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## Means Testing: The Dilemma of Targeting Subsidies in African Higher Education

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### Abstract

Means testing, a form of subsidy targeting, attempts to distribute at least some higher education subsidies on the basis of need or estimated ability to pay. This article explores the major principles, approaches, and challenges as well as some of the controversies surrounding means testing, taking into account the unique context of the African continent. For example, in many African countries incomes are not only low but are also frequently hidden or partly in kind. Assets are often both minimal and extremely illiquid. These conditions limit possible cash contributions toward higher education but also make it difficult to measure and to verify the subsidies to which many families are entitled. Therefore, many developing countries complement measures or estimates of income and assets with so-called categorical indicators of need (e.g., race/tribe/ethnicity, parents' education, type of employment, secondary school attendance, possession of an automobile or access to a car driver) which are readily observable and more difficult to hide than conventional measures of incomes or assets. This article acknowledges some imperfection in these measures but argues that rough justice in estimating ability to pay is still preferable to equal subsidies for all. It concludes with some recommendations about targeting subsidies to higher education in Africa.

### Résumé

L'enquête sur les revenus, qui est une forme de ciblage pour l'accès aux subventions, vise à distribuer des subventions de l'enseignement supérieur, sur la base des besoins

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ou de la capacité à payer. Cet article s'intéresse aux principes, approches et défis de base, ainsi qu'aux controverses autour du concept d'enquête sur les revenus, en prenant en compte le contexte spécifique du continent africain. Dans un grand nombre de pays africains, par exemple, les revenus sont non seulement bas, mais ils sont parfois tout simplement dissimulés, ou alors, ils sont en grande partie en nature. Les biens sont à la fois minimes et très peu liquides. Ces conditions limitent les contributions en espèces à l'enseignement supérieur, mais limitent également la possibilité de mesurer et de vérifier les subventions auxquelles un grand nombre de familles a droit. Au vu de cette situation, plusieurs pays en développement complètent les mesures ou estimations de revenus et de biens à l'aide d'indicateurs catégoriques de besoins (ex : race/tribu/ethnicité, niveau d'instruction des parents, type d'emploi, la fréquentation du lycée, possession d'une automobile ou d'un chauffeur), qui sont plus visibles et plus difficiles à dissimuler que les méthodes conventionnelles de mesure du revenu et des biens. Cet article reconnaît les imperfections de ces mesures, mais soutient toutefois que l'application de règles strictes permettant de définir la capacité à payer les prêts vaut mieux qu'une politique de subventions égales pour tous. Il conclut en émettant des recommandations relatives au ciblage des subventions de l'enseignement supérieur en Afrique.

### **Estimating and Verifying Family Means**

Throughout the world, including the African continent, countries are turning to various forms of higher education cost-sharing, shifting at least some of the costs once borne exclusively or at least predominantly by the government, or taxpayers, to being shared, or borne partly by parents, students, and other non-governmental sources of revenue. Johnstone's article in this issue (Johnstone, 2004; see also Johnstone 1986, 2002, 2003) cites examples of this shift and presents the rationales for, or forces behind, this shift as threefold: (a) the view that having parents and/or students share some of the costs is more equitable because students (also parents) receive considerable benefits from higher education and therefore ought to bear a portion of the costs; (b) the view that tuition fees and/or bearing some of the costs of food and lodging can lead to greater efficiency and greater responsiveness in providing these expensive services; and (c) the view—especially relevant to developing countries—that there is simply no additional tax capacity (or if there were, any additional claims of higher education would be far down in the queue of unmet public needs) and that universities and other tertiary-level institutions must therefore turn to parents and students for additional revenue. In fact, the alternative to additional revenue from parents and/or students in the form of tuition fees as well as fees for lodging and food may be increasingly underfunded and deteriorating public universities and other institutions of higher education or increasingly constrained capacity or both. Such a condition would harm most severely children

of the poor and middle class who do not have the alternatives of seeking higher educational opportunities abroad or in the emerging private sectors.

In “Higher Education Finance and Accessibility: Tuition Fees and Student Loans in Sub-Saharan Africa” (this issue), Johnstone elaborates on these forces and describes the emergence of dual, or parallel, tuition fees in East Africa, as well as continuing pressure for some kind of cost-sharing in other countries as possibly the only way to expand capacity to meet some of the rapidly increasing (in sub-Saharan Africa, the virtually exploding) demand for higher education. Aside from the need to increase capacity, cost-sharing may be the only way to improve the deteriorating conditions of most sub-Saharan African universities, hold on to faculty, and generate resources to provide grants and loans that are absolutely essential if students from other-than-affluent families are to have a chance at higher educational participation. The incomes of the average family in most of Africa, however, are extremely low, and the resources available to many or most families are insufficient to meet new expectations of paying tuition fees as well as costs of student living. Thus, the advent of (or sharp increases in) tuition fees and other parent- or student-borne costs must be met with some form of targeted subsidies in the form of means-tested grants and/or loans if cost-sharing is not to preclude the possibility of higher education for the majority of families with low incomes.

