Navigating Through Reforms

Cotton reforms in Burkina Faso

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Historically, cotton has been a key cash crop in many West African countries. It is not typically viewed as a food security crop because cotton fiber (or lint), its primary commodity, is not consumable. But if cotton cultivation can contribute to increasing household incomes, and if such changes in incomes can translate into increases in the quality and quantity of food consumed in the household, then cotton is an important crop to many small farmers. This is the case in Burkina Faso, where cotton has played an important role in both the economy and culture for many generations.

Dating back to the French colonial rule and continuing through independence in 1960, Burkina Faso's cotton expansion strategy has involved substantial government intervention, a feature also common in many countries in the region. This system revolved around "contract farming" arrangements by which a state-controlled cotton company provided inputs (such as research on cotton improvement, farmer education services, fertilizers, loans, and marketing services) in exchange for the farmers' output through exclusive purchase rights. This arrangement, where the state protects farmers from free-market perils including large-scale market fluctuations and difficulties in accessing credit, seemingly would contribute to positive outcomes, such as the faster adoption of modern inputs, high repayment rates, and production growth.

But despite growth in the cotton industry in the 1960s and 1970s, this state-led strategy had become widely criticized by the late-1980s. The state cotton company had exorbitant operating costs, which reduced farmers' earnings, and was accused of corruption, while inefficiencies in the structure of farmers' groups meant that farmer repayment rates to the state ran only at around 40 percent. By the early-1990s, the entire Burkinabè cotton sector was in serious financial jeopardy.

Although these types of problems were evident in nearly all of Africa's cotton-producing countries, governments across the continent responded quite differently and with mixed success: some governments, such as Mali's, resisted reform and others, such as Benin's, embraced wholesale liberalization. Being quite systematic in its approach, Burkina Faso pursued a third path, careful to introduce reforms gradually and to learn lessons from its neighbors.[1]

This more nuanced reform approach has been the driving factor behind Burkina Faso's threefold increase in cotton production since the early-1990s, which led the country to become Africa's leading cotton producer in 2006 and its leading exporter in 2007. By comparison, production stagnated in both Mali and Benin, where it had been much higher in the past. Since Burkina Faso's reforms began, the number of households cultivating cotton has nearly doubled to more than 175,000 from 1996 to 2006, and cotton-related work has generated an estimated 235,000 new jobs that have directly and indirectly benefited around 1.8 million people. Despite recent financial problems and falling cotton prices, the Burkinabè model represents a remarkable success.

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Burkina Faso's Cotton Story

Cotton has long been an integral part of the Burkinabè economy. After relatively slow growth under the French colonial administration in the 1920s, cotton production expanded and continued to increase rapidly in 1960 after the transition from French rule. An important continuous presence throughout the West African cotton sector was the French Company for the Development of Textile Fibers (CFDT), which continued to provide new seed varieties, extension services, and other inputs and marketing services after independence and even after Burkina Faso established a state-controlled cotton company, SOFITEX, in 1979. In partnership with CFDT, SOFITEX continued to operate the state-led system in which farmers, organized in cooperatives known as Village Groups, were provided with improved seeds, extension services, fertilizers, pesticides, and marketing services in exchange for the exclusive marketing of their cotton crops.

But while the state-led CFDT cooperation system introduced new production techniques and high-yielding crop varieties, which resulted in a twofold increase in crop yields during the 1980s, the state's heavy hand led to some significant drawbacks. Poor financial management, corruption, and rampant overspending throughout the system, combined with falling cotton prices in international markets during the late-1980s, signaled that the system was not working well. Corruption also became widespread among Village Group leaders and SOFITEX officials, weakening the credibility of the state-led system. As a result of these shortcomings, the prices paid to farmers declined from 1988 to 1992, Village Groups accumulated large debts, and production started to collapse in the early-1990s. At this stage, the need to reform the sector was urgent, and both donors and the Burkinabè government recognized that the cotton sector was too important to ignore.

Despite broad agreement that the sector was in trouble, the major players within it—including the World Bank and the French international aid agency, Agence Française de Développement—did not immediately agree on the best reform path. On one side, the World Bank emphasized the inefficiency in the state's management of the sector, leading to weak returns to farmers. On the other side, the Agence Française de Développement , the CFDT, and some officials in the Burkinabè government believed that disorganized farmers would be at a disadvantage upon losing protection and support from the state in the face of full-scale liberalization. Hence, the reform path that emerged was both a political compromise and an effort toward maintaining the best elements of the state-led model while removing or minimizing the worst.

