appropriately designed pull programs can help ensure that if new products are developed, they will reach those who need them. For example, developed countries or private foundations could commit to purchase malaria vaccine at $5 per immunized person and to make it available to developing countries either for free or in return for a modest co-payment.

Designing a Purchase Commitment

The design of a purchase commitment will be a critical determinant of its effectiveness. If potential developers are to invest in research, they must believe that once they have sunk funds into developing a desired product, the sponsors of a purchase program will not renege on their commitments but will pay a price that covers both the cost of manufacturing and research. Courts have held that similar public commitments to reward contest winners or to purchase specified goods constitute legally binding contracts and that the decisions of independent parties appointed in advance to adjudicate such programs are binding. For example, in the 1960s the U.S. government pledged to purchase, at a minimum price, domestically produced manganese. After the world price of the commodity fell and the General Services Administration (GSA), the U.S. executive agency in charge of administering the program, attempted to renege, U.S. courts forced the GSA to honor the commitment. The credibility of a purchase commitment can be enhanced by clearly specifying eligibility and pricing rules and insulating decision makers from political pressure through long terms of service.

If donor governments, international organizations, or private foundations commit to purchase a future vaccine, they should set out in advance the principles for determining the eligibility of candidate vaccines for purchase and the price they would be willing to pay for a vaccine. Eligibility conditions for candidate products would likely include some minimal technical requirements that would ordinarily include clearance by a regulatory agency, such as the U.S. Food and Drug Administration (FDA). They might then be subject to a market test: nations wishing to purchase products might be required to provide a modest co-payment tied to their per capita income. Requiring countries that receive vaccines to provide co-payments in exchange for the product would give countries incentives to carefully investigate whether candidate products are appropriate for their local conditions. Any product meeting the technical requirements and attracting requests from developing countries would be eligible for purchase.

A purchase commitment could also include a system of bonus payments. To provide potential developers with a credible commitment, the program would need

to specify a base price which would be paid for vaccines meeting the technical requirements and the market test. However, it would be desirable for developers to have incentives to develop products that exceed such a minimum threshold. To some extent, this incentive will be provided by the threat of competition from superior products being developed by other companies. However, it would also be useful to have a system of bonus payments that would depend on the quality of the product. Guaranteeing a base price for products which met a basic standard would provide the necessary reassurance to potential developers, while a system of bonus payments for products which exceeded this standard would preserve the benefits of flexibility.

Pricing and Cost of a Commitment

Given the enormous burden of diseases such as malaria, tuberculosis, and HIV/AIDS, it is important to provide sufficient incentive for many researchers to enter the field and to induce major pharmaceutical firms to pursue several potential leads simultaneously so that products can be developed quickly. Moreover, given the limited cost-effectiveness of current products for these diseases and the difficulty of improving prevention through behavioral change, there is little risk that payments made as a result of a purchase commitment could exceed the cost of saving the equivalent number of lives using today's treatments or expanded prevention programs.

Estimates indicate that a $250 to $500 million real annual market is needed to motivate substantial research. The nominal size of a purchase commitment made now should be larger, perhaps beginning around $330 million per year to accommodate inflation, given that vaccines may not be developed for some time. A commitment at this level would be extremely cost effective, costing approximately $4 per year of life saved. Over ten years about 1.9 billion discounted disability adjusted life years (DALYs)[5] could be saved (which is equivalent to saving the lives of around 63 million thirty-year olds) at a cost of approximately $4 per year of life saved. In comparison, anti-retroviral treatment of AIDS is estimated to cost $1100 per person per year and, since treatment would not be perfectly effective, the cost per year of life saved is likely to be considerably greater.

The details of which vaccine sales would qualify would be worked out by USAID under this program, and the details of their procedures will be quite important for the effect of the program. Biotech and pharmaceutical firms are more likely to find the commitment credible if, once the needed funding legislation is passed, USAID quickly specifies guidelines for how it will allocate credits. In particular, USAID would need to specify how it will address issues of vaccine pricing (presumably, it would not approve credit allocations for a small quantity of vaccine sold at tens

of thousands of dollars per person immunized), how much of the fund could be spent on a vaccine that is currently far along in research, such as the pneumococcus vaccine, and what procedures would be used to allocate credits if multiple versions of a vaccine were available.