At the same time, one of the very great dilemmas for higher educational policy in Africa and virtually all developing countries is means testing—determining and verifying the amount that a family can reasonably be expected to contribute toward its children’s higher education. In 1988, McMahon first called international scholarly attention to the sheer technical difficulty of ascertaining and verifying incomes and assets. This limitation hampers the implementation of *means-tested*, or *need-based*, or *targeted* systems that underlie conventional financial assistance in the Organization for Economic Cooperation and Development (OECD) countries. This difficulty goes beyond the mere extent of poverty, great though it is in most of Africa. Successful means testing to preserve and even enhance higher educational accessibility in the face of increasing cost-sharing requires, first, a culture that accepts the underlying appropriateness of the expectation that parents and possibly extended families will contribute to the higher education expenses of their children, at least to the extent of the family’s financial ability. But this expectation cannot be assumed in countries where these costs have traditionally been borne almost entirely by the government. A second assumption is that the culture accepts the right of the government (or of the university—which may be seen as essentially the same) to ask very personal and perhaps even financially threatening questions about incomes and assets. Third, means testing requires the govern-

ment or the university to be able to verify this underlying information despite natural incentives and abundant opportunities for families to hide income and assets from the prying eyes of the authorities. In most developing countries, all three of these conditions are limited or absent altogether. Further contributing to the difficulty of means testing in very poor countries of Africa and elsewhere are these facts:

1. There may be no effective taxation of income except, perhaps, of civil servants.
2. Many adults may be employed in second and third jobs in cash economies where relatively few accurate records are kept and where even fewer are shared routinely with the government.
3. Many families use banks seldom or not at all. Banks may also have little or no ability or inclination to link either deposits/withdrawals or interest paid on accounts to individuals and to share this information with authorities.
4. The market value of real property may not be clearly known.
5. Finally, to the extent that real property might be included in assessing financial means, there may be few ways to convert this asset to cash short of selling it. That is, the possibility of mortgaging or borrowing with the property as collateral may be limited.

In short, countries that are attempting to introduce tuition fees and other elements of cost-sharing in higher education—and that also wish to preserve higher education's accessibility to academically talented young men and women from poor and rural families—need to find a reasonably fair and cost-effective way to ascertain and verify a family's income, or the means to pay for the higher education of their children.

This article explores the underlying principles of, and approaches to, means testing and need analysis in determining the appropriate financial contribution to expect from parents, extended families, and/or students in meeting their share of the costs of higher education. This share includes costs of living as well as the institutionally borne costs of instruction.<sup>1</sup> We will deal first with the broad range of policies that target the delivery of both transfer payments and publicly funded goods and services to the poor. We will consider the advantages and disadvantages of assessing "need" through the self-reporting of incomes and/or assets as opposed to using categorical indicators (e.g., occupation or place of residence) as proxies for sometimes hidden or misreported incomes and assets. We will then explore "means testing" and "needs analysis" as these terms apply to the targeting of subsidies in the delivery of higher

education, focusing on the rationale for need-based financial aid in higher education, typical needs analysis formulae, and the use of categorical indicators for estimating both “means” and remaining “financial need” in low-income countries.

The second part explores means testing and need analysis as these terms apply to higher education, focusing on (a) the rationale for need-based financial aid in higher education, (b) typical need analysis formulae, and (c) the use of categorical indicators, or proxies, for estimating both means and remaining financial need in low-income countries.

We then examine the use of means testing and need analysis as used for the targeting of higher educational subsidies in two highly industrialized economies, the United States and Japan, and one less industrialized, developing economy, the Philippines, which has a heavy reliance on private higher education and so has worked hard to develop a means-testing system to target more efficiently the scarce government resources devoted to higher education. The paper concludes with some reflections and recommendations for the greater targeting of higher education subsidies in Africa.

### **Political and Economic Reasons for Targeting**

Experience in many countries suggests that the affluent and well-connected societal groups disproportionately use and benefit from public services. Evidence supports this finding even for services that are meant to be freely available to all, including hospitals in urban centers, public primary and secondary schools, and higher education in many developing countries. The drawbacks of the universal provision of supposedly “free” public services are clear. Most countries cannot afford to provide such services universally, and this distributional impact is almost certainly inequitable (Walle, 1995). In response to these drawbacks, many studies (e.g., Atkinson, 1995; Nichols & Zeckhauser, 1982; Sen, 1995) establish the need for the increased targeting of government expenditure toward the poor. The theoretical rationales for targeting include both equity and efficiency. According to Sen (1995), “The more accurate a subsidy in fact is in reaching the poor, the less the wastage, and the less it costs to achieve the desired objective” (p. 11).

### ***Concerns about Income-Tested Transfers***

Most targeted schemes use income as the main barometer to identify the population that suffers certain deprivations. The agency or unit responsible for distribution takes steps to identify the deprived population and target it to receive the benefits. For example, in a social welfare program designed to alleviate poverty, the target population will be families whose incomes fall below the point deter-

mined as minimum income for healthy living, given such factors as family size, costs of food and lodging, and other country-specific indicators. In such a case, the head-count ratio of those below the line to the total population measures the aggregate level of poverty (Atkinson, 1995), while the total amount by which the incomes of the poor fall short of the poverty line suggests the extent of the poverty gap. Once the target population and the extent of the deprivation have been identified, the next step is to assess the distributional impact of the proposed poverty-ameliorating scheme—that is, the efficiency of the targeting. This efficiency is measured in two ways: vertically and horizontally.

*Vertical efficiency* refers to the accuracy and the comprehensiveness of the program in assisting only the target group (Kanbur, Keen, & Tuomala, 1995). Vertical efficiency diminishes when those who are not poor receive payments or when the poor receive excess payments. *Horizontal efficiency* is the degree to which the targeted program redresses the problem. It is measured by the ratio of the benefits going to the target group to the total benefits that would be needed for them to move above the cut-off line (Atkinson, 1995; Sen, 1995). While vertical and horizontal efficiency are both, in theory, desirable, they are sometimes in competition. For example, it is possible to achieve a high level of horizontal efficiency simply by transferring uniform benefits to all people below the poverty line, but such an achievement comes at the cost of losing vertical efficiency (Atkinson, 1995; Cornes, 1995). Such a problem is particularly serious, as Atkinson argues, where the available budget is far short of the total poverty gap—a reality in most low-income countries. An alternative, *targeted* approach, for example, would reduce these gaps by a roughly equivalent degree, thus requiring greater transfers to the poorest rather than distributing equal amounts to all of the poor.