Cotton Sector Reforms

The first stage of Burkina Faso's reform process focused on strengthening local institutions and building capacity in preparation for eventual market liberalization. One of the first priorities was to build and strengthen farmers' organizations. This specific reform targeted one of the most immediate problems—the low repayment rates by farmers' groups for state-provided credits—but it was also aimed at increasing farmers' participation in the cotton sector. The problem with the existing Village Groups was that they required cotton farmers to be pooled together with other farmers. This meant that the other farmers got a free ride off the relatively profitable cotton sector, which discouraged cotton production and reduced repayment rates. So to improve cotton farmers' social capital and production incentives, the government introduced legislation to allow cotton farmers to form and manage their own voluntary membership groups (Groupement de Producteurs de Coton, or Cotton Producer Groups) in 1996. As a result, group repayment rates increased from 50 to 60 percent before the reforms to more than 90 percent afterward.[2] Moreover, thousands of farmers joined cotton groups, and the Cotton Producer Groups arguably facilitated the rapid expansion of cotton farming in the country. In this phase, local capacity was further strengthened with the formation of a cotton union in the late-1990s; by 1999, the government had allocated 30 percent of its SOFITEX shares to the union.

Another reform looked to maintaining the benefits of contract farming—such as potentially higher repayment rates and higher input use—while inducing greater efficiency through private-sector participation. The government took a number of steps to begin the process of liberalizing cotton markets, starting with allowing the private sector to provide functions for which the state had no comparative advantage (for instance, in areas such as input provision, transport services, and cotton refinement, but not research and develop-

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Gathering harvested cotton

ment).[3] Further liberalization in 2004 provided two private companies with exclusive purchase rights in "concession areas" of the country's cotton-producing areas, along with a monopoly on contract farming arrangements with the Cotton Producer Groups.

By 2006, the government had significantly reduced its role in the cotton sector, having delegated most responsibilities to the new cotton union and the Cotton Producer Groups. In addition, it had established an interprofessional association to promote cooperation among important stakeholders, including cotton farmers, bank representatives, government officials, research institutes, and other private stakeholders. This association became an important institution for resolving conflicts and promoting the development of the sector, particularly at a time of decline in cotton prices since the early-2000s.

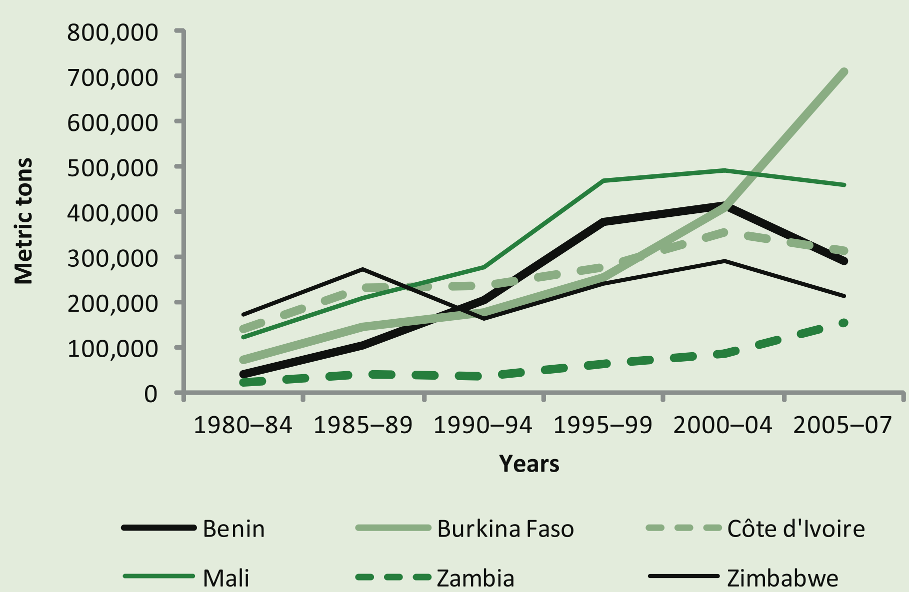
Impacts on Production and Exports

In terms of production, the numbers reflect a dramatic increase after the reform. Cotton production (both seed and lint) increased from 150,500 tons in 1995 to 690,000 tons in 2007, which translated into an increase in US$165 million in cotton export earnings.[4] Before the reforms, cotton production accounted for just 3.3 percent of national agricultural production in terms of value; by 2006, it had reached more than 8 percent.[5] Further, the number of cotton-producing households nearly doubled, from around 95,000 in 1996 to more than 175,000 in 2006.[6] This growth pattern was largely driven by the intervention, since the reformulation of the farmers' groups successfully improved incentives for cotton production and improved relationships between farmers' groups and cotton firms.

