The Role of Loans in Financing Immunization in Developing Countries

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The GAVI Financing Task Force, as represented by its core members, considers that the arguments and evidence presented are sound and balanced, and is in general agreement with the content and conclusions contained within the paper.

Introduction

Immunization stands out as a demonstrably effective intervention against human disease. A global consensus is now highlighting the need for intensified efforts to ensure that all children receive not only the basic Expanded Programme on Immunization (EPI) vaccines but also the benefits of new and underused vaccines either already benefiting people in well-off parts of the world or about to come to market.[1]

Increasing coverage and introducing additional vaccines requires more resources for immunization. This paper summarizes the experience with and potential for using loan financing to meet this need. In this context, loan financing or simply 'loans' refers to funds borrowed by countries from regional development banks (e.g. Asian Development Bank (ADB)) and the World Bank (WB). While lenders recognize that the first priority would be complete national government financing of immunization programs, coverage levels suggest this is currently beyond the reach of some developing country governments. Additional resources could be financed by grants, typically from bilateral donors or philanthropic organizations, or loans. Although both grants and loans would increase resources available for immunization, the policy conditions of loans, such as performance-based disbursement, may assist in reorienting resources to highest priority needs such as immunization.[2] This paper considers that issue among others in reviewing experience with loan financing for immunization.

Investing in Immunization - a brief note on immunization programs

Most countries have some form of national immunization program (NIP) with substantial public sector involvement in financing, procurement, and in many, service delivery. The state's role in immunization reflects the substantial positive externalities that flow from immunization. Positive externalities arise because immunization can benefit not only the immunized individual but also the population in which s/he lives. At high levels of coverage, immunization against a disease like measles may stop the spread of measles in the community. This situation is known as herd immunity. As herd immunity increases due to increased coverage, the likelihood of sustained disease transmission falls because the pool of susceptible hosts is reduced. Immunization with vaccines that have little or no effect on disease transmission, such as BCG, or against organisms with environmental sources of infection, such as tetanus, will not produce herd immunity. Given the potential for herd immunity as a positive externality of immunization, collective bearing of the costs of immunization, such as through a loan taken by a national government, would mirror the collective benefit of herd immunity.

Estimates of the cost per fully immunized child (FIC) vary, depending upon the year and the country, but recent data from a comprehensive study of Morocco, Bangladesh, Cote d'Ivoire, and Colombia, estimate costs per FIC of $US 20-25, which translates into per capita spending of $US0.20-0.60 for most countries. Even in the context of limited national health budgets, this typically represents only 5% of total public sector spending on health.[3]

Cost analyses of NIP highlight their labour intensity, with labour the single largest cost item, accounting for roughly 60% of total costs. Vaccines and supplies account for roughly 30% of total costs, meaning that recurrent costs amount to approximately 90% of total costs. For countries still working to reach high levels of coverage of the basic EPI immunizations, these costs are likely to be roughly scalable, i.e. increasing coverage will require more resources for both vaccines and staff. However, countries with already high levels of coverage seeking to expand the range of vaccines delivered to their population would likely allocate a much higher proportion of new resources to purchasing vaccines. Furthermore, where new vaccines have unit costs substantially higher than existing vaccines, NIP cost structures will shift towards greater vaccine costs relative to labour costs. Capital costs, including cold chain equipment, vehicles and quality assurance systems, account for the remaining ten per cent.[3]

Given that NIP costs are predominantly recurrent costs, financing these costs with a loan would, at first glance, be unsustainable. If recurrent costs are not projected to decline dramatically, (such as with imminent eradication or significant price reductions for vaccines), financing these with a loan would lead to growing indebtedness as each annual birth cohort or immunization campaign creates additional costs. Loan financing for capital elements of immunization programs avoids potentially unsustainable recurring costs but must still be evaluated in light of the conditions under which loan funds are offered.

Loans for Immunization

The World Bank (WB) is the largest potential source of loans to finance immunization efforts. Regional investment banks are an additional source of loan funds but the WB is by far the largest lender in the broad area of health. The World Bank reports 157 active loans in the Health, Nutrition, and Population (HNP) sector.[4] In addition, health components of sectoral loans in the areas of water and sanitation, agriculture and social protection mean that upwards of 250 World Bank loans have a health element. Appendix 1 provides a summary of immunization-related lending by the WB, prepared by WB staff.

