

Better Vision for the Poor

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Several social enterprises are attempting to provide eyeglasses to the 500 million to 1 billion poor people in the world who need them. Some enterprises see the provision of trained optometrists as the key to solving the problem; others are focused on cost reduction; others still are focused on technological innovations. Why haven't any of these approaches succeeded on a large scale?

BY ANEEL KARNANI, BERNARD GARRETTE, JORDAN KASSALOW, & MOSES LEE

ESTIMATES FOR THE NUMBER of poor people worldwide who need eyeglasses are startling. The World Health Organization reports approximately 517 million people in developing countries are visually impaired because they do not have access to corrective treatment. The Centre for Vision in the Developing World at Oxford University has a higher estimate: More than 1 billion people need but do not get vision correction. There is a simple, old, and cost-effective technology to solve this problem—eyeglasses. Yet the problem persists on a vast scale. For the poor, eyeglasses often are either inaccessible or unaffordable, forcing hundreds of millions of people to live below their full potential.

Visual impairment is more than just a health problem. It has economic, educational, and public safety implications. In Tanzania, for example, 71 percent of people who are farsighted are dissatisfied with their ability to do near work, such as winnowing grain, sewing, reading, and cooking food. But only 6 percent of people in Tanzania who are farsighted have eyeglasses.¹ In India in mid-2000, only 7 percent of the population wore spectacles, whereas about 65 percent of the population needed them.²

A simple pair of eyeglasses could dramatically improve the lives of the poor, by increasing earning power and occupational and public safety, improving educational opportunities, and fostering the ability to perform everyday tasks. Even the straightforward economic return from eyeglasses for the poor far exceeds their cost. A variety of approaches have been tried to solve this problem, using for-profit businesses, social enterprises, and innovative technologies. To date, none have succeeded on a large scale.

Given the high economic value and low cost of eyeglasses, it

would seem that private companies could profitably supply eyeglasses to the poor—an ideal situation for applying the bottom of the pyramid (BOP) approach popularized by C.K. Prahalad. In 2005, Essilor International, a publicly traded French company, launched a BOP initiative targeting the Indian rural poor. But the project has yet to make a profit.

VisionSpring, founded in 2001 as a nonprofit dedicated to reducing poverty and generating opportunity in the developing world through the sale of affordable eyeglasses, uses a social entrepreneurship approach. In 2009, VisionSpring sold 201,000 pairs of ready-made reading glasses. It is now trying to scale up its efforts and hopes to sell 1 million pairs of eyeglasses per year by 2012. Yet even if VisionSpring achieves this goal, the impact is too little, given that between 500 million and 1 billion people need eyeglasses—and the number is growing.

Another approach to solving the vision problem emphasizes technological innovation to provide low-cost, self-adjustable spectacles. These eyeglasses are called AdSpecs, and they are being developed by Joshua Silver, a physics professor at Oxford University. At least two other organizations are also offering adjustable spectacles, but none has achieved significant scale, probably because they are not cost-effective and have not gained customer acceptance from a style perspective.

If the benefits of eyeglasses are so obvious, why has it been so difficult to solve such an apparently easy social problem?

VISION BARRIERS

Many challenges confront the provision of eyeglasses to the poor in developing countries. Chief among them are a lack of awareness about the value of corrected vision, access to eyeglasses, and affordability. A 2006 study of the principal barriers to eye care in Andhra Pradesh, India, reported that 23.8 percent of the 2,615 respondents believed they did not have a serious vision problem, with 23.4 percent stating that they were able to see adequately, 20.4 percent that other obligations prevented an eye checkup, and 17.5 percent that they did not have the money.³

One of the problems is that many poor people do not know that a simple, affordable product exists to restore their clear vision; they assume that only expensive eyeglasses will solve their vision problem. Others do not fully appreciate the benefits of good vision. VisionSpring relates a case where a farmer's crop failed after he planted the wrong seeds because of his poor near vision.

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Cultural biases related to comfort and attractiveness also pose hurdles for the use of eyeglasses. A study in East Timor found that the chief reasons for unwillingness to use eyeglasses were appearance (41.1 percent) and embarrassment (37.5 percent).⁴ In China, some people mistakenly believe that wearing eyeglasses causes children's vision to deteriorate faster. And elsewhere, poor people settle for traditional medicine, which is not known to correct refractive error.