Notwithstanding the seeming precision of using measured total income and/or measured wealth in targeting the distribution of transfers and other public benefits, income-tested transfers suffer from several problems. In theory, income-tested transfers function well if: (a) the government operates a personal income tax system; (b) everyone files a tax return; (c) the information is deemed sufficient to determine a fair payment; and (d) the administrative machinery exists to effect the payments (Atkinson, 1995; Sen, 1995; Cornes, 1995). In practice, however, most income-tested transfers are not automatic, even in high-income countries. They thus require measuring income at two stages: claiming and verification (Atkinson, 1995; Cornes, 1995). Problems related to both claiming and verification include the huge administrative cost associated with audits, creating penalties to be imposed in cases of income underestimation or deliberate deception, and requiring employers to perform the laborious chore

of collecting and documenting their employees' current income. Thus, employers tend to discourage potential recipients from claiming the benefit.

An alternative approach to simplify the process is to maintain a given payment for a longer period of time—that is, to establish both the overall eligibility for, as well as the appropriate amount of, the income transfer only infrequently, as opposed to continually “fine-tuning” eligibility and benefits to fit the changing financial circumstances of the targeted individuals. In such a system, however, the benefits paid will not necessarily remain proportional to either current income or the current need. The use of past earning-periods also inevitably means that some current recipients would not have qualified on the basis of their current circumstances (Cornes, 1995). However, such simplification may reduce the administrative costs (which are sometimes greater than the costs of the transfers themselves), thus theoretically increasing the resources available for the pool of transfer benefits.

Irregularities and distortions of information, according to Sen (1995), will inescapably allow some individuals in income-tested transfer schemes to gain targeted benefits they do not deserve and may similarly exclude some deserving recipients from obtaining the benefit at all. But even without such misinformation and misrepresentation of information, income-tested transfers can lead to distortions of one's economic behavior. This possibility occurs when benefit eligibility is based on a factor that is not only readily available but also capable of manipulation. Examples are working and earning only enough to maintain the benefit, shifting some remuneration into another “benefit year” or to another member of a family unit, or shifting from monetary to nonmonetary forms of remuneration. Such activities, not technically illegal, can diminish the efficiency of the targeted scheme and become a labor disincentive in the economy as a whole (Schultz, 2001).

### ***Means Testing and Categorical Indicators***

Fortunately, income is not the only indicator for assessing means or determining need. Indicators other than income are referred to as *categorical* indicators. A categorical approach generally employs multiple indicators to supplement whatever is available on income and assets and to maximize the social objective for which the transfer schemes are designed. Categorical indicators, for example, might include occupation, type of housing, region of residence, automobile ownership, family size and age of children, gender, ethnicity, and other characteristics that are not only relevant in estimating means and need but which may also enable the system to target beyond means for additional social purposes. Some examples of such targeting would be ethnicity, language, region, single parenthood, or other attributes that the government chooses

to assist. Such indicators have the additional advantages of being difficult to manipulate (hence, less susceptible to corruption) and relatively easy to observe (hence, less costly to measure). As such, categorical indicators can be used either as an alternative or as a complement to income testing. In practice, Cornes (1995) notes, almost all means-tested schemes are conditional, not just on income, but also on satisfying certain categorical criteria.

As useful as they are in supplementing the information obtained through determining or estimating income, categorical conditions have their own problems. Imperfect targeting, for example may arise either from a loose connection between the categorical indicator and the benefit or social program (e.g., family size or place of residence and eligibility for welfare benefits), or from errors or ambiguities in identifying the categorical indicator itself (e.g., place of residence or ethnicity). These imperfections may lead to false negatives, or Type I errors, resulting in the exclusion of eligible families. They can also lead to false positives, or Type II errors, resulting in benefits awarded to families or individuals who are not in need and who ought not to have been eligible (Atkinson, 1995; Sen, 1995; Walle, 1995).

Another problem is “incomplete take up,” or the failure of eligible recipients to claim the income transfer or other public benefits to which they are entitled (Atkinson, 1995; Kanbur, Keen, & Tuomala, 1995; Sen, 1995). Potential recipients may simply lack information about their entitlements, or they may be aware of their entitlements but choose not to make the claim—for example, if they regard the status of “welfare recipient” as “stigmatizing.”

Notwithstanding these problems, adding categorical indicators to information on income and assets can still increase efficiency and accuracy. Atkinson (1995), for example, advocates linking measures of income/assets to categorical conditions of age, gender, illness, social surroundings, and the like. Thus, assessment would go beyond personal income alone in measuring whether potential recipients have the capability of functioning (or not) in society. Sen (1995) claims that using a broad set of categorical measures may ease some of the practical and political problems associated with targeting because of:

- *The frequently lower manipulability of observed functioning.* Some elementary deprivations (illiteracy, illness, etc.) can serve as categorical conditions because neither reason nor choice allows their deliberate cultivation on tactical grounds.
- *The fixedness of predispositional characteristics.* The causal factors underlying some functional deprivations can go much deeper than income deprivation and may be very hard to adjust (old age, gender) and are not open to incentive effects in the way adjustable features are.



- *The usefulness of self-selection.* There is particular value in using a method of targeting that allows the individual to weigh different life-related considerations and opportunity costs beyond income.
- *The nontransferability of benefits tied to personal functioning.* Unlike income, most service benefits typically cannot be shifted nor sold and hence are not of much use to those who do not need them.