The World Bank president, James Wolfensohn, has also said that the institution plans to create a $1 billion fund to help countries purchase specified vaccines if and when they are developed. However, the World Bank has yet to act on this commitment. Some within the Bank have advocated a more general program to combat communicable diseases of the poor. However, for a general program to stimulate research, it must include an explicit commitment to help finance the purchase of new vaccines if and when they are developed. Without an explicit commitment along the lines proposed by Wolfensohn, it is unlikely that the large-scale investments needed to develop vaccines will be undertaken.

Private foundations could also play a major role in creating markets for new vaccines. Foundations may find it easier than governments to commit credibly to future vaccine purchases, given their greater continuity of leadership. For instance, the Gates Foundation, with $22 billion in assets and a focus on children's health in developing countries and vaccines in particular, is well placed to forward a vaccine purchase commitment. While continuing to fund its other priorities, a foundation could put its principal to use in encouraging vaccine research simply by pledging that if a vaccine were actually developed, the foundation would purchase and distribute it in developing countries.

Thus, any of several organizations—including national governments, the World Bank, and private foundations—have the ability to create a credible purchase commitment to stimulate vaccine research. If such a commitment fails to induce the development of the needed products, no funds would be spent. If it succeeds, millions of lives would be saved each year at a cost of a few dollars each.

2. Odious Debt

Sovereign debt is another area where it would be beneficial to review the current norms and institutional structures. Current institutions provide incentives and opportunity for dictators to borrow internationally, loot the funds, and leave the debt to be repaid by successor governments and ultimately their people. Simply allowing countries to renounce debt *ex post* (afterwards) would also provide inappropriate incentives, but an international institution that ruled on the legitimacy of debt *ex ante* (ahead of time) would provide better incentives.

When the United States gained control of Cuba in 1898 after the Spanish-American War, it repudiated the debt accumulated by Cuba under Spanish rule.

The arguments made by the U.S. during peace negotiations are the origins of the *doctrine of odious debt*. The U.S. claimed that the U.S. and/or Cuba should not bear the obligations because, first, the debt had been "imposed upon the people of Cuba without their consent"; second, it had not "been incurred for the benefit of the Cuban people"; and, third, "the creditors, from the beginning, took the chances of the investment."[6] Spain never accepted the validity of the U.S. arguments, but the U.S. implicitly prevailed, with Spain taking responsibility for the Cuban debt under the peace treaty.

Legal scholars have elaborated a doctrine of odious debt, using definitions that parallel the U.S. arguments quoted above. They argue that sovereign debt is *odious* if (1) its purpose does not benefit the people and (2) it is incurred without the consent of the people. Some scholars argue that odious debt incurred by one government should not be transferable to a successor government. Others hold that debt should remain transferable unless (3) creditors were aware in advance that (1) and (2) held. Just as an individual does not have to repay if someone borrows in her name, the argument is that the population is not responsible for illegitimate loans taken out by the government. The doctrine would give banks a disincentive to lend to odious governments in the first place, since the loans would not be recognized and repaid by successor regimes.

Loans to the apartheid government in South Africa are an interesting recent case. The apartheid regime borrowed from abroad in part to build up its military and police and otherwise repress the African majority. Private banks continued to lend to the South African government during the 1980s. The Archbishop of Cape Town has since campaigned for apartheid-era debt to "be declared odious and written off," and South Africa's Truth and Reconciliation Commission also questioned whether the post-apartheid government was responsible for repayment of the "odious debt." The South African government, however, has not endorsed this position. When apartheid was being dismantled in 1993, future-President Nelson Mandela called for the world to normalize economic relations with South Africa, and three days later the finance minister announced at an investor conference in New York that South Africa would repay its sovereign debt. It seems that the new leadership of South Africa was concerned about building a reputation for playing by the rules of capitalism, and it worried that defaulting on debt would hurt its chances of attracting new foreign investment.

There are other cases in which corrupt dictators borrow from abroad, expropriate the funds for personal use, and leave the debts to the population they had ruled. For example, under Mobutu Sese Seko, the former Zaïre accumulated over $12 billion in sovereign debt, while Mobutu diverted public funds to his personal accounts (his assets reached $4 billion in the mid-1980s) and to his efforts to retain

power (e.g., payments to cronies, military expenses). Similarly, when Ferdinand Marcos lost power in 1986, the Philippines owed $28 billion to foreign creditors, and Marcos' personal wealth was estimated at $10 billion. Lending to governments without regard for their odiousness thus seems to be the status quo of international lending. Under the existing system, banks lend to governments including those of apartheid South Africa and Anastasio Somoza in Nicaragua. Some odious regimes such as that of Charles Taylor in Liberia do not receive loans from commercial banks, but this seems to be because the regime is following policies that make lending risky, and not because of odiousness *per se*.