Poor access is another major barrier. In the developing world, eyeglasses are primarily available in high-priced urban optical shops. For the rural poor, a trip to buy glasses is expensive and often prohibitive. It often requires a daylong trip each way to a nearby city. Eye screening centers are sparse, especially in rural areas, because of lack of funding. As a result, primary eye care is largely unavailable where governments lack the willingness to pay for the services or where there is not a community base with the ability to pay.

Even if people become aware of and gain access to eyeglasses, the glasses must become more affordable. In the Tanzania study, 31 percent of the people surveyed were unable to afford eyeglasses at a price that covered the cost and shipping of the spectacles. The East Timor study found that 49 percent of rural subjects were unwilling to pay even \$1 for eyeglasses, and only 16 percent were willing to pay \$3. Willingness to pay was higher for the urban poor than the

rural poor, and higher for men than women. VisionSpring's experience is that most people are willing to pay around 10 percent of their monthly income, once they experience proper vision. This implies that eyeglasses have to be priced at about \$2.50 to gain wide acceptance among the poor. A recent study in India provided eyeglasses free to the subjects. One month after using the eyeglasses, the subjects were asked how much they would be willing to pay for the eyeglasses; the median answer was about \$4.⁵

Yet in developing countries, eyeglasses are sold at significant margins by eye doctors and optical shops. A pair of custom eyeglasses often costs about \$50, a price truly out of reach for poor people living below the poverty line of about \$3 per day. The total indirect cost of acquiring eyeglasses—including reduced livelihood, cost of transportation, and doctor fees—can be significantly more than the cost of the eyeglasses themselves.

Another major barrier to delivering vision correction is the lack of trained optometrists. Many developing countries have as few as one optometrist for every 1 million people—the figure for the United Kingdom is one per 8,000 people. In Mali, the ratio is one per 8 million, according to the Centre for Vision in the Developing World. Many developing countries lack sufficiently trained ophthalmic support personnel, such as assistants and technicians, and rely too much on highly skilled ophthalmologists for simple eye screenings. The Andhra Pradesh study found that 93 percent of those who wore eyeglasses for farsightedness got a prescription from an ophthalmologist.

To better understand the challenges of providing eyeglasses

A VisionSpring representative in Bangladesh fits a client with low-cost reading glasses, as villagers look on.



to the poor, it is useful to examine closely the work of three providers—Essilor, VisionSpring, and AdSpecs—each of which is taking a different approach to solving the problem.

ESSILOR: BOP APPROACH

Some people believe that the vision crisis can be solved by using the for-profit model to tackle the BOP market. The best example of this approach is Essilor International. With revenues of \$4.2 billion and a global market share of about 30 percent, Essilor dominates the global ophthalmic lens industry. Essilor designs, manufactures, and sells plastic optical lenses in more than 100 countries. Essilor owns 15 lens manufacturing plants and 311 prescription laboratories, 37 of which are in India. The plants manufacture semifinished lenses for prescription laboratories, which grind and polish the lenses to meet specific prescriptions. Finished lenses are then sold to opticians, optometrists, cooperatives, and optic chain stores.

In 1998, Essilor entered the Indian market after internal market research showed much growth potential for plastic lenses. At that time, most people in India used glass lenses; the growth of plastic lenses (which are lighter, more malleable, and shatter resistant) was estimated at 20 percent a year. Sales climbed and Essilor achieved an annual growth rate of 35 percent by 2007. Essilor sold all its lenses through optical shops. Indian opticians generally realize a gross margin of 60 percent on the sale of each pair of eyeglasses; in developed countries, gross margins are typically 100 percent or more.

Because most Indian optical shops were located in urban centers, 70 percent of India's rural population did not have access to Essilor's lenses or services. In the early 2000s, Essilor's management began to view the rural population as a large, untapped consumer market that not only could contribute to Essilor's growth but also could allow Essilor to address wide-scale visual impairment. This seemed to be an ideal application of the BOP proposition. Because poor roads, communication networks, and other essential infrastructure made access to the rural market difficult, Essilor needed to develop an innovative distribution strategy.

In 2005, Essilor teamed up with two highly respected Indian nonprofit eye hospitals, Aravind and Sankara Nethralaya. The pilot project started by operating a tele-ophthalmology van and a refraction van, which visited villages to provide eye care and distribute corrective spectacles. The model was meant to be neither a corporate social responsibility venture nor a charity. The expectation was that serving the rural poor would provide a profitable and significant growth avenue for Essilor India. And the hope was that Essilor would scale up the operation; the company estimated that 1,000 vans would be needed to reach 600,000 villages.