Even supplementing income/asset measurements with categorical indicators does not solve all of the limitations of subsidy targeting, and the search for workable approaches is a continuous exercise—one which is just beginning in only a few developing countries.

### **Complications in Applying Means Testing to Targeted Subsidies**

Using a parental/family means test to determine eligibility for targeted subsidies in higher education presents special complications in all countries, particularly in developing countries. These difficulties are not fatal to the concept of cost-sharing or to determining workable indicators of parental and/or student means. However, even in developing countries, each of these (and other) complications needs to be taken into account and addressed in some way. This section considers four complications in applying means testing to targeted subsidies: (a) the treatment of assets, (b) official limitations on the family's financial responsibility; (c) stipulation of the parental/family unit deemed financially responsible; and (d) the effective tax rate, or relationship between the increasing financial means of the parental/family unit and the increase in the expected contribution.

#### ***Treatment of Assets***

Assets, or wealth (over and above current income) may occur in the form of savings, investments, or ownership of a home, business, or farm. Such assets contribute to parents' and/or student's financial strength and to their presumed ability to contribute toward the costs of higher education. Thus, such assets are frequently part of a means test for the targeting of subsidies. However, the correlation between income and assets is far from perfect; and including assets in the determination of means—and thus in consideration of how much the parent or student is expected to contribute toward college costs—can be highly controversial. Furthermore, the consideration of assets in determining the expected parental/family contribution, while almost always controversial, can be used in three quite different ways.

First, insofar as assets in most cases correlate reasonably well with current income, measuring assets can corroborate other measures of income and pos-

sibly even signal unreported income. Whether an asset is a reasonable indicator of current income or ability to pay may depend on the culture and the economy. For example, ownership of an automobile, a television set, or a personal telephone in an otherwise low-income country might be considered at the very least a signal of high means and the likelihood of a commensurately high ability to contribute something toward higher education expenses, even though such assets in moderate and high income countries might be considered virtual necessities and bear almost no relationship to current income. Also, the values of homes and agricultural land may be pushed up over time by a rising market far in excess of any rate of increase in the family's earnings—and thus in excess of the family's actual ability to contribute from current earnings without being forced to sell the home or farm.

In developing countries generally, and especially in Africa, such assets are especially illiquid—that is, not easily converted into the cash necessary to actually pay college costs—at least not without selling the asset and destroying or severely diminishing the home or means of livelihood. However, given that measures of current income are notoriously unreliable in developing countries, using assets to at least corroborate current income and overall means to pay may be very helpful. Real property is more difficult to hide than liquid assets, which can be held in an unreported account in another country. It is true that asset measurements may also be unreliable, especially where assets can be hidden from authorities and where there has not been a free market in operation with enough transactions to establish proper valuation of assets. However, a combination of several unreliable measures may still be better than relying on only the single unreliable measure of current earnings.

Second and more important—but also the source of considerable controversy—sufficient assets, especially investments and other liquid forms of savings, may not only corroborate reported current income or earnings but may in fact be assumed to be part of the actual parental contribution. In such a targeted cost-sharing system, it would be assumed that a portion of the family's assets could be liquidated, or cashed in, to supplement some portion of current income, thus paying the expected parental share of the dependent child's higher education expenses. This assumption poses a special problem in the case of assets that are not only highly illiquid but which may also consist of the family home, farm, or business.

In means testing in the United States, such assets are either excluded altogether or their value is counted only after a considerable exemption. For example, the official U.S. government means test known as the “federal methodology” ignores all assets for families with income under \$50,000 and excludes home equity from consideration altogether. In contrast is the “independent

methodology” used by many of the very expensive private colleges and universities for their own grants and price discounts. Operated by the independent, nongovernmental College Board, this method considers all liquid and nonliquid assets, including home assets for all applicants for financial assistance (Baum, 1999; Creech & Davis, 1999; Lind & Gilroy, 1997).

Very different philosophies underlie these two approaches (Baum, 1995; Creech & Davis, 1999). The federal methodology asserts the principle that homes and family farms are nonliquid assets, the consideration (or effective taxation) of which might require families to liquidate these assets, thus disrupting their lives in unacceptable ways to finance their expected share of their children’s higher education costs. In contrast, the College Board’s independent methodology asserts that both assets and income contribute to the family’s financial strength independently and that a family that has chosen to hold its assets in the forms of home ownership ought not to be treated more favorably (i.e., assigned a lower expected parental contribution) than a family that has chosen to rent its home and to hold most of its assets in the form of savings or investments that are presumably easy to liquidate. (In fact, the ease of refinancing, or arranging for a second mortgage, in the United States means that a family owning its home should not have to sell it to meet an expected parental contribution that has been influenced in part by the home’s value.)

Considering the political unpopularity of cost-sharing, it is politically tempting to exclude or at least to greatly discount real property in means-tested targeting and to consider only the most liquid of assets, such as savings. However, a case can also be made for excluding savings earmarked explicitly for the children’s college expenses. The rationale for such an exclusion is that the consideration of such special college savings will usually increase the parent’s expected contribution and diminish the chances, or the amount, of any targeted subsidies. Thus, the exclusion of savings made explicitly to contribute to the children’s future higher education expenses may enhance the incentive for such savings. And as the parents’ share of higher education costs (especially private higher education costs in the United States and elsewhere) rises beyond the amounts that can reasonably be expected to come from current family income—and even beyond the amounts that can be expected from current plus future income (that is, from parental borrowing)—most parents expecting to contribute financially to their children’s higher education must begin saving for these future college costs far in advance of the actual event (that is, also from past income). While such considerations may seem distant to most African countries, they must still be considered and resolved before the effective implementation of any comprehensive means-testing system.