Under the status quo, successor governments typically accept responsibility for debt, even if the predecessor regime is regarded as odious. Looting is not a valid excuse for failure to repay. Countries are deterred from default either through sanctions such as seizure of assets or through loss of reputation and governments fear that they will face these penalties even if their non-repayment is made from the high moral ground. For example, South Africa has not repudiated the apartheid-era debt. In Nicaragua, the Sandinista government came close to repudiating Somoza's debt but reconsidered when their allies in Cuba advised them that doing so would alienate them from Western capitalist countries and was unwise.

One reason that the doctrine of odious debt has not gained wide recognition under international law is a concern that it would create a slippery slope. Governments lie on a continuum in the extent to which they do or do not have the consent of the people and do or do not spend for their benefit. A leading legal scholar writes, "the concept of odious debts tends to be expanded as States seek a pretext for avoiding obligations which otherwise would be imposed upon them, and for this reason it is essential strictly to limit it."[7] It seems difficult to avoid the danger of shutting down international capital flows entirely if it is left to the debtor country to determine *ex post* whether debt qualifies as odious. The Mexican government could disavow debts run up during the era of PRI domination, or a future U.S. government could renounce debts incurred before the passage of the Voting Rights Act of 1965. If, instead, the creditor assesses odiousness, it will tend to find governments non-odious. An outside judge also might falsely label previous governments as odious if it values the welfare of indebted countries. Once a loan has been granted, the judge could shift part of a country's debt burden to creditors by calling the debt odious. This creates a time-consistency problem, since sovereign lending would dry up if creditors anticipated that their loans would be branded odious. It is clear that the best solution is for some independent group or institution to judge if the government is officially odious.

While the status quo creates inappropriate incentives for dictators to borrow even when this is not in the interests of their people, and for foreign creditors to

lend to them, an alternative in which debt was ruled odious *ex post* (i.e. after the loans are made) might also create inappropriate incentives and so would be a bad idea. Although a deciding Institution biased in favor of either poor countries or their creditors might tend to judge dishonestly *ex post (*i.e. when it rules on existing debt), it is more likely to judge honestly *ex ante* (i.e., ahead of time), i.e. when its rules on futures loans to a particular government. An Institution that ruled *ex ante* would be much less subject to biases that were in favor of either creditors or the population as a whole. If the Institution favors the population of the country, it would wish to allow appropriate loans, but not inappropriate ones. Even if the Institution favored creditors, it would not have a particularly strong incentive to permit inappropriate loans *ex ante*, because in a competitive capital market, creditors do not make substantial profits *ex ante*.

The Institution could work in one of two ways, either with no formal power other than declaring regimes odious, or it could have the power to block seizure of assets. If the Institution assesses and publicly identifies regimes as odious, lending to odious regimes could be curtailed because successor governments who repudiate odious debt face no reputational loss. It is possible that just announcing that a dictatorial government is odious might create a new equilibrium in which nobody lends because they know that it would not be repaid. If somebody did lend to an odious regime, then failure to repay would not be interpreted by the international community as a negative mark against the country, and its reputation would be intact to borrow in the future.

This type of sanction is self-enforcing and thus might be more effective than trade sanctions as a weapon against dictators. Third countries have incentives to break sanctions, and smugglers have incentives to evade them. In contrast, banks would not have an incentive to lend to a ruler who had been declared odious, since a successor government would face little danger of seized assets or loss of reputation if it refused to honor the debts of the odious regime. Such an Institution might also have favorable incentive effects on dictators and would-be dictators. Dictators might choose to cut back on their looting rather than risk being declared odious and losing borrowing privileges. Moreover, there might be fewer coups and odious regimes in the first place if potential dictators expected to be spurned by creditors.