During the pilot project, the tele-ophthalmology and refraction vans hosted two-day eye camps in villages across India. The camps were able to serve up to 150 patients a day. The tele-ophthalmology van contained state-of-the-art equipment. It provided screenings for various eye disorders, such as cataracts, through a satellite con-

CASE STUDY QUESTIONS

Why are some global health problems ignored?

How can social enterprises succeed in jump-starting social change?

How can nonprofits prod governments and businesses to solve social problems?

nection to a hospital. The optometrists at the camp screened patients for both near-sighted and farsighted vision. After a screening, patients were provided a prescription and given the opportunity to purchase custom-made eyeglasses from the refraction van. The refraction van carried frames, lenses, a grinding machine, and refraction equipment. In other words, it was an optical shop on wheels. Each van carried 200 to 500 frames and approximately 1,000 lenses, with the capacity to produce roughly 60 custom-made eyeglasses a day.

Essilor paid for the refraction vans, grinding equipment, and lens material. Each fully stocked van cost the company approximately \$50,000. In addition to funding the vans, Essilor supported the training of the optometrists. To share in the cost of the project, the hospitals agreed to fund the tele-ophthalmology vans and all related operating expenses, such as wages and fuel costs. Revenues were generated from the sale of the eyeglasses and sponsorships. Each pair of eyeglasses was priced around \$4. Sponsors, such as local government authorities, NGOs, and philanthropists, provided support for the eye camps and in return had their organizations' names on banners.

In 2007, approximately 50 percent of clients screened were provided prescriptions; of these, roughly 40 percent purchased eyeglasses from the van. On average, the project sold 35 pairs of eyeglasses a day. But the revenues earned from the sale of eyeglasses and sponsorships were not sufficient to cover operating expenses, let alone make a profit.

To improve financial performance, Essilor has broadened its product range. In 2010, prices range from \$4 to \$8. Some of the cheapest products are ready-made reading glasses, which are offered as a low-cost option to patients not in a position to buy prescription spectacles. These low-price products are outsourced from external providers. Essilor also has streamlined its customer process. Now, after registration, each patient meets a refractionist, who performs an automated test on an autorefractor. People with normal eyesight are selected out. Other patients undergo a detailed screening using a trial set, to arrive at an exact prescription. If any clinical issue is diagnosed, the patient is examined by an ophthalmologist via tele-ophthalmology.

Thanks to these changes in pricing, product mix, and process, Essilor claims its BOP operation now covers its operating expenses. Essilor does not charge this initiative overhead and capital costs; only operational and depreciation costs at the van level are taken into account. Therefore, the project does not make any profit. After trying to franchise the vans to local opticians, the company has decided to operate them on its own and to limit future investments to the amount of cash generated by the existing vans. In 2010, Essilor was operating six refraction vans and plans to invest in a few more.

VISIONSPRING: SOCIAL ENTREPRENEURSHIP

Others believe that the vision crisis can best be solved by using a model based on social entrepreneurship. VisionSpring is perhaps

the best example of this movement. Founded in 2001 by Dr. Jordan Kassalow and Scott Berrie as a nonprofit in the United States and India, VisionSpring started by providing only ready-made reading glasses to correct farsightedness. The strategy was adopted because of the strong link between poor near vision and economic productivity, and because presbyopia (the progressive deterioration of near vision) represented about 75 percent of the visual impairment problem. VisionSpring aimed to take reading glasses out of the exclusive hands of eye care professionals and make them a consumer product.

The organization developed an innovative business model to provide basic screening services and ready-made reading eyeglasses to people living in rural villages. After assessing multiple suppliers, management decided that China was the most cost-effective source for the eyeglasses. To reach rural people, VisionSpring trained local women—"Vision Entrepreneurs"—as independent commissioned sales representatives to visit villages and sell reading glasses for under \$4 a pair. Vision Entrepreneurs provided basic screenings, using distance and near eye charts, to determine the appropriate strength of the lenses. VisionSpring provided a "business in a bag"—a sales kit containing reading glasses, screening tools, marketing materials, and a uniform. Vision Entrepreneurs also underwent a three-day training program in basic eye care and business management.