A third way in which assets may enter into the consideration of family means, or the ability to contribute financially toward the children's higher education expenses—anticipated in the preceding paragraph—is the ability of assets to support borrowing. This factor is especially critical in the United States and a few other advanced industrialized countries (AICs) where officially expected parental contributions can be extremely high and where borrowing is relatively simple and inexpensive given good collateral like a home or similar assets.

In other words, the real property allows the family to make contributions not simply out of current income (which diminishes current living standards) or even out of past income (which depends on savings that may or may not be there, or upon the sale of the assets, which may be disruptive), but also out of future income (or the capacity of current assets to collateralize borrowing). Thus, many U.S. families borrow to meet at least some of their calculated expected parental contribution; and the least expensive way to borrow is to provide assets as collateral, as in refinancing a home. However, home mortgaging (not to mention second mortgaging) is simply not a part of the economy or the culture in the developing world, and the home, farm, or small business of a Ghanaian or a Kenyan family probably cannot be collateralized for a loan at an acceptable rate of interest. Therefore, we are back to the question of what including home or farm equity in the means test is meant to accomplish. In the absence of the ready ability to convert such assets to cash, their usefulness may lie mainly in the first rationale: using multiple measures of assets, including real property, to get a truer picture of total means and to signal serious underreporting of current income.

### ***Limiting Parental Financial Responsibility***

The bedrock of cost-sharing in most countries where it is official policy lies in the expectation of a means-tested parental contribution to the higher educational expenses of their children. In such cases, the student, at least for the purpose of establishing this officially expected financial contribution, is still considered a financially dependent child. (The exception is Scandinavia, where university students are automatically designated as financially independent and where the cost-sharing applies only to the student, generally by government-assisted borrowing.) However, it is clear that the official expectation of a parental financial responsibility, even in the case of affluent parents, must have a limit—some point at which, or circumstances under which, the student can be considered financially independent regardless of his or her parents' financial means. At this point, whatever targeting exists with respect to financial assistance or eligibility for other targeted subsidies would apply only to the

students' income and assets (or sometimes to the income and/or assets of a spouse).

For example, the limit on the parental financial responsibility might last through the first degree only, or only to a certain age of the child, or to the point of marriage. In the United States, the rules for receiving means-tested grants and guaranteed loans from the federal government automatically convey independent status for graduate and professional students, married students, veterans, orphans, wards of the court, individuals with legal dependents, and students over age 24 (Dick & Edlin, 1997). Determining independent status in other countries, such as the Philippines, New Zealand, or Japan is, by and large, consistent with the above criteria.

Policies dealing with such a need for a limit also respond to instances in which the parents may simply refuse to contribute. (In Germany and Austria, the expected parental financial contribution to their children's higher education expenses is a legal obligation, enforceable either by the children or by government authorities.) Policies also need to acknowledge that many students want to be considered "independent"—even though such students are generally not financially independent at all but merely prefer dependence on the government (that is, on other taxpayers) to financial dependence on their parents. In short, any targeted subsidy system built on an expected parental contribution must establish rules for when a student may be considered independent—that is, no longer dependent on his or her parents regardless of their financial means.

### ***Stipulating the "Parental/Family" Unit Responsible***

In advanced industrialized countries, targeting is based on the means (however defined) of the immediate, or nuclear, family, and effectively considers the current incomes and assets of the parents and student. This situation gets complicated when the student wishes to declare financial independence from the parents, as discussed above. In AICs, the principal complication is the status of the noncustodial parent in legal divorces or separations. Again, such situations are fairly easy to resolve through clear stipulations in the policies governing means testing and need analysis. The most typical situation is defining the financial responsibility of an absent father: Should the "family means," which determines eligibility for grants, loans, or other subsidies, include the income and assets of noncustodial parent? Are the authorities prepared to take legal action against the noncustodial parent who has sufficient means but who refuses to acknowledge any financial responsibility for the higher education expenses of the children?

In African countries and other less industrialized countries, especially in rural or nonmetropolitan regions, stipulating the appropriate unit for calculating the expected family contribution to higher education expenses may be even more complex. Frequently, financial responsibilities are shared within extended family units that may include not only several generations, but also the combined families of siblings.<sup>2</sup> Conceivably, in very early periods of higher education participation, only one youth from a small village may be fortunate enough to attend the university. Even if the government pays the tuition, it does not always pay living expenses. Anecdotes report that sometimes the village assumes financial responsibility, thus complicating systems of means testing.

Again, these matters can be resolved simply and in any number of ways. But they must be resolved officially and in written form, even in developing countries just beginning a means-tested system of financial assistance to higher education students.

### ***Officially Calculating Means and Subsidies***

A means-tested subsidy is a benefit (e.g., a grant, tuition fee discount, or access to a subsidized loan) that is targeted to families or directly to students with minimal means. The system may provide a benefit to which the student/family unit is either entitled or is not. Or the system may call for benefits that rise with the diminishing calculated family means. Or from the opposite perspective but with the same meaning, the system may call for a grant that diminishes with increasing incomes or measured means. A system in which the student either is or is not entitled to the full benefit has the advantage of being simple to calculate and easy to dispense. At the same time, such a system places great financial stakes on entitlement status, especially when the calculated means are close to the “tipping” point. The incentive is thus very great to shift incomes or earnings out of the period upon which the entitlement is to be based or even to suppress or fail to report income altogether. Finally, vertical equity is compromised, with many families of quite different means being entitled (or not) to the same benefit.

