John R. Commons and the Evolution of Institutions:
The Case of the Malian Cotton Sector

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Abstract
Applying John R. Commons institutional economic framework, this paper analyzes the evolution of the key institutions in the Malian cotton sector starting with the CFDT contract following the country's Independence in 1960; the nationalization of the cotton gin company, CMDT, in 1974; the completion of a vertically integrated market structure from the mid-1980s to mid-1990s; and, finally, to the current state of the market-oriented reforms in 2010. In accordance with John R. Commons' economic theory, institutional changes in the Malian cotton sector have led to both intended and unintended consequences impacting economic performance at the farm, gin, and State levels, which in turn, has contributed to the emergence of new limiting factors. At present, the limiting factors to desired economic performance in the Malian cotton sector are: the lack of adequate extension services, high rates of indebtedness at both farmer and cooperative levels, difficulty in farming in an integrated system due to the limited access to cereal inputs on credit, low yields, delays in payment, and discordance between farmers and their union's leaders. Based on these findings, policy recommendations to revitalize the Malian cotton sector are drawn.

1. Introduction

The structural adjustment programs (SAPs) proposed by the Bretton Wood Institutions to improve economic performance in least developed countries (LDCs) through increased competition and reduced transaction costs have not led to significant poverty alleviation and economic growth as promised. By dismissing both formal and informal institutions, policies based solely on neoclassical economic theory have proved to be ineffective and inappropriate (Saleth and Dinar, 2004; North, 1994). Although these market-oriented reforms have been well designed, they have been based on the assumption that economic reforms alone would lead to market efficiency and, therefore, have ignored the need for and effect of other formal and informal institutional changes. With the limited successes of the SAPs promoting economic development, there has been recent interest in the analysis of the role of institutions. For example, several studies have analyzed the relationships between institutions and economic development, providing new perspectives on how to incorporate institutions into development efforts (e.g. Broda, 2008; Nubukpo, 2008; Stein, 1994).

Regarding institutions, within schools of institutional economic thought, John R. Commons' theories are particularly relevant to the analysis of the agricultural economy in LDCs. This is, especially true in Africa, since he focused on the importance of public policies in the design and achievement of a productive economy and political order (Parsons, 1985). Indeed, successes in agricultural development rely upon both farmers access to technological advances, such as improved seed varieties, and the creation of a system that provides a stable social, economic, and political order. In addition to explaining the evolution of institutions, Commons' theory provides a framework to analyze the effects of institutions on resource allocation and distribution of income (Roumasset, 1978). Although Commons' economic theory is well-suited to study changes in institutional environments in the agricultural sectors of LDCs within the framework of the SAPs, there has been little practical application of his theory.

The objective of the study is to apply general concepts from the writing of Commons about the evolution of institutions to analyze key changes in the institutional environment of the Malian cotton sector. Specifically, Commons' evolutionary process is used to discuss the key institutional changes in the Malian cotton sector starting with the country's Independence in 1960 through the ongoing market-oriented reforms in 2010. The analysis of pre-reform institutional arrangements provides valuable insights on the roles and positions of the main stakeholders toward the ongoing reforms as well as on the chronology and pace of the reforms. The success of the reforms in revitalizing the Malian cotton sector relies upon a better understanding of the limiting factors and their consequences on economic performance and institutions.

This paper is organized as follows. A brief review of the key concepts of Commons' economic theory, mainly from his book "Institutional Economics", is provided in section 2. Section 3 applies Commons' theory of institutional evolution to analyze the Malian cotton sector under four different institutional environments: 1) contract with the French parastatal following Mali's Independence; 2) nationalization of the cotton gin company; 3) establishment of a vertically integrated market structure; and 4) implementation of market-oriented reforms, within the structural adjustment policy framework. Section 4 concludes with policy alternatives that should be adopted to improve the Malian cotton sector performance.

