Doing it wisely: Using financial innovations to improve aid outcomes

Ву

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ABSTRACT

International aid donors have asymmetric information about the beneficiaries and the project implementers. Different financial instruments can be used to deal with the problems of adverse selection and moral hazard. This essay discusses how the risks and the returns of these instruments can be used to align the incentives of various stakeholders with the objectives of the aid programs. Debt is preferred to grants if the benefits are private and marketable (e.g. agriculture, skills-training). We argue that for human development target areas with public and long-term benefits (e.g. primary education, vaccination), the project implementers can be motivated by using equity and options.

The essay shows that the tiered structures of future payment streams using financial derivatives can facilitate behavioral nudging. These instruments can improve long-term outcomes by affecting recipient selection and by offering tangible returns for efficiency. For capital spending projects, providing grants and loans to the communities, which then fund the actual development through equity, can help solve the principal-agent problem. Less risk-averse implementers can leverage the original aid by using it as equity to generate more loans, if the downside is insurable through guarantee schemes.

We talk about the comparative usefulness of the financial instruments in generating spillovers & multipliers and how it changes with institutional setup, macroeconomic conditions & implicit prices of expected outcomes. By increasing formal, non-cash & traceable transactions, the efficacy of these instruments can be measured easily with available methodologies (like A/B testing) and technology.

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1. Introduction

Economic development is often projected as one of the achievements of post-WWII era. Even though the current human development index (HDI) levels are nothing to be proud of, the time-trends in HDI components have been generally positive. The latest United Nations Development Program (UNDP, 2014) data shows that "low human development" countries' HDI grew on average yearly rate of 0.76% between 1980 and 1990, 0.94% between 1990 and 2000 and 1.5% between 2000 and 2013. Things become less clear when it comes to questions like should these numbers be acceptable or how much has been the contribution of international aid programs. For example, (Easterly, Levine, & Roodman, 2003) refute the earlier findings and say that there is no evidence of effects of aid on growth even in countries with good institutions. Similarly there is no consensus on impact of international aid towards achieving individual Millennium Development Goals (UN, 2014).

International aid community is aware of these debates and is trying to address them with initiatives like Paris Declaration and Accra Agenda for Action (OECD, 2005). Theoretically, the aid should promote growth by increasing the investment and thus making the population more productive (through increased physical and human capital per worker). But that argument assumes that there is no impact of foreign aid on anything else (*Ceterus Paribus* assumption), which clearly is not the case. (Younger, 1992) and (Rajan & Subramanian, 2005) argue that foreign aid flows weaken the economy's competitiveness through appreciation of currency and thus leading to slowdown in export-oriented industries in manufacturing sector. This essay shows how correct financial instruments can be used to reduce the impact of these and other adverse mechanisms. Since the direction of expected currency movement is known, the aid agencies could enter into futures contracts or currency swaps with the parties likely to be affected. We also discuss the use of financial instruments to minimize the probability of "crowding-out" of private investment.

In early 2000s, grants vs. loans discussion gained prominence after Meltzer report (Meltzer, 2000). (Bulow & Rogoff, 2005) argue that shifting to grants would protect the donors from the uncomfortable task of trying to collect and most likely to forgive that debt later. (Cohen, Jacque, & Reisen., 2007) argue that the role of debt shouldn't be discounted as an instrument in delivering aid and that debt cancellations mechanisms complement the benefits. Most of this discussion has been in the context of multilateral development banks. There has been little work about the optimality of a financial instrument for different target areas and for non-official development assistance, which is the focus of this essay. In most scenarios, the amount of aid available is limited and hence the donors have to make many allocative decisions. As we discuss below, selecting the appropriate beneficiaries and project implementers can help in improving the outcomes. Even at the macro level where aid affects

productivity through investment, the returns would be different depending on for example whether the investment is labor augmenting. Right financial instruments can help in ensuring this.