Therefore, the more ideal and equitable means testing provides a more continuous relationship between the officially calculated financial means of the parental or family unit and the value of the means-tested grant (or conversely, the size of the expected family financial contribution). Such a targeting system, then, resembles an income tax in which, at least between some maximum grant (or minimum family contribution) and a phase-out of the grant altogether (or maximum family contribution), there is a defined relationship between increases or decreases in calculated means and increases or decreases in the

grant or the effective fees. This system has the advantage of reducing the incentives to alter the calculated means near the tipping point, thus providing what is probably a more equitable system of targeting. At the same time, such a system is also complex and implicitly rewards income shifting or underreporting for all of the families eligible for some financial assistance or discounted fees, not just those near the tipping point.

As a practical matter, developing countries just beginning a system of cost-sharing and targeted subsidies may have to implement the simpler system: the “rough justice” by which a student either is or is not entitled to the subsidy. Along with improvements in the calculation and verification of means, however, such countries might attempt to institute a more sophisticated system with a more continuous relationship between the calculated means and the targeted benefit.

### Examples from Three Countries

The principles of means testing and need analysis may be illustrated by considering means testing and need analysis as these policies are applied in three quite different countries: the United States, Japan, and the Philippines, each of which has considerable experience with cost-sharing and the targeting of higher education subsidies. The United States, for example, enjoys relatively high individual incomes plus highly developed systems of income verification and the enforcement of income tax obligations, which in turn have created a culture of high income tax compliance. Upon these factors, a system for means testing can be built rather easily. Such systems begin with determining what constitutes income. This determination requires differentiating between gross and net income, mainly by deducting expenditures incurred to earn the income. It thus more nearly and fairly equates the incomes of salaried employees and wage earners (which can be reported with presumed accuracy by the employer) with the more variable incomes of farmers, artisans, independent contractors, and other self-employed workers.

The United States also has systems of capturing, as well as cost-effectively reporting and monitoring, “unearned income”: e.g., dividends, interest, capital gains on sales of assets, and even winnings from gambling. Finally, because of a free market economy and many years of transactions, market prices have been established for virtually all individually held major assets such as homes, businesses, and farms—allowing a means test to employ assets in addition to income or earnings for the more complete determination of financial ability to pay. In short, parental means can be determined quite precisely from the records used to pay individual income taxes, since these records contain much finan-

cial information on assets in addition to earnings. Consequently, there is no need to employ categorical indicators as proxies for measured means, although categorical indicators are still useful in complementing income and asset measures, such as, for example, the number of dependents in the household and the number of dependents already in college (Atkinson, 1995).

Japan also has a highly developed economy along with a well-developed and relatively efficient income tax system that can be tapped for indicators of means in determining eligibility for means-tested grants and subsidized loans. Means testing in Japan assesses income broadly, treating salaried and nonsalaried incomes differently and including income earned by any member of the household. This category includes any unmarried member of the family including siblings living separately. These indicators of income and assets (including home equity) are combined with various categorical indicators—such as number of household members, disabilities, unusual medical expenses, and the like—to determine family means and eligibility for certain targeted subsidies (Japan Scholarship Foundation, 2000).

The Philippines, a developing country with limited resources, has the highest proportion of students served by the private higher education sector of any country. It suffers from many of the same problems as Africa and other low-income countries, including the uneven taxation of income, a prevalence of employment in the informal economy, and a lack of transparency in many financial transactions. The Philippines thus relies on a combination of reported income and assets, plus a range of categorical indicators, together with rigorous verification of these reports for the distribution of student financial assistance. For example, in addition to the usual requirement to report taxable income, home equity, and other liquid and illiquid assets, households making a case for targeted subsidies are required to submit major bills (e.g., water and electricity), their mode of daily transportation (including the availability and type of any vehicle), type of high school completed by the student, major appliances and facilities (e.g., TV and washing machine), and any private life insurance. These categorical indicators are used partly to complement or adjust the reported measures of incomes and assets—presumably for a more refined and equitable measure of ability to pay—and partly as independent indicators to corroborate reported income and assets (or to signal likely underreporting). (CHED, 2001).

### **Means Testing and Need Analysis in Low-Income Countries**

Some details of the need analysis systems described above may be less applicable to very low income countries, including many in Africa. Such countries typically lack not only reliable and verifiable information on incomes and as-



sets, but also lack information on some of the categorical indicators that may be used to support targeting or to verify the self-reported data on means. Subsistence agriculture, on which the economies of most of these countries are based, coupled with scattered and unplanned settlement patterns and underdeveloped communication systems, make the task of tracking the income and/or assets of potential recipients exceedingly difficult. Therefore, determining eligibility based on these indicators becomes less feasible. Under these conditions, especially early in the use of government-sponsored targeting, whether for higher education or any other subsidies or benefits, it may be necessary to rely mainly on rough and easily observable categorical indicators. Observers such as Merisotis and Wolanin (2002), who have done work in Mozambique, and Schultz (2001), suggest the following indicators to approximate need among applicants in low-income countries.

1. *Race, ethnicity, sex, tribe, caste, and related attributes.* The rationale for using these attributes is the historical underrepresentation of certain ethnic groups in higher education and the need to redress such disparity. Data may be obtained from the enrollment records of ministries and the universities. The population census may also help to identify linguistic and ethnic groups whose participation in higher education is far below the national average. Implementing such policies, however, requires working closely with local and regional governments, both to justify the rationale of the policy and to identify the right group that deserves the benefit package. Identifying and verifying ethnic and/or linguistic groups in the multilingual/multiethnic countries of the African continent is not only politically controversial but is also technically exceedingly difficult. A particular problem is forged documents that undeservedly identify individuals as members of the underrepresented ethnic groups.
2. *Parents' education.* Children from educated families disproportionately reap the benefits of higher education. For example, Mayanja (1998), reports that children from the best-educated parents are most likely to enjoy the benefits of free higher education at Uganda's Makerere University. Unlike income, which is subject to manipulation, educational level is nonadjustable and will not have a disincentive effect on labor (Shultz, 2001).
3. *Regional targeting.* The rural populace generally has limited access to basic primary and secondary education and is therefore underrepresented in higher education. Farming families may experience too-high opportunity costs if they allow older children to go to school. Finally, trans-

portation and living expenses are higher because the student cannot commute to a college or university from the home. All of these factors can restrict participation in higher education. Using this criterion will thus help to identify an underserved sector of the society.