The WB makes funds available to countries through a variety of instruments, each with its own financial terms and conditions. Any given country may be eligible for only some of these instruments, typically determined by its level of GDP per capita, its macroeconomic policy environment, and its repayment record.

The World Bank Group consists of five institutions, two of which are relevant here: the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD). The IBRD is the original core of the World Bank and makes loans to its members. IBRD loans are typically taken by middle income countries and have interest rates which vary with market conditions. IBRD borrowers generally receive a 15-20 year repayment term with an initial five year grace period.

For the poorest countries, the costs of borrowing may make IBRD funds too expensive and IDA loans are specifically targeted at countries with per capita incomes less than

US$885, with exceptions for some small island states. Seventy-eight countries are currently eligible for IDA loans.[5] IDA borrowers pay no interest and the disbursements are referred to as credits. Repayment periods can be as long as 40 years and borrowers pay only an administrative fee of slightly less than 1.0% of the loan's value.

Despite the absence of interest charges, IDA credits differ from grants, i.e. funds given to countries by donors. While grants need not be repaid, IDA credits must be repaid. Given the low cost of IDA funds and the limited pool available, the WB allocates IDA funds among countries based on country performance ratings. These ratings are derived from twenty criteria, grouped into the areas of economic management, structural policies, (with particular attention to macroeconomic policy), policies for social inclusion/equity, and public sector management and institutions. Additional information is drawn from assessments of current projects using IDA credits. Further details of the rating process are available from the World Bank.

Given the concessionary (i.e. no interest) terms of IDA credits and the long repayment period, some have suggested that IDA credits are '80% grants' or 'free money'. While IDA money must be repaid, the absence of interest and the long time until maturity means that the value of the loan amount at the time of payback will be substantially discounted relative to the value of the loan at the time it is disbursed.

This time value of money makes IDA credits particularly attractive for long-term investments, but the time value of money should not be confused with a grant. If countries wish to have ongoing access to IDA credits, they are required to be making satisfactory progress not only towards the objectives for which the credits are being used but also towards repayment of already committed credits. Thus, should project progress not meet expectations or general economic policy lower a country's rating, access to IDA credits could be lost midway through a project.

For countries contemplating loans for immunization, the rate of return on these investments is often difficult to calculate or is embodied within broader development objectives. For example, in the short run, reducing child mortality may increase demand for schooling, raising the need for governments to spend money on education. However, in the medium to long term, a healthy, educated pool of labour is vital for economic growth and development.

In addition, grant funds from international donors have traditionally supported human development programs like immunization, and loans that substitute for grants (i.e. free money) from donors are likely to be unattractive to governments. The policy conditions attached to loans may also be perceived as unacceptable conditionality by potential recipients, although used positively, they can help strengthen NIPs. Finally, in theory, loan funds would be rationally applied to those investments most likely to yield the highest rates of return and, as a practical consequence, immunization programs must then vie not only with other human development priorities for resources, but often with other sectors.

In practice, the World Bank and others acknowledge that funds, despite loan conditions, are generally fungible, meaning that money borrowed for immunization may be reallocated within the health system or even to other national priorities. Similarly, funds borrowed for other purposes or general budget support may support the health sector or immunization programs. The reality of fungibility suggests that policy conditions attached to loans need to be a reasonable balance between the lender's potential desire to target funds and the borrowers need for administrative flexibility in allocating resources. In addition, performance targets need to balance accountability with mechanisms that avoid eliminating financing for health sector elements that are performing well.

Finally, countries' willingness to use IDA credits for immunization may be seen by GAVI and other international bodies as clear evidence of countries' financial and political commitments to immunization.[6]

Loans for Immunization – the experience to date

Loans solely for immunization are a very small portion of total IDA lending for health. In addition, health sector lending in general has shifted from specific capital investments to support of sector-wide reform. Furthermore, NIP budgets are relatively small, so loans expressly for immunization would tend to be relatively small amounts yet require virtually the same preparation as much larger disbursements. By contrast, bundling specific program lending, such as for immunization, within sector wide support increases the loan value, (thus potentially reducing preparation costs as a proportion of disbursed funds), and may also capture synergies among various health programs. Thus, measuring all lending for immunization is essentially impossible, because it is typically one of many components of projects addressing either health system reform or child development more broadly.