After the success of Grameen Bank (Rahman, 1999) in Bangladesh, the role of microfinance in promoting development, reducing gender inequality and alleviating poverty has received much attention. (Littlefield, Morduch, & Hashemi, 2003) discuss whether microfinance can help countries reach Millennium Development Goals. Since the markets are better at assigning resources to their most valuable uses than a central planner, these private sector microfinance initiatives offer better chance of dealing with development challenges. (Moyo, 2009) makes the claim that pausing the official aid flows will result in faster reduction in poverty in Africa because private entrepreneurship will fill the gap. But the recent papers evaluating the impact of microfinance in reducing poverty in Bangladesh and India ((Khandker & Samad, 2013), (Shylendra, 2006)) find that private sector driven initiatives are also susceptible to these problems and hence we need to focus on incentives of the stakeholders rather than public vs. private. The essay discusses how proper mechanism design with the help of right financial contracts can help create incentives to avoid various issues associated with information asymmetry and principal-agent problems.

The rest of the essay is organized as follows. The next section provides some context to why we need new viewpoints regarding the future directions of development assistance. The essay then discusses various financial instruments like loans, guarantees, insurance, equity, options, swaps and their roles in effectiveness of development projects. Then we talk about the riskiness of projects and role of expectations in determining the optimal mix of these instruments for any given country and a particular target area. The essay discusses robustness by outlining how these recommendations change with the institutional setup and other factors. Finally the essay describes how the accountability can be achieved by tracking transactions in these instruments across parties and over time.

2. The debate on "measured" aid effectiveness

The researchers, policy makers and development professionals have different views on whether international aid aimed at development areas works. There have been various cycles of optimism and cynicism in last few decades. Numerous empirical studies have made the debate more partisan rather than providing convincing evidence. In their forthcoming paper, (Doucouliagos & Paldam, 2015) do the meta-analysis of recent studies on empirical effectiveness literature since 2007 and find that most of the uptick observed in studies after 2009 is just an artifact. (Brückner, 2013) discusses the simultaneity problem in the aid and growth debate and shows that the causality exists in both direction with high GDP growth being associated with negative foreign aid. One of the reasons why economic development community and the researchers have failed to reach a consensus on the merits of different aid programs is the lack of counterfactuals. (Woolcock, 2009) argues that the randomization does not solve this issue and project specific estimations are needed. But this problem about absence of any measurable impact

is not unique to development assistance field. The famous Solow productivity paradox of us seeing computers everywhere except in productivity numbers was discussed in (Brynjolfsson, 1993). But most researchers and policymakers treated that as a measurement issue and no one debated the contribution of computers. This unfortunately hasn't been the case with development aid debate.

We think that the part of disbelief about effectiveness of aid comes from the basic premise that without any screening criteria or profit seeking motives the investment projects financed by aid grants and their outcomes will be lower in quality than they otherwise would be. As (Easterly, 2007) mentions, the development community mistakenly believes that the mechanisms of "invisible-hand" can be replicated by the experts. There hasn't been much debate about the glaring problem of information asymmetry, where the donors have less information about the projects than the implementers or the beneficiaries. (Martens, 2005) argues that these information asymmetries create serious issues and the aid agencies exist to solve those issues. But not many have focused on this thread. Even though in finance, it is very common to talk about moral hazard and adverse selection problem, there has been no discussion on how private aid and official assistance can be modified to deal with these problems. To be fair, the researchers have focused on some of the negative impact of international aid. For example, (Bräutigam & Knac, 2004) talk about how continued foreign aid can create disincentive for aid agencies and aid recipients to allow any change. But their focus has been reactive i.e. how international aid creates various governance problems in low-income countries, rather than prescriptive. Unlike this essay, not many studies have focused on providing recommendations on how to make aid work and how to deal with these potential issues.

We believe that the development assistance undoubtedly helps. Many who are skeptical are contemplating a different counterfactual, and their criticism is about the implementation of aid and its side effects. This essay tries to solve some of the problems that hamper the effectiveness of international aid by proposing the use of a set of financial instruments which can change the motivations for different stakeholders. Since the donors cannot rely on the fear of regulators acting as deterrent, a creatively designed financial structure for the project can ensure that the deviations from expected behavior result into financial losses for the involved stakeholders. In cases with repeat interactions (which is often the case), the presence of social and other networks will help in achieving the desired equilibrium responses from everyone involved.