To increase its global reach and scale, VisionSpring also developed a franchise model on a fee-for-service basis. This involved disseminating its sales kits to other nonprofit and for-profit organizations, such as BRAC, a microcredit organization in Bangladesh. Through this franchise model, VisionSpring now has more than 5,000 Vision Entrepreneurs in 11 countries.

Using a wholesale approach, VisionSpring distributes its reading glasses through pharmacies in urban and rural centers. The organization is testing this approach with Apollo, one of the largest pharmacy chains in India. VisionSpring has launched operations in 11 countries in Asia, Latin America, and Africa, with its biggest presence in India. In 2008, the nonprofit sold 98,000 pairs of glasses, and in 2009 it sold 201,000, doubling sales for the fifth straight year. VisionSpring's objective is to sell 1 million eyeglasses in 2012. Much of the growth is expected to come from franchising and wholesaling the business model, to leverage large distribution networks that already exist in target countries.

In 2009, VisionSpring had revenues of about \$250,000, and its total costs were \$1.36 million; the difference was covered by philanthropic donations and grants. The cost of eyeglasses procured was 13 percent of total costs; field and overhead expenses (for example, training, marketing, staff salaries, and travel) accounted for the remainder. The total cost of delivering a pair of glasses was \$6.77.

VisionSpring's 2012 budget anticipates 1 million eyeglasses sold, with revenues of \$1.3 million and total costs of \$2.8 million, requiring a philanthropic subsidy of \$1.5 million. Overhead and all field expenses would account for 71 percent of total costs. Currently, 18 percent of total costs are covered by earned revenue; VisionSpring expects this ratio to reach 38 percent in 2012, and has a long-term goal of 100 percent earned revenue coverage. Although VisionSpring seeks to be self-financing, for now its business model is dependent

on philanthropy. Looking ahead, management believes that VisionSpring will require at least three to five more years of subsidies before reaching sufficient economies of scale. The break-even point is estimated at 5 million eyeglasses sold per year.

ADSPECS: TECHNOLOGICAL INNOVATION

Yet another group of people believe that the best way to solve the vision crisis among the poor is to use technological innovation to provide low-cost self-adjustable spectacles. The technology enables untrained wearers to set the right focus for lenses in less than a minute, greatly reducing the need for trained optometrists. These adjustable glasses cannot yet help with astigmatism, although about 80 percent of people needing vision correction have such mild astigmatism that the glasses can still be effective.

Joshua Silver developed one such technology, called AdSpecs, at Oxford University's Centre for Vision in the Developing World in 1996. The glasses are round, plastic frames with lenses made of clear sacs of silicon oil sandwiched between two clear plastic discs. The two sacs are each connected to a tube and a small syringe that can be adjusted by turning a dial. As a wearer adjusts the dials, he or she controls how much fluid is loaded into each sac, thereby changing its curvature; this fine-tunes the glasses to an individual's prescription. Once the lenses are adjusted, the sacs are sealed off permanently with a small valve and the adjusting mechanisms are removed. The glasses do look rather klutzy: thick lenses in a dark tortoiseshell frame.

Silver calls AdSpecs "an ordinary company that's never made a profit." The glasses sell for \$19 per pair. Over the last 13 years, 30,000 AdSpecs have been sold to the Ghana Education Ministry, the U.S. government (which purchased 20,000 glasses to distribute as humanitarian aid), and other organizations. Clearly, the high price of AdSpecs is a major drawback. Silver has set an ambitious goal of distributing a billion glasses at the price of \$1 per pair by the year 2020. He says the key will be making the technology cheaper and cranking up the volume.

Silver also has been working on improving the glasses' aesthetics. He expects to finish a new model of self-adjusting lenses, called Eyejusters, in the spring of 2011. Eyejusters differ from AdSpecs in that they use two lenses that slide across each other to alter their focus, based on a design pioneered in the 1960s by Nobel Prize-winning physicist Luis Alvarez. David Crosby, principal scientist at the Centre for Vision in the Developing World, said that the move to SlideLens technology allows for three crucial changes. The lenses no longer need to be round, thus allowing for more freedom in the design. And because fluid has been removed from the design, the manufacturing is easier and the glasses can be produced less expensively; the first generation of Eyejusters are expected to cost \$15. Eyejusters also can be readjusted, providing more accurate vision correction.