4. *Type of employment.* Type of employment—e.g., civil service, farmer/herdsman, small business owner, hourly wage laborer, etc.—is not a precise predictor of ability to pay, although certain readily identifiable and verifiable employment types might help exclude professions from entitlement to targeted subsidies in the absence of other high-need indicators. For example, most salaries from civil service, private employment, nongovernment organization, or nonprofit entity jobs are almost always sufficiently high to appropriately exclude the family from automatic entitlements, including need-based grants for the children's higher education. Placing the burden of proof upon such families to demonstrate why they should nevertheless be entitled to targeted aid should considerably reduce the inappropriate assignments of such aid.
5. *Secondary school attendance.* Where demand for higher education far outstrips capacity—which is the case for most of Africa and most developing countries—entrance to higher education is extremely competitive, and parents who have the financial means frequently send their children to elite secondary schools and invest considerable resources in tutorial and other preparatory programs. Conversely, the children of low-income parents have no option but to attend the generally lower quality rural high schools, which give students little chance to qualify for postsecondary admission. Mayanja (1998) writes that in Uganda, the lion's share of the performance-based subsidy in Makerere University goes to students who come from high-fee-charging "first world" schools. Similarly, a significant number of students who enjoy free higher education in Ethiopia went to prestigious private secondary schools. Thus, data on the type of secondary school completed can provide a fairly good picture of parental affordability in low-income countries. Indeed, using this criterion has both political and economic justifications. Among other things, enforcing these criteria means that parents who have managed to pay for their children's secondary education may have a greater stake in paying for their higher education.

### ***The Special Case of Foreign Remittances***

A complication in many developing counties, and especially in many African countries from which large numbers of the most educated and productive have emigrated, is the treatment of remittances: income (and occasionally assets

such as automobiles) which are sent back to families from temporary or permanent émigrés now working in high-income countries such as the United States, Europe, Saudi Arabia, Japan, or, increasingly, South Africa or even Botswana. Remittances raise all of the complications of asset inclusion, income verification, and the determination of the appropriate family unit. Foreign remittances are particularly likely to be hidden—not only because most income, or at least most high income, is apt to be hidden, but also because foreign remittances are more likely to be implicated in tax evasion or black market transactions. Also, foreign remittance may well be unsustainable and hence not able to be counted upon.

However, while the majority of beneficiaries of foreign remittances will probably hide the actual amount and even the sources of their good fortune, they are not likely to continue to lead the kind of visibly destitute life that would result in receiving the maximum higher education subsidy. Rather, those receiving remittances nearly always invest in better homes, cars, or business opportunities. Thus, they are likely to join those whose ability to pay is determined, or at least revealed, by their visible assets or lifestyles. Many Africans who depend heavily on foreign remittances appear to be spending this new income on personal property, business investments, and on various alterations in lifestyle (including sending their children to expensive private schools), all of which makes them stand out in their communities and stand out in contrast to the backgrounds they had occupied only a few years before a close relative emigrated.

### *Examples of Means Testing in Africa*

In Mozambique, parents are required to submit information about household income and assets. According to Merisotis and Wolanin (2002), this income/asset information is supplemented with categorical information on parents' occupation, whether the home has running water and/or electricity, and the principal mode of family transportation (e.g., car, public transportation, car and driver provided by business or government agency, etc.)

In Uganda, several proxy variables are used to signify income and determine ability to pay for higher education. The father's level of occupation and the mode of transportation used are the major barometers to classify students among three income groups (Mayanja, 1998).

Classified as high income are families with professional fathers who have more than 15 years schooling (i.e., first degree or above); businessmen fathers with private or official vehicles; and professional fathers with 15 years or less of schooling but with a personal or official car.

Classified as middle-income families are those whose fathers are professionals with 15 years or less of schooling but with cars and businessmen and farmers with no personal or official vehicles. Classified as low-income families are peasants and those who are not employed.

The use of such social or categorical indicators in determining the family's ability to pay is not without its problems. First, it is very labor-intensive to verify the accuracy of the information obtained. In addition, as discussed earlier, some social, or categorical, indicators are either highly subjective or may bear only a tenuous connection with ability to pay, making them of little use in determining ability to pay in fine degrees, or on a continuum. In such cases, they are useful mainly in determining whether the family has either no ability or some ability to pay (Merisotis & Wolanin, 2002).

Still, the social, or categorical, indicators are useful and their weaknesses can also be minimized. For example, limiting verification to a random sample of those who apply can minimize the high costs associated with verification, as in any audit. However, the efficacy of sampling, or spot-checking, according to Merisotis and Wolanin (2002), depends on the severity of the penalty for cheating. Arguably, publicly exposing those who cheat in the media, for example, and making them subject to social sanctions could minimize the problem. However, since social sanctions are culture bound, exposing someone for cheating the government would be met with indifference in some contexts.