3. Financial instruments and incentives

The relationship between the financial markets and the economic development has been studied widely. (King & Levine, 1993) argue that the financial systems provide screening, allocation and risk-diversification services which encourage entrepreneurship leading to productivity growth. There have been many empirical studies verifying the presence of this relationship. (Demetriades & Hussein, 1996) and (Rajan & Zingales, 1996) find significant and casual link between financial development and per-

capita growth for a panel of countries. But many of the low-income countries have poorly developed financial markets. This gives rise to the futility argument in the sense that the development assistance is not going to be make a difference unless we have good institutions in place. The proponents of this view forget that "doing nothing is not an alternative".

We think that by using appropriate financial instruments, international aid can create incentives for people, communities, project managers and industries to demand better systems that can help them protect and maintain values of their assets. Good financial systems can coexist with wide variety of political regimes. Since even politicians can benefit from the stable and well-functioning financial channels, we believe that using financial instruments as suggested in this essay would work even in politically fragile states.

The delivery of international aid from the donors to final beneficiaries can be thought of as a series of steps involving financial and contractual transactions between two entities which are mentioned in Table 1. At each of these steps, we should choose the financial instruments that are most likely to synchronize the incentives for both parties.

The target areas for many of the aid program align with one or more Millennium Development Goals, most of which offer non-market, non-excludable and non-immediate benefits for the final beneficiaries. If the success of the project requires the beneficiaries to make efforts (e.g. coming to school every day), the service provider should offer something tangible in return. One such instrument could be modeled along equity options that vest over a period of time. Another criteria is whether the spending is investment toward building capital stock (usable for more than one-time period) or payment for goods & services.

Table 1 outlines a methodological approach for identifying incentives of the agent (person whose actions will have impact on the outcomes) and choice of financial instruments for the principal (who is trying to achieve certain objectives which may be in conflict with agent's rational response in the absence of any additional motivators).

Table 1: Financial transactions in a typical private international aid project

Transaction	Example Incentives (Agent - A)	Example Financial Instrument
		(Principal - P)
Final Beneficiary	Outcomes marketable & excludable?	Loans with outcome dependent
(A) & Service	Beneficiary selection matters (e.g. skills)?	interest rates.
Provider (P)	Effort required to improve outcomes?	Options vesting over a period of
		time.
Service Providers	Capital vs. Current expense? Future flow	Equity position in capital projects.
(A) & Aid Recipients	of private returns?	Loans for selling the expertise/
(P)	Learning by doing/ capacity building?	expansion.

Aid Recipients (A) &	Scope for new projects?	Futures contracts.
Foreign Aid	Protection against shocks?	Currency, interest rate swaps.
Agencies (P)		Insurance/ Guarantees.
Aid Agencies (A) &	Continued funding?	Derivative contracts.
Donors (P)	Demonstrable outcomes/ success	Contingent payments.
	stories?	

4. Grants, Debt or Equity

There is an ongoing debate on whether the composition (i.e. loans vs. grants) of development assistance matters. Using panel data (Odedokun, 2004) finds that loans are better in enforcing budget discipline compared to grants and suggests an international financing package consisting of grants and nonconcessional loans. (Clements, Gupta, Pivovarsky, & Tiongson, 2004) find that domestic revenues go down when countries receive more aid in the form of grants. Based on the incentive-driven framework discussed earlier, the dependence on grants for investment projects can lead to lower quality of capital. In addition, there is possibility that foreign assistance can crowd-out the domestic investment by increasing the cost of limited productive resources in a country or a region. These negative side-effects of grants are stronger for the projects dealing with products and services for which domestic substitutes are available in the target communities. Thus using the grant for opening a school where there aren't any is fine, because educational services are complementary to and improve the benefits from many other services (e.g. healthcare services). But launching a new school where there already are few by using grant money will introduce distortions in local markets in terms of factor prices and their allocations.

Recommendation: Use the grants for non-capital projects and for the capital projects which would deliver the services that are complementary to the existing ones and that do not generate private returns.

If the recipient country already has few companies operating in the target sector, expanding the capacity of one of the existing companies via loans or equity investments is the way to go. Since profit making is usually not an objective for the donors, the rationale for offering the development assistance as loans is to ensure its most productive use for the projects that are likely to generate future revenue stream; for example extraction of natural resources. In next section, we talk about some of the sophisticated variations of debt and equity which can ensure that the allocation of aid money is based on proper pricing (i.e. a risky project implementer faces a higher ex-ante interest rate and vice-versa).