However, this Institution might still be biased in favor of or against particular governments. A bias in favor of a government, i.e. a reluctance to deem it odious, might arise if the government is an ally or an important trading partner of a powerful nation, a patron, that has influence on the Institution's decision. For example, it is unlikely the Institution would blacklist Saudi Arabia or China, regardless of their misdeeds. A more serious problem arises if the Institution is

biased against a particular government for ideological reasons. In this situation, the Institution might term the government odious even if in fact it is not. This would lead to inappropriate denial of loans. It would therefore be important to design the Institution in a way that protects against dishonest judgments due to bias against particular non-odious governments.

The voting rules of the Institution could act as safeguards against such bias. In particular, if the voting rule required a supermajority among the members to judge a regime odious, the decisive voter is less biased against the government than under a simple majority rule. The cost of this rule is that there will be more false negatives, since odious regimes favored by a minority of judges will be cleared by the Institution. Another provision to safeguard against biased judgments is to have an Institution composed of professional jurists with lengthy tenure. Such judges may be less beholden to the political agendas of their home countries. One also may want to tie the Institution's hands by using a narrow definition of odious.

There certainly are examples where creditor countries widely condemned a particular regime yet commercial banks continued to lend to the regime. These would be the instances in which the Institution could publicly declare the regime odious, even under the narrow definition of odiousness, and discourage commercial lending to it. Franjo Tudjman of Croatia was arguably such an odious ruler. In 1997, the International Monetary Fund cut off aid that was earmarked for Croatia, at the behest of the U.S., Germany, and Britain. The reason cited was the "unsatisfactory state of democracy in Croatia". By this time, Tudjman was thought to be suppressing the media and looting public funds. Meanwhile, commercial banks lent an additional $2 billion to the Croatian government between the IMF censure and Tudjman's death in December 1999. If an Institution had publicly declared the regime odious at the time of the IMF freeze and enforcement mechanisms were in place (i.e. non-repayment of subsequent loans to Tudjman was a condition for foreign aid to future Croatian governments and non-repayment could not be punished with seizure of assets), the $2 billion in debt that probably was not beneficial to the Croatian people who now bear the debt, might not have been lent.

The system proposed could be implemented without an international Institution but solely using domestic courts and policies. Or the Institution could be the U.N. Security Council. The key is that the judgment be made.

To summarize, an Institution could deter lending to governments that do not have the consent of the people and spend against their interests, such as that of apartheid South Africa. The people ruled by an odious regime would be better off, since they would not be saddled by debts that were illegitimate in the first place. With enforcement mechanisms, such as an International Monetary Fund policy of

withholding foreign aid if a successor government does not repudiate debt declared odious by the Institution or if the Institution blocks seizure of assets for odious debt, one potentially could eliminate lending to governments deemed odious. If the Institution is sufficiently concerned about justice and rules constrain it to err on the side of assessing regimes as non-odious, some undesirable lending would still occur, but any deterrence of odious debt would be an improvement over the status quo. The type of sanction described is self-enforcing—banks would have little incentive to circumvent it and lend to an odious regime. Also, governments might decide to loot less to stay off the blacklist, and would-be dictators might be discouraged from seeking power if sovereign borrowing is not one of the spoils of office.

3. Conclusions

The importance of incentives and the institutions that create them in the development process has long been recognized. Here I have argued that it is worth applying similar institutional and incentives-based analysis to development assistance policy and more broadly to policy toward the developing world. These programs must be well designed, but they hold out significant promise in developing beneficial drugs and avoiding odious debt.

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1 North 2000, qtd. in *World Development Report* 2002

2 This section focuses on institutions that would provide incentives to develop vaccines for diseases such as malaria, tuberculosis, and AIDS, but the same institutional design could be used to address the distinctive agriculture problems facing poor countries. For more information on the latter, see Kremer and Zwane (2001).

3 Glennerster and Kremer, 2001.

4 Desowitz ,1991, p. 255.

5 DALYs are a measure of the burden of diseases and can be used to make comparisons between diseases. They take into account not only the lives lost through disease but also the number of years of disability caused. For a more complete discussion of DALYs see Murray and Lopez (1996). For reference, in the 1993 World Development Report, the World Bank treats health interventions in developing countries that cost less than $100 per DALY as cost effective (World Bank 1993, page 64).

6 Moore, 1906. The United Nations Convention related to sovereign debt under state succession makes no mention of odious debt, for example. (United Nations 1983).

7 O'Connell, 1967.

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