The indirect contributions of cotton sector growth to GDP growth are also significant, especially in terms of foreign exchange earnings. Cotton exports before the reforms represented less than 30 percent of Burkina Faso's annual export earnings, but reached as high as 70 percent during the reform period and are now regularly around 50 percent of export earnings.

An indirect indicator of the success of the reforms is that Burkina Faso has overtaken Mali and Egypt to become the current African leader in cotton production as of 2006 and lint-cotton

Figure 13.1—Average annual cotton seed production, 1980-84 to 2005-07



Note: Production figures are based on five-year averages.

Source: FAO (Food and Agriculture Organization of the United Nations). 2009. FAOSTAT statistical database. Rome.

exports as of 2007, based on a threefold increase in production since the early-1990s. In 2007, Burkina Faso's cotton production exceeded Mali's by 66 percent, which is especially noteworthy considering that Mali had significantly outpaced Burkina Faso on this front for the previous two decades (see Figure 13.1).

Contributions to Employment and Rural Welfare

Cotton sector reforms in Burkina Faso have resulted not only in extensive growth in production but also in a corresponding increase in employment opportunities and rural welfare, benefitting an estimated 1.8 million people. In terms of job creation, the share of cotton farmers has almost doubled between 1994 and 2003, reflecting an increase in agricultural employment from 11.3 percent to 19.9 percent during this same period. This amounts to an estimated 235,000 new jobs for farmers in the sector, some of whom were land croppers or migrants returning to Burkina Faso from war-torn Côte d'Ivoire after 2001. The cotton reforms eased the absorption of this new labor force in allowing migrants to quickly access inputs and form their own farmers' groups.[7]

But new employment opportunities were not the only impact of the reforms. Cotton production affects food security through its impact on farm income, which households can spend on food purchases and on food production. Household incomes rose sharply among cotton farmers during 1995 to 2003, with estimates varying from 19 percent to 43 percent. Poverty rates among cotton farmers also fell sharply from 62 to 47 percent between 1994 and 2003, although it should be noted that poverty rates among the rest of the population also fell during this period.[8]

In terms of food production, the relationship with cotton is complicated because while food crops can compete with cotton for land, cotton farmers also grow food as part of an intercropping strategy. So, somewhat counterintuitively, food production actually increased in cotton-producing areas during the reform period: as farmers grew more cotton, they also produced more food by intercropping.[9] In 1996, around 40 to 45 percent of people involved in cotton cultivation reported that they were food secure; as of 2006, this figure had increased to 70 percent.

However, there is no evidence that rates of malnutrition have declined for the broader population, suggesting that the cotton success story has principally influenced food consumption only among cotton-producing households. This situation exists probably because, unlike food production, cotton growth does not alleviate poverty by lowering the economywide price of food, which is one of the most direct determinants of poverty reduction. For this reason, expanded cotton production should not be viewed as the primary means of solving the country's broader malnutrition problems.

Are Burkina Faso's Cotton-Sector Reforms Sustainable?

The success of Burkina Faso's reform approach hinges, to a large extent, on government policies as well as on the ability of the Cotton Producer Groups and the cotton union to manage the responsibilities that the government transferred to them. Though difficult to predict because the reforms and their impacts are still ongoing, the constraints that the Cotton Producer Groups continue to face—particularly a lack of resources as well as hints of corruption in the cotton union—suggest that further reforms will likely be needed to ensure a continuous and smooth transfer of power from the state.

Perhaps most disconcerting is the recent financial difficulty that the sector has faced, which is largely linked to cotton pricing. Because international cotton prices are volatile, governments have long tried to smooth out part of the international price volatility at the farm level to reduce farmers' risk and income variation. However, the dangers are twofold: prices can be smoothed to the point where they are out of synch with real world price movements, and stabilization funds can be easily mismanaged and abused. Though Burkina Faso did try to move to a pricing formula that was more closely aligned with international prices, the formula was poorly implemented and the cotton stabilization fund was mismanaged. While in this sense the Burkinabè government's cotton reforms were unsuccessful, government officials do at least appear to be addressing the problem by outsourcing the management of the stabilization fund to the West African Development Bank. Meanwhile, the government intervened again to recapitalize cotton firms as a means of shoring up the sector before new private investors come on board. This effort shows that although decision-making under the new institutional structures in the sector has not been error-free, problems have been addressed relatively quickly and in an appropriately consultative manner. Indeed, the closer collaboration among SOFITEX, the farmers' union, and the private sector that has evolved may well be one of the most significant outcomes of the entire reform process.