Recommendation: Use the loans for the capital projects with immediate, private & identifiable returns.

In general, poverty eradication and gender equality areas are most suited for using loans as the financial instrument. For other areas like education and healthcare, there are no immediate monetary returns and hence using the loans may be counterproductive. The alignment with the project objectives needs to happen through additional incentive. The equity structure can encourage service providers or

recipient countries (in case of government run schools and hospitals) to be more innovative. Equity arrangement is better than the grants, because it also provides a mechanism for the donors or aidagencies to actively influence the day-to-day operations and thus improve the efficiency. The equity in project provides motivation for service providers to maintain and increase project's value because even in the absence of capital markets (i.e. no possibility of IPOs) the book value of the project can be used as collateral or to get securitized loans.

Recommendation: Use the equity for the capital projects that generate outcomes with long-term, non-appropriable and public benefits.

As mentioned earlier, these financial instruments can also be used at different stages to allocate limited resources for education and healthcare projects (e.g. capacity is lower than willing participants) based on the value (willingness-to-pay) rather than using rationing (first-come, first-serve). One way to achieve this can be to ask service provider to charge the beneficiaries and the beneficiaries receive that amount as loans which will be waived on achieving the desired outcomes.

Recommendation: Use the contingent loans for current expenses rather than the grants, if dealing with beneficiary selection.

(Foster & Leavy, 2001) provide a nice overview of various instruments available for international aid; like balance of payment support, sector budget support, debt relief, project aid etc. But their discussion focusses mostly on official assistance as captured in OECD Development Assistance Committee (OECD, 2014) statistics. The focus of this essay is on non-official and private development assistance which has started to play an increasingly important role. If we can properly manage incentive dynamics by using the right financial mix of instruments, the individuals and firms acting in their self-interest have a better chance of achieving the targeted outcomes.

5. Uncertainty and Risk Management

(Bulíř & Hamann, 2008) show that the volatility of aid flows is much higher than that of domestic business cycles. In the integrated global economy with correlated business cycles this means that rather than acting as a shock-absorber, the foreign aid makes the bad times worse and may create capital quality issues during the good times. (Nielsen, Findley, Davis, Candland, & Nielson, 2011) go as far as making a claim that the foreign aid shocks may increase the chances of violent armed conflict by weakening the government's credibility with respect to project commitments. One of the benefits of recent financial innovations is to provide us with the tools for risk management and its pricing based on people's expectations. The development projects can be affected by external shocks because the stakeholders' decision matrices change and thus their optimal responses also change. The objective of using the derivatives is to ensure that these expected changes do not negatively affect the project outcomes. One such shock is fluctuations in country's exchange rate.

Recommendation: The loans should be denominated in domestic currency or otherwise also involve currency swaps.

The role of conditional cash transfers in encouraging participation has been discussed by many researchers (see (Baird, McIntosh, & Özler, 2011) for example). We suggest a modification that rely on behavioral economics to nudge people towards the choices preferred by the donors. This approach has gained popularity due to (Thaler & Sunstein., 2008). The options that vest on successful participation in the program can improve the outcomes due to people's tendency for loss-aversion (see` (Kahneman, Knetsch, & Thaler, 1991)). This type of setup can also generate positive externalities through peer and social networks, if the total payout is indexed to the performance of overall community or group.

Recommendation: For improving participants' motivation, the options maturing at the end of program should be preferred to upfront conditional cash transfer.

Another incentive problem is the uncertainty regarding total project costs due to external shocks (e.g. changes in interest rates, raw material prices). The project implementers either have to maintain a contingency fund or to front-load the costs. Neither approach is optimal, since those funds can be used as leverage elsewhere.

Recommendation: For multi-year projects, offer a line of credit and interest rate swaps rather than one-time loan.

One risk facing these economic development projects in poverty eradication and gender empowerment areas is the expected volatility in returns. This creates disincentives for more efficient project developers and service providers who have higher opportunity costs to participate in these initiatives.

Recommendation: To insure against the downside risks of project returns, (contingently) redeemable preferred shares and convertible debt options should be offered.

Despite their role in aggravating the financial crisis of 2007-08, financial derivatives serve many useful purposes. We can use these instruments to reduce the impact of shocks in various capacities. Since profit-maximization is not the primary incentive for many of the stakeholders involved in development assistance projects, using these instruments in this context should be safer than their use elsewhere.