For example, in Bangladesh, an active US$ 250 million IDA credit is supporting the Health and Population Program Project (HPPP) as part of the government's Health and Population Sector Program (HPSP). The HPSP focuses on reorganizing and reforming public services to improve the cost-efficiency of resource allocation. Nevertheless, US$20 million are explicitly allocated to procurement of drugs, vaccines, and contraceptives.[7]

Sectoral lending rather than lending for specific disease control programs should increase the likelihood that recipient health systems will be broadly strengthened. The WB identifies enhancing sector-wide management capacity and carrying out reforms including decentralization and devolution of some hospital services to the private sector as goals of the HPPP.[7] World Health Organization (WHO) coverage data for Bangladesh from 1995 through 1999 note a slight decline in BCG coverage, (from 100% to 94%), and significant declines in DTP3 (diphtheria, tetanus, & pertussis, 3 doses) and measles vaccine coverage, from 91% to 66% and 96% to 61% respectively.[8] Although changes in coverage cannot be causally linked to types of financing, these data highlight the considerable scope for improving immunization coverage in Bangladesh.

In Morocco, vaccine purchases have been funded in part from the proceeds of a series of World Bank loans for the health sector. None of these loans has listed increasing immunization coverage as an explicit objective, yet the NIP is included both as one among services for which access is to be expanded and as one for which management is to be strengthened. Thus, the 68 million dollar Basic Health Project approved in 1996 listed three objectives: increasing access to preventive and curative care, strengthening safe motherhood programs to reduce maternal and neonatal mortality, and maintaining support for priority health programs. Immunization fell under the third of these objectives.[9] That was followed in 1998 with the Health Financing and Management Project whose objectives were also threefold: strengthening hospital management and improving quality, replacing priority medical equipment, and improving medical staff effectiveness and productivity.[10] Part of the funds are also reportedly being used to add hepatitis B (HepB) and *Haemophilus influenzae* type b (Hib) to the national immunization program. WHO coverage data for Morocco from 1995 through 1999 report a slight decline in BCG coverage, (from 93% to 90%), and slight increases in DTP3 coverage, (from 90 to 94%) and measles vaccine coverage, (from 88% to 93%). In addition, HepB coverage was first noted in 1999 at 10% and Hib in the same year at 1%.[8] These data may well be too soon after the loan's initiation to reflect changes in loan-financed changes in Morocco's NIP.

In addition to lending intended to strengthen the health sector as a whole, loans may also be useful in moving immunization programs towards sustainable financing. In Bolivia, the WB's US$25 million adaptable program loan (APL) explicitly links national government commitment to increase budgeted resources for immunization with access to loan funds. One of this project's central elements is implementing a new medium term plan for the Expanded Immunization Program (note that this is the language used in the World Bank documentation but appears to refer to the Expanded Program on Immunization, EPI), including introducing vaccines against Hib and HepB, and in endemic areas, yellow fever. Approximately 48% of project funds, (loan proceeds and government resources), are allocated to this objective. Thus, public expenditure on immunizations is projected to rise from US$ 1.5 million in the absence of the loan to as high as US$ 9.0 million during the initial phase before settling at a steady annual level of US$ 6.1 million.[11]

Although there are substantial health sector reform elements of this loan, the decision to structure Bolivia's loan as an APL creates the flexibility to alter implementation during the project's lifecycle.[12] To quote the WB project document, "many of the Program's elements make the APL the appropriate financing mechanism: (i) the goal of reducing infant mortality rates requires changes that can only be achieved over the long-term; (ii) the introduction of new management instruments requires experimentation, learning-by-doing and adjustment over time; and (iii) the program's success requires that successive governments continue to assign priority to reducing child and maternal mortality, postponing competing objectives sought by politically powerful groups - the Bank's active presence in the sector for the long run may help secure this commitment."[13]