Two Dutch organizations, Focus on Vision Foundation and VU University Medical Center, are trying to produce low-cost adjustable eyeglasses as well, though they have received less media attention than AdSpecs. Both models are based on the Alvarez lenses, but neither organization has produced the glasses on a mass scale. Focus on Vision, which is probably further along in the development process,

plans to distribute 30,000 eyeglasses in 2010 and says its production costs are \$4 per pair. Its president, Dr. Ben van Noort, anticipates that “as soon as we make a million per year, the price will drop to one euro.”

BETTER VISION FOR THE POOR

Why haven't these approaches made a significant dent in providing affordable eyeglasses to the poor? The biggest problem is price. Many poor people who can afford to pay for eyeglasses do not perceive their value and are therefore unwilling to pay for them, and many others simply can't afford to pay the full cost of the glasses. There are only four solutions to this problem: increase the appreciation of eyeglasses' benefits through education and awareness, thereby increasing demand and people's willingness to pay; reduce the total cost of eyeglasses through technological or business innovations; subsidize the glasses; or pursue a combination of these strategies.

The first solution, education and awareness, is probably not feasible for a private organization. Essilor found that charging \$4 resulted in only 40 percent of people who need glasses actually buying them. The East Timor study found that 49 percent of rural subjects were unwilling to pay even \$1 for eyeglasses, and only 16 percent were willing to pay \$3. Even if this study is exceptional, it is clear that any solution must emphasize dramatic cost reduction. Essilor's problem is not that the quality of its products and services is high, it is that its costs are high from relying on professional optometrists to customize eyeglasses for individual clients. One lesson from Essilor is that if the poor are given easy access to eyeglasses, a significant fraction will purchase them.

VisionSpring significantly reduced costs by substituting a low-skilled Vision Entrepreneur for a professional optometrist. It also reduced production costs by centralizing purchasing, sourcing from China, and providing glasses in a few standardized strengths. In spite of that, its revenues are not high enough to cover costs. As a result, VisionSpring needs philanthropic subsidies, which limit its ability to achieve scale commensurate with the size of the vision problem. Scaling up is also constrained by limited distribution channels that serve the poor, especially in rural areas. At the same time, creating a distribution network dedicated to one product is an expensive solution. Piggybacking onto an existing distribution network is more cost-effective, as VisionSpring is doing in its partnership with BRAC, Women's Development Business, and others. An initial drawback of VisionSpring's approach is that it provided only reading glasses. This left out the significant number of people suffering from myopia, especially children. VisionSpring has now started school-based and other initiatives to provide myopic children and adults with glasses. The organization has demonstrated that it is feasible to reduce production costs through centralized purchasing and to reduce distribution costs by not using highly trained personnel.

The technology innovation approach is also appealing, because by making the glasses self-adjustable two large cost elements can be eliminated: optometrists and customized manufacturing. Its biggest drawbacks are the high cost of producing the eyeglasses and their poor aesthetic appeal. If the costs can be brought down to \$1 to \$2 per pair and the eyeglasses can be made more cosmetically

pleasing, then the technology approach might solve the blurry vision problem. But that is a big *if*—there is little evidence so far of accomplishing such dramatic cost reduction or design changes. Even if the cost of producing the adjustable eyeglasses comes down dramatically, distribution costs can still be a hurdle. VisionSpring sources the reading glasses at about \$1 per pair from China and sells them at \$4 per pair to the consumer; it still needs significant philanthropic subsidies. Self-adjusting eyeglasses reinforce the lesson that to reduce total costs it is critical to eliminate trained personnel in the field. Another useful lesson is that the poor are also conscious of style in eyeglasses.

The impact of blurry vision is real and extremely costly to the poor, especially among skilled middle-aged people who rely on clear near vision to work and among children who need to see the blackboard to learn. The economic and social benefits of solving this problem far exceed the costs of providing eyeglasses to all poor visually impaired people. Yet the problem persists. Despite the evidence, blurry vision has attracted little attention as a global public health issue. Because eyeglasses are widely available and affordable in the developed world, there is a perception that blurry vision does not create a sociomedical disorder. Thus there is no sense of urgency about eyeglasses to influence policymakers. Unlike public health causes such as AIDS, there are no activists shouting that eyeglasses are a human right. It is distressing that such a simple, inexpensive, and politically neutral health intervention has been so underfunded and underutilized in poor countries.