The environmental sustainability of cotton production is also critical, especially in a region known for degraded soils and thought to be highly vulnerable to climate change. One concern is that increased cotton production has gone hand in hand with a requisite increase in land use, including marginal lands that may have more fragile soils. For cotton production, it is critical to improve and maintain soil fertility by applying appropriate amounts of both chemical and organic fertilizers. Currently, however, there are concerns that farmers are not applying the recommended levels of either type of fertilizer. As such, some new initiatives have been established to improve soil management, including pilot organic farming projects and extension programs to help farmers obtain environmentally friendly inputs, such as organic fertilizer.

New Solutions to Old Problems: Bt Cotton in China and India

In 1996, a new chapter for global cotton production began with the commercial introduction of genetically engineered (GE) cotton. Despite pests being a major economic constraint to cotton production, conventional breeding had proven to be unsuccessful in developing insect-resistant cotton varieties. It was only through the use of GE technology that it was possible to develop varieties resistant to insects. The first generation of such varieties are known as Bt cotton and contain a gene introduced from the soil bacterium *Bacillus thuringiensis* (Bt) that produces a toxin lethal to specific types of bollworms.

Bt cotton spread rapidly from the United States to Australia, Mexico, Argentina, China, and South Africa (all of which commercialized Bt cotton in the mid- to late-1990s) as well as to India, Colombia, Egypt, Brazil, and, most recently, Burkina Faso.[a] Studies show that over the years Bt cotton has benefitted farmers overall, although there is great variability in study findings on Bt cotton by location, year, and assessment method used.[b] This is particularly true in China and India, where Bt cotton is viewed as a boon for many small-scale, resource-poor farmers—or, those farmers whose cotton land holdings average just 2.0 hectares in India and fewer than 0.75 hectares in China.[c] Documented gains have come mainly from the reduction of pesticide use and increased yields, which together have contributed to improvements in farm incomes.

In China, Bt cotton was developed both independently by the Chinese Academy of Agricultural Sciences (CAAS) and in a partnership between CAAS and Monsanto, a global crop-science company. Once Bt cotton was commercialized in 1997, it spread rapidly throughout most of China's cotton-growing provinces. As of 2008, Bt cotton accounted for more than 70 percent of all cotton cultivation area in China, or about 3.8 million hectares, and was being cultivated by an estimated 7 million smallholders. Annual farm surveys from the main cotton production districts in China document the use of less pesticide for Bt cotton varieties (in comparison to non-Bt varieties), ranging from approximately 85 percent less pesticide use in 1999 to 46 percent in 2006. Less pesticide use has translated not only into lower costs of production, but also into fewer reported cases of insecticide poisoning.[d] The reduction in pest damage resulting from the cultivation of Bt cotton has increased productivity, with reported yield increases of around 6 percent, with significant variability in both directions.[e]

In India, Bt cotton was initially developed through a joint venture between Mahyco, an Indian seed company, and Monsanto, and commercialized in 2002 (although farmers were cultivating unapproved Bt cotton illegally prior to this time). As of 2008, Bt cotton was cultivated on more than 80 percent (approximately 7.6 million hectares) of India's cotton area by an estimated 5 million smallholders. On average, farmers cultivating Bt cotton reduced pesticide use 42 percent, secured yield increases of 30 percent, and increased their cotton profit by 47 percent,

The Burkinabè Cotton Reforms: Keys to Success

Burkina Faso's gradual approach to cotton-sector reforms differed from that of several other cotton-producing African countries, some of which stuck to the troubled status quo while others embarked on overly hasty liberalization paths. The problem with the latter approach is that it introduces a real risk of market failures that could result in more harm than good. On the other hand, keeping the pre-reforms status quo was clearly untenable.

Burkina Faso's success is grounded in a number of factors. For both political reasons and a genuine desire to preserve the better elements of the state-led model, Burkina Faso adopted a cautious and pragmatic approach to reform. This approach has facilitated institution building—such as the farmers' groups and the cotton union—and allowed policymakers to observe and improve upon the outcomes of the reforms. For example, while reforming farmers' groups improved incentives for farmers to work cooperatively and increase production, the success of this effort also provided a strong case for strengthening key institutions as part of the liberalization process. Also, creating the cotton farmers' union served political ends and also helped farmers become greater participants in decision-making. In addition, the partial privatization of the cotton sector was

although the variability is as significant as it is in China.[f] Nevertheless, Bt cotton has contributed significantly to increases in both cotton area under cultivation and total cotton production in India, moving the country from the third largest importer in 2002–03 to the second largest exporter (after the United States) in 2007–08.[g]

Despite these gains, controversy continues to surround Bt cotton. Concerns include: the high variability in performance of Bt cotton under different agroclimatic conditions and pest pressures; the differences in farmers practices and the lack of information in the hands of farmers; the cost of the technology; the challenges for small farmers who must navigate through markets in which large companies own the Bt traits and supply costly seeds; and the risk to develop resistance to the Bt toxin and overwhelm the gains afforded by the technology. But based on the evidence thus far, Bt cotton seems to be providing new opportunities for small farmers to increase cotton yields and output, with the potential to increase both incomes and food security.