The Bolivian loan, although covering some recurrent costs, particularly vaccines, has been promoted as a catalyst to increasing spending on immunization from national government budgets.[14] This catalytic potential of loans distinguishes loans from grants and may foster both financial self-sufficiency and sustainability for NIPs. While it is too early in the project's life to tell whether this has been successful in Bolivia, the APL structure does create flexibility to adjust future disbursements to reflect performance. WHO coverage data for Bolivia from 1995 through 1999 report increases in BCG coverage, (from 87% to 95%), DTP3 coverage, (from 88% to 96%), and measles coverage, (from 83% to 100%).[8]

In other HNP loans, immunization coverage is used as an outcome measure of a package of health sector reforms and programs to be funded by loan proceeds. For example, The Health Sector Development Program Project for Ethiopia "aims to develop a health system which provides comprehensive and integrated primary care services, primarily based at community health level facilities".[15] Although not targeting immunization programs explicitly, the project intends to improve immunization coverage (from 67% DTP-3 coverage in 1997 to 70-80% in 2002) as an outcome of a package of measures focusing on health system decentralization and reorganization.[16] WHO coverage data for Ethiopia from 1997 through 1999 report that DTP3 coverage has been essentially unchanged, rising from 63% in 1997 to 64% in 1999.[8]

What emerges from these brief vignettes is the extent to which 'loans for immunization' is largely a misnomer. Immunization is one of many services delivered by health systems whose improved performance or reform is the fundamental objective of much WB lending. ADB lending through health sector loans including immunization program expansion as one among several elements is similar. An additional feature of ADB lending has been loan-financed investment in domestic production. During the late 1980s, China opted to allocate ADB funds to improving domestic vaccine production, although the loan was not explicitly tied to investments in vaccine production. More recently, the ADB has announced an Asian Vaccination Initiative (AVI) focusing on assisting countries in assessing their immunization financing requirements. Although the ADB has stated that this process may identify opportunities for bank lending to developing member countries, the assessment is proceeding as a program of regional technical assistance with no explicit link to future loan disbursements.[17,18]

The Case of Loans for Eradication/Elimination Activities

The largest WB loan targeted specifically at immunization amounts to 142.6 million dollars over 3 years to India. This IDA loan has been granted in response to a request from the government of India supported by international donors for funds to intensify polio eradication efforts. Although US$ 101 million of the funds will be used to finance vaccines, the prospect of eradication creates an opportunity to shorten the remaining duration of immunization for polio and thus both mitigates the sustainability concerns associated with loan financing of recurrent costs and may generate economic savings from averted treatment costs.[19]

In addition, the second and third components of the project direct the government of India to strengthen immunization activities including upgrading cold chain and laboratory equipment, improving laboratories for disease surveillance and developing a strategic framework for VPD over the next 7-10 years.[20]

Given the progress towards polio eradication to date, the number of countries with the necessary combination of access to IDA credits, reasonable absorptive capacity, and significant wild polio transmission that might follow India's example is small. Ethiopia may be unique in meeting these requirements.[21] Thus, this loan to India would appear to be an exception to the general pattern of embedding loan financing for immunization in broader health sector reform projects, and even in this case, almost 30% of the loan proceeds are earmarked for components two and three: strengthening routine immunization (26.6%, US$ 38 million) and strategic framework development (3.1%, US$ 4.40 million).

Loans & Vaccine Pricing

Were vaccine demand to increase, whether due to additional resources from loans or other sources, this would be expected to affect pricing. Given that the market for vaccines is dominated by a small number of suppliers and that many purchases occur through block procurement, the greatest effect of increased demand would likely be through inducing new market entrants, leading to increased competition and lower average prices.[22] In the case where production capacity exceeds current production, increased demand might trigger increased production and lower prices. Based on the dwindling number of vaccine manufacturers and reported shortages of some EPI vaccines, idle vaccine production capacity would appear to be minimal at present.