6. Framework conditions: Which instruments work when?

This essay may have come as a disappointment to someone looking for quick answer on which is the best financial instrument for development assistance. We chose instead to stress on the fundamental decision criteria; which is to align the agent's incentives with the principal's objective. We outlined how to apply this criteria using grid-based methodology i.e. for each transaction and for each objective. The development assistance should be implemented using a mix of financial instruments. But there are some factors which may act as enabler or as hindrance in any given situation. (Burnside & Dollar, 2004)

show that impact of aid on growth depends on interaction between aid and institutional quality. To make these financial instruments preferable to cash, a good contract enforcement regime is required. For these financial instruments to trigger the desired responses, people and the firms need to feel confident about the accounting methods.

We believe that these trust-building institutions (contract enforcement, accounting) can be built irrespective of the political situation in the country. If foreign aid and development assistance projects start using these instruments, the local population (people and the firms) will have to accept this extra cost because of the two reasons: 1) The demand for foreign aid is perfectly inelastic; 2) The competition among recipient countries and among project implementers in a given country (in case of private aid). Contract enforcement acts as a deterrent but the donors and the aid agencies can also judge the quality of the project implementers and service providers beforehand by searching the World Bank's service provider database and the list of debarred firms.

The industry structure in the country is also very important. The presence of competitors increases the benefits of using these financial instruments for service providers. It also changes the calculations for them regarding costs of potential shirking and reneging. The economic slack in the target community determines how effective these instruments will be in improving the program outcomes. If the resources (raw material, skilled and unskilled workers) can be deployed without significantly affecting the factor prices, the second order impact will not be negative. Inter-industry input-output linkages and people networks are crucial in generating spillovers and multiplier effects. If the investment resulting from development assistance project improves productivity of intermediate input sector, then the overall benefits will be higher compared to the investment in the final goods sector.

A runaway inflation, which is usually a concern in less developed countries, can give rise to unpredictable local mechanisms and change the incentives for stakeholders. Thus for these financial instruments to work as intended, the government should have credibility in managing the inflation or at least the inflationary expectations.

7. Accountability and Attribution of Impact

(Svensson, 2000) suggests and tests a model which implies that even the expected foreign aid can increase corruption. This has been a cause of concern for the donors. But using a mix of financial instruments, as suggested in this essay, increases the transparency and reduces the potential for corruption, since many of the instruments are counterparty specific and get settled on a future date. The reduced liquidity and non-standard nature of these instruments dissuades people from accepting it as bribe. If in future this tradeoff between wider acceptance and usefulness of the instruments becomes a concern, the donors can use a more standard set of financial contracts while using a central clearinghouse to maintain the transparency.

If a project generates good outcomes, we cannot easily ascertain which of the financial instruments contributed the most. This is one shortcoming of this approach, which can be rectified by using A/B testing or randomization depending on the project (i.e. whether it has enough participants or is operating at more than one location etc.). The better traceability of financial instruments compared to the cash makes this comparative analysis feasible. For example, one could compare which of the two options vesting over the program duration encouraged more students to finish the course by just comparing the final settlement rates (i.e. what percentage of each type were exercised).

We want to stress on the endogenous nature of these measured targets. The impact attribution should be used to compare two implementations rather than relying too much on the absolute value of impact (i.e. regression coefficient and its significance). Because the latter approach gives rise to the skepticism which is becoming increasingly widespread in academic research literature.

8. Conclusions

This essay provides an incentive-driven framework for evaluating the best financial instrument for development assistance projects. In a typical workflow for non-official targeted project, a mix of instruments can be used to avoid moral hazard, adverse selection and principal-agent problems. There is a need to distinguish between capital and current expenses as well as between the outcomes that generate private, marketable returns and the ones generating public returns. We make some recommendations regarding the use of grants, loans, equity and derivatives. The recommendations made here may not be universally applicable, but what is crucial is the methodology of using financial instruments to align the incentives with the objectives.

To conclude, we believe that the debate on whether loans are better than grants assumes too simplistic view of international development assistance. In reality, the optimality of any financial instrument need to be qualified by the parties involved, project sector and the target outcomes. This essay is an attempt to do that.

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