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a. James, C. 2008. *Global status of commercialized biotech/GM crops: 2008*. ISAAA Brief 39. Ithaca: International Service for the Acquisition of Agri-biotech Applications.

b. Smale, M., P. Zambrano, G. Gruère, J. Falck-Zepeda, I. Matuschke, D. Horna, L. Nagarajan, I. Yerramareddy, and H. Jones. 2009. *Measuring the economic impacts of transgenic crops in developing agriculture during the first decade: Approaches, findings, and future directions*. Food Policy Review 10. Washington, D.C.: International Food Policy Research Institute.

c. James 2008; Huang, J., H. Chen, J. Mi, R. Hu, and E. Osir. 2009. Farmers' seed and pest control management for Bt cotton in China. In *Biotechnology and agricultural development: Transgenic cotton, rural institutions and resource-poor farmers*, ed. R. Tripp. London: Routledge.

d. Huang et al. 2009.

e. Smale, M., A. Niane, and P. Zambrano. Forthcoming. Une revue des méthodes appliquées dans l'evaluation de l'impact economique des plantes transgéniques sur les producteurs dans l'agriculture non-Industrialisée: La première décennie. *Economie Rurale*.

f. Smale, Niane, and Zambrano 2009.

g. Sadashivappa, P., and M. Qaim. 2009. Effects of Bt cotton in India during the first five years of adoption. Paper presented at the International Association of Agricultural Economists' 2009 Conference, August 16–22, Beijing; Gruère, G. P., P. Mehta-Bhatt, and D. Sengupta. 2008. *Bt cotton and farmer suicides in India: Reviewing the evidence*. IFPRI Discussion Paper 808. Washington, D.C.: International Food Policy Research Institute; James 2008.

driven by pragmatism rather than ideology; some elements of state involvement had always worked well, so it made sense to preserve those elements while allowing the private sector to operate where it had a greater advantage. Moreover, the granting of private sector regional monopolies partly acted as an experiment through which policymakers could gauge the potential of this sector.

The broader principles that underlie this success story then are those that relate to the process of reform rather than the specific details—especially Burkina Faso's pragmatic approach of introducing reforms gradually, sequencing and prioritizing them. Given the very similar institutional and agroecological conditions of neighboring cotton-producing countries, particularly Mali, it is possible that the more specific policy initiatives of the Burkinabè cotton reforms could potentially be applied to these countries as well.

NOTES

1. Tschirley, D., C. Poulton, and P. Labaste. 2009. *Organization and performance of cotton sectors in Africa: Learning from reform experience.* Washington, D.C.: World Bank; Bourdet, Y. 2004. A tale of three countries—structure, reform and performance of the cotton sector in Mali, Burkina Faso, and Benin. Country Economic Report 2004: 2. Stockholm, Sweden: Swedish International Development Cooperative Agency.
2. Bernard, T., M-H. Collion, A. de Janvry, P. Rondot, and E. Sadoulet. 2008. Do village organizations make a difference in African rural development? A study for Senegal and Burkina Faso. *World Development* 36 (11): 2188–2204; Kaminski, J. 2006. *Retrospective survey on ten years of changes in the cotton sector of Burkina Faso: Interviews of stakeholders, field survey of representative producers and GPCs, and price information on local markets.* Toulouse, France: Toulouse School of Economics.
3. Research and development is still carried out by public research centers, but under a public–private partnership with cotton firms, other research centers in France, and the state.
4. FAO (Food and Agriculture Organization of the United Nations). 2009. FAOSTAT statistical database. Rome.
5. FAO 2009.
6. Kaminski 2006.
7. Kaminski 2006.
8. Grimm, M., and I. Gunther. 2004. A country case study on Burkina Faso. Research paper for the Operationalising Pro-Poor Growth Project, a joint initiative of the Agence Française de Développement, German Federal Ministry for Economic Cooperation, German Agency for Technical Cooperation, KfW Development Bank, U.K. Department for International Development, and the World Bank. University of Gottingen, Gottingen, Germany.
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