Whether loan financing can trigger vaccine development is less clear. The high fixed costs of vaccine production, (one estimate suggests that 97% of costs are fixed and only 3% variable),[23] lead to very low prices for mature products (because production is established, may be scalable, and in some cases, excess production capacity may exist), but has the opposite effect for innovative ones, (because the fixed costs must be paid despite uncertainty about the potential market size).[23] In addition, some innovative products may also be less scalable due to a combination of smaller facilities and changes in production processes, particularly those involving chemical conjugation.[24]

As a final consideration, loans may have a role in contributing to a 'market guarantee' advocated by some as a necessity to induce research and development of vaccines for diseases that predominantly affect the poor.[25] However, any effective market guarantee would need to be not only sufficiently large but also sustainable if it is to have a significant catalytic effect. Loans taken by developing countries to fund high risk research and development would create a repayment obligation and yet no guarantee of an affordable or even effective vaccine. Furthermore, the extent of sub-optimal procurement in many IDA-eligible countries suggests that if a 'market guarantee' is perceived to be desirable to stimulate production or lower prices, it would be strengthened by making it

less contingent on loans. Basing such a guarantee on grant funds or a blended finance pool would increase the number of stakeholders with an interest in preventing sub-optimal procurement. In short, loans would appear to have a limited role in providing a market guarantee in the absence of other sources of financing. Given the scope for expanding coverage of available, demonstrably effective vaccines, and the uncertainty surrounding research on new vaccines, borrowers, particularly developing countries, would logically favour lower risk investments in expanding programs with existing vaccines.

The Context of HIPC/PRSP

For many IDA-eligible countries, particularly those in sub-Saharan Africa, the political context surrounding borrowing and debt is at present dominated by the push for debt relief, whether through HIPC (Highly Indebted Poor Countries) or other initiatives. As much as there may be compelling investments in human development that can be facilitated by loan financing at concessionary rates, and even if countries have the absorptive capacity in place to use the funds effectively and efficiently, the rate of return on a health sector investment may be insufficient to offset government reticence to take on more debt at a time when the overwhelming political pressure is for debt relief and forgiveness.

The PRSP (Poverty Reduction Strategy Paper) process implemented to guide the efforts of HIPC-eligible countries focuses on cost-effective health interventions, but the sourcebook available to guide countries in preparing PRSPs gives no particular guidance on financing, procurement or service delivery of immunization programs. The sourcebook material on immunization policy and strategy issues does, however, recognize that the general thrust to health service decentralization may undermine immunization programs, as noted in the excerpt below.[26]

3.6.2 Immunization policy and strategy issues

> …
> While vaccines clearly are essential to vaccination, many more inputs are needed to deliver them effectively and safely. The cost of fully immunizing a child is about US$15 of which about US$1.00 covers the cost of vaccines and the other US$14 is needed to cover the costs of delivering the vaccines…
>
> The effect of health sector reform on the organization and delivery of immunization services has been the subject of several studies in Africa, Latin American, and Central Asian (sic). Some key findings include that certain functions, such as the setting of policies, norms and standards, the procurement of vaccines and equipment, and the design of disease surveillance forms, should not be decentralized. As immunization entails the control of vaccine-preventable diseases that do not respect district borders, it is especially important that the national level continues to play a role in the analysis and application of surveillance (and burden of disease) data. It was also recommended that the design and implementation of health sector reform actively engage immunization

technical staff to ensure that those unique features essential to immunization quality and effectiveness are encompassed in the reforms.

Although the WB's estimates of costs per FIC were developed before data were gathered from intensive country studies,[3] these guidelines for the PRSP process suggest a substantial state role in immunization. The key point is the extent to which the particular features of immunization programs constitute an argument for centralized financing and procurement, and recognizing that this potential gain from centralization may run counter to general trends to decentralization.

To date, the submitted and interim PRSPs contain little if any explicit mention of immunization except in setting targets for increasing immunization coverage.[27] Using immunization coverage as a performance outcome reflects both its desirability on its own merits but also the extent to which it may be a marker for health system performance, since it is a service required annually by 100% of newborns.

Summary of Loan Experience

The background presented here and the limited experience to date highlight a number of key points relevant to the decision to finance immunization programs with loans. These are summarized in the bullets that follow:

- Immunization has substantial positive externalities. Many countries lack sufficient resources to provide the basic EPI vaccines to their populations to say nothing of additional vaccines such as HepB and Hib. Loans, particularly IDA credits, are a potential source of funds to close this financing gap. National budget funds would be the preferred source but both grants and loans are options for closing the resource gap. While grant funds have the advantage of not needing to be paid back, the policy conditions on loan funds may provide leverage for focusing national resources on priority programs.