### **Conclusion**

With limited or nonexistent information on either incomes or assets, with no cultural tradition of voluntary disclosure of such information, and with little risk of sanctions for underreporting, the difficulties of creating reliable, verifiable, and cost-effective systems for means testing in developing countries are formidable. To some, these difficulties are so formidable as to preclude most forms of subsidy targeting, including means-tested grants and loans for higher education. The near absence of successful cost-sharing in virtually any African country (with the exception of South Africa, which is an exceptional African country in most ways), seems to support a conclusion that cost-sharing will remain a distant goal, forever frustrated by the combination of political, ideological, and technical obstacles. The paucity of African examples of successful means testing conforms to the paucity of successful African examples of loan recovery or successful adoption of even a modest tuition charge applicable to all students (again, with the exception of South Africa).

At the same time, the prospect of meeting the rising costs of the rapidly increasing African demand for higher education with only public revenues seems even more remote—making some cost-sharing and subsidy targeting in

African higher education, however limited, an imperative. Thus, we conclude that African and other developing countries must continue to work at systems of means testing and targeting in providing subsidies for higher education and other social services. Because we cannot point to a genuinely successful and generally replicable model in Africa, we offer these summary conclusions based on our understanding of means testing in the developed world and on the limited experiences with subsidy targeting in Africa. We hope that they might be helpful to countries attempting to devise schemes of means testing and subsidy targeting in pursuit of greater and more equitable access to higher education.

First, means testing in developing countries must combine: (a) voluntary reporting of income and assets, with (b) some stipulated set of verifiable categorical indicators, or attributes, both to measure additional capacity to pay and also to corroborate the voluntary reports and other measures of income and asset values, enforced by (c) a system of random sample verification, and (d) appropriate and enforceable sanctions.

Second, all means-testing schemes—even those used in AICs like the United States—involve compromises and imperfections. The means-testing schemes even conceivable in Africa, particularly at this initial stage, will be imperfect and will involve compromises on both of the essential goals: equity and efficiency. At the same time, experience from developed nations suggests that a thoughtful, comprehensive, and transparent policy, even in the absence of all of the supporting data, traditions, and systems that have existed for decades in many of the OECD countries, can minimize those avoidable imperfections in means-testing schemes that emerge simply from the failure to have thought through the kinds of complications we have discussed in this article and to have devised some—any—clear and workable resolution.

For example, the issues surrounding the treatment of home or farm assets have lots of resolutions—all of them technically complex and most of them either politically unpopular or fiscally unworkable (and some both). But the only completely unacceptable and truly costly one is no resolution at all: pretending that it does not matter how assets and incomes can be transformed from one to another, producing an outcome that is unpopular and unfair and unsuccessful in diversifying higher education's revenue. In other words, targeting schemes that fail to foresee potential perils are no better than untargeted schemes and are hardly defensible on the grounds of either equity or efficiency.

Third, means-testing and/or need analysis schemes need not be perfect, but they must be clear and predictable. In the end, a truly effective and efficient system of targeting must rely substantially on voluntary participation and com-

pliance. This in turn requires people to believe that the system, however much it may disadvantage them, is (a) essentially fair and (b) unacceptably costly to evade or misrepresent. Such an outcome calls for systems that are not only predictable and clear but that actually convey confidence and motivation. The inevitably complex and imperfect multiple indicators and verification procedures have the inevitable potential, not only to anger the politically powerful, but also to discourage low-income and ethnic or linguistic minority parents and students from beginning or completing the application procedures. Under these circumstances, clarity and predictability are essential. Equally important is providing technical assistance for needy families to fill out the applications. Such assistance will increase the cost but is justified in helping to assure both the vertical and the horizontal equity of higher education subsidy targeting.

Fourth, the development and especially the implementation of cost-sharing and targeting schemes require adequate participation with local constituencies, including religious authorities, local governments, community organizations, and cultural groups. For example, stipulating the appropriate family unit needs to be sensitive to cultural and religious mores, including the acceptance, for example, of the practice of polygamy. A workable and enforceable scheme for determining expected family contributions, then, must go beyond the central government to the grassroots constituencies—both to solidify political acceptance of policies that are almost inherently unpopular and also to appropriate local mechanisms of verification and enforcement.

Fifth, a workable and cost-effective scheme of cost-sharing accompanied by means-tested student financial assistance requires the participation of a host of existing government agencies extending far beyond the higher education ministry. These include ministries and agencies involved in secondary education, tax collection, the census, immigration, the postal service, welfare and other social services, and other agencies at both the central and provincial levels. All of these agencies and their top government officials and civil servants have their own, often overwhelming, problems. The formation and successful execution of a scheme of cost-sharing and revenue diversification requires a strong and committed government.

The stakes are high for institutions of higher education, for the students, and for the larger society. In the end, cost-sharing, revenue diversification, targeting, and means testing are merely devices to serve the much larger goals of higher education itself: the creation and preservation of knowledge, the foundations of a democratic civil society, the training of a productive workforce, the realization of individual potential, and the assurance of social justice.

## Notes

- 1 “Means testing” and “need analysis” convey slightly different meanings to the same policy end. As used in this article, “means testing” refers to various schemes used to determine a household’s or individual’s ability to pay for higher education, generally including estimates of current income and major assets such as a home, a farm, or investments. “Need analysis” refers to estimates of the financial need remaining after subtracting an estimated family/student contribution (based on the means test) from the total cost of higher education attendance counting all fees as well as food, lodging, and other costs of living.
- 2 The tradition of polygamy in many parts of Africa is a further complication. Not only do polygamous families have many children, but many of these children are close in age, potentially requiring higher education almost simultaneously. At the same time, anecdotal evidence (some from francophone African graduate students) suggests a close association between polygamy and family wealth (land, cattle), making polygamy a possible signal of other substantial assets and current income. Thus, although these families have high needs, they may also simultaneously have high ability to contribute to their children’s higher education.

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