PROPOSED SOLUTION

But the situation is not hopeless. The challenge is to move the spectacles business from a low volume, high margin approach to a high volume, low margin one, to gain greater penetration among the poor. The starting point is to reduce costs as much as possible while still providing acceptable quality. The standards to judge what is acceptable have to be from the perspective of a poor person who does not get any vision correction now, not from the perspective of an affluent person who receives modern eye care. Our solution would use a basic screening process that does not require a trained professional. This sacrifices precision, but that is acceptable because medical evidence indicates that undercorrection of vision does not have significant negative side effects. Overcorrection of vision does have side effects, such as headaches and nausea. The screening process needs to avoid overcorrection, but that is easy to achieve using simple techniques. Rather than becoming the final product, self-adjustable glasses could be used for determining a patient's prescription needs without assistance from a high-cost technically trained professional.

As for the production costs of eyeglasses, they could be reduced by manufacturing eyeglasses in a large factory, emphasizing scale economies, centralizing sourcing, and instituting standardization. (A drawback of the standardization approach to ready-made glasses is that the prescription strength is the same in both lenses.) Lenses would be manufactured from the least expensive material, which is probably acrylic; this is the type of plastic that is used in ready-made reading glasses sold in the United States. Lenses would be offered in steps of 0.50 diopters for reading glasses and in steps of 0.25



A Liberian woman wears a pair of AdSpecs, the self-adjusting eyeglasses developed by Oxford University Physics Professor Joshua Silver.

diopters up to -2.00D for distance glasses; there would be no correction for astigmatism (which requires customized prescription). We estimate that, if implemented, this approach would give about 80 percent of the people who require a distance prescription a corrected vision of 20/40 or better—the level of vision required to drive in the United States.

One study in India implemented a randomized clinical trial with poor adults to compare ready-made eyeglasses with customized spectacles.⁶ The results showed that although vision is slightly better with customized spectacles, after one month of use 90 percent of the subjects were satisfied with ready-made eyeglasses and planned to continue wearing them. A similar study with Chinese school-age children led by Yangfa Zeng and published in a 2009 issue of *Ophthalmology* confirms the high level of satisfaction and acceptance of ready-made spectacles.

With our approach, there would be a very limited variety of frame styles, carefully selected on the basis of local preferences. The factory cost of producing standardized prescription eyeglasses using simple frames in a country like China would be well below \$2 per pair. Distribution costs would be reduced by piggybacking onto existing networks, such as a microcredit organization, a packaged consumer goods company, or government offices and agencies. Overhead would be minimized by localizing costs and by restricting the scope of the project to one or a few neighboring countries.

Yet even if this proposal were carried out, it is not certain whether the total costs would result in a pair of eyeglasses that

could be priced below what the poor are willing to pay, even assuming significant scale of operations. There is also the issue of geographical variation. The willingness to pay for eyeglasses varies by country, region, culture, and income level. If willingness to pay is high enough to cover the total costs, then there is no need for government intervention. This could be a profitable business for private firms, and consistent with the current vogue of market-based solutions for poverty alleviation.

But if the costs are still too high, then the only way to cover the gap is through a subsidy. The subsidy does not need to cover the entire cost of the glasses, but only the gap between the willingness to pay and the cost. Given the scale of the problem, the only source for such large subsidies is the government. Governments could help to build the market for eyeglasses by funding education and awareness campaigns or subsidizing eye care centers. They also could implement targeted policies, such as requiring children to get basic eye screening in schools.

Modern financial markets can provide significant capital for ventures that are expected to be profitable,

making it easy for businesses to scale up. And governments can use the treasury for scaling up its projects. But nonprofit organizations find it difficult to attract the capital needed to scale up and satisfy designated social needs. Ultimately, it will have to be businesses and governments that provide eyeglasses to the poor on a large scale. Nonprofits can advocate and serve as a catalyst to prod governments and companies to solve the social problem, but they cannot do it alone. If selling eyeglasses to the poor becomes profitable, then a nonprofit such as VisionSpring can demonstrate and publicize the economic viability of this approach—or even morph into a for-profit company.

Private companies and government intervention, however, are not mutually exclusive solutions. They can exist side by side. For example, the condom market in India is divided into three segments: condoms sold at market prices by private companies; condoms sold at low prices through social marketing programs and through government subsidies; and condoms distributed free by the government. A similar approach might be useful for eyeglasses. ■

Notes

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