- Linking coverage changes to various systems of financing is difficult due to the substantial number of factors determining coverage. Countries able to use loans to mobilize additional, sustainable national resources for immunization would appear to be better situated to use loan financing effectively. World Bank lending to Bolivia is premised on the loan catalyzing such a reallocation of national budget resources to immunization.

- Immunization is delivered through the health sector. Reflecting that embedded relationship, loan financing for immunization has been part of loans for broader health sector reform (HSR) and human development efforts. Countries contemplating health sector loans that would include an immunization component would do well to ensure that the general decentralization thrust of HSR, particularly if embedded as a policy condition of health sector lending, does not undermine the benefits from centralized vaccine procurement, surveillance, and management.

- Ninety per cent of NIP costs are recurring expenses, and two thirds of this total are personnel costs. An increase in absolute funds for immunization funded by loans would not be sustainable unless it catalyzed an augmentation of internal resources. Among the elements of an NIP, loan financing would be most profitably applied to capital costs, creating durable assets and potentially, human capital through training. While the scope for expanding capital investment in NIP is limited by the overwhelmingly labour intensive nature of the programs, key capital inputs including cold chain and equipment investments and training, where opportunities exist to retain immunization program staff once trained, may be well suited to loan financing.

- In all cases of loans for immunization, substantial technical assistance appears to have been provided to the recipients, but not as an explicit condition of the loan. The extent to which this has been sufficient and appropriate is difficult to assess in many of the projects as they are still ongoing. Nevertheless, advocates of immunization should not underestimate the needs for such assistance particularly where loans are targeted to multifaceted health sector reform or child development objectives. For these multipurpose loans, performance criteria should be structured to minimize the likelihood that funds for immunization would be cut off if overall health sector performance fails to meet targets.

- Of the four cases considered in this paper, all reported coverage greater than 50% at or near the time the loan was provided, indicating a fairly extensive NIP was already in place and functioning. Countries with lower rates of coverage may face difficulties in efficiently translating resources into improved coverage

- For most IDA-eligible countries, accepting a loan, even at IDA rates would increase costs if it simply substituted for grant assistance. This issue is not to be underestimated since some of the most grant-dependent countries may lack the absorptive capacity to use loan proceeds effectively and efficiently. In such settings, the cost-effectiveness of immunization may be reduced by rising costs per FIC and generally low levels of immunization coverage. Ensuring sufficient absorptive capacity or its development is vital if immunization programs are to be scalable and remain cost-effective.

- More work is needed to gather evidence demonstrating health's key role as an investment and translate it into effective national policies. The current work of the Commission on Macroeconomics and Health[28] is marshalling evidence to support these links. The cost-effectiveness of immunization gives it high priority as an investment in development.

Policy Implications

1)Loans have a place in financing immunization, and one with scope for growth. Streamlining the loan preparation process and support from international organizations to countries willing to borrow money for immunization may be useful in increasing lending

for immunization. Countries where loan financing triggers increased domestic resource allocation, where absorptive capacity is such that NIPs are scalable to the levels needed to reach coverage targets, and where opportunities exist for investment in non-recurrent cost elements of NIPs are likely to be better candidates for loans. As part of assessing potential for loan financing of immunization, attention to these features among others would build on the limited experience with loans to date.

2)Imminent eradication may create special circumstances where loan financing of recurrent cost inputs is good policy because the prospect of disease eradication and consequent savings in immunization expenses and possibly treatment justifies the initial outlay. A small number of countries may face this situation with polio eradication efforts. Should measles eradication become imminent, similar considerations may apply.

3)Technical assistance to recipient countries is a vital part of ensuring loan financing translates into improved immunization coverage and expansion of available vaccines. Some lending agencies are particularly active in providing such assistance to recipient countries but that should not obviate the need for interagency coordination and clear, performance targets for immunization program elements beyond improved coverage, including quality assurance, cold chain performance, and national reference laboratory functioning. Particular attention may also be needed to ensure that immunization functions optimally financed by the State and through centralized systems are not undermined by generalized prescriptions for health sector decentralization.

NOTES

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