2. Commons' Key Economic Concepts

In Commons' institutional economic theory, transactions are the smallest economic units of investigation. Being based upon relationships between individuals and organizations, such as governmental units and firms, transactions correlate together the economic, legal and moral aspects of economic outcomes. Commons classified transactions into three categories: bargaining, managerial, and rational. Bargaining transactions involve the transfer of wealth, such as right ownership, between legally equal but not economically equal parties. The differences in economic power are explained by the alternative opportunities (Commons referred to them as being the limits of coercion) and bargaining power, such as the ability to withhold, available to both parties (Rutherford, 1983; p. 725). The rationing and managerial transactions involve differences in the legal power of both parties. Managerial transactions are based on production relationships and create wealth through the command of a legally superior party. The relationship between an employer and an employee is a typical example. Rationing transactions involve the apportioning of wealth or purchasing power by an authority legally superior to the parties (Commons, 1934; p.67-68). For instance, boards of director of corporations, unions, and administrative governmental units.

These three types of transactions are interdependent and they create together a going concern. Following Commons' terminology, a going concern refers to the joint expectation of beneficial transactions united together by the working rules and by the control of the constantly changing limiting factors (Commons, 1934). In other words, a going concern is "the institutional perimeter in which transactions take place" (Fiorito, 2008; p. 11), such as a household, farmers' union or corporation. Transactions taking place in a going concern are governed by working rules of collective action designed to maintain order. A factor is considered to be limiting if its control at the right time, in the right place and in the right form stimulate the work of the other complementary factors (Commons, 1934). Once a limiting factor is controlled for, this latter becomes a complementary factor and a new limiting factor emerges. For instance, the inadequate provision of raw cotton during the Civil War in America was a limiting factor that led to the stoppage of cotton mills and to high rate of unemployment in England (Commons, 1970; p.180).

In Common's analysis, the choices and actions of individuals and of going concerns that are made within the context of one or more limiting factors are the driver of institutional changes (Figure 1). On one hand, these choices and actions can be constrained by informal institutions, such as social norms and customs, and by formal institutions such as laws, regulation, and electoral systems. On the other hand, institutions can serve as instruments to alter the choices and actions of both individuals and concerns. Therefore, institutional changes can be seen as something that emerges from actions made given the existing state of knowledge, prevailing social norms, best existing practices, and political possibilities in the current institutional environment (Rutherford, 1983). This is a dynamic process since individual choices and actions vary with changes in the decision-making environment. An interesting element of Commons' analysis is that individual actions may result in unintended consequences which in turn, give rise to new problems to be solved. Indeed, all institutions are not the result of conscious design and, therefore, unplanned and unintended consequences from human interactions exist (Hodgson, 2003; p. 564). Institutional changes are, therefore, neither necessarily progressive nor reasonable. Commons used the term reasonable to refer to more equitable outcomes. The interactions taken place in the society and their (un)intended consequences on economic performance can be analyzed through three types of transactions. The (un)intended effects of institutions, for instance, on resource allocation, production, and distribution of income can be analyzed through bargaining transactions (transfer of wealth), managerial transactions (creation of wealth), and rationing transactions (apportioning of wealth).

3. Commons' Theory Applied to the Malian Cotton Sector

In this section, Commons' economic theory is applied to analyze the evolution of the institutional environment of the Malian cotton sector from 1960 to 2010. Key actions to control for limiting factors, and their (un) intended consequences on economic performance are identified and analyzed-starting with the contract agreement between the French parastatal and the Malian government following the country's Independence in 1960, to the nationalization of the cotton gin company in 1974, to the vertically integrated market structure in the 1980s to 1990s, and to the ongoing market-oriented reforms of the 2000s. The impacts of institutional changes on economic performance are assessed mainly through production measures, such as cotton output, yields, and hectares, export earnings, farmer, gin, and State's revenues, rural development, and provision of public goods, such as extension services, and research and development (R&D).

The analysis concludes with an assessment of the emerging key limiting factors to future economic performance given the ongoing privatization and liberalization reforms. This assessment will provide useful insights to policy-makers seeking to revitalize the Malian cotton sector.

3.1 Mali's Independence and CFDT Contract

The French Company for Textile Development (CFDT) was established in 1949 as a joint venture with the French State. This parastatal ginned and commercialized cotton production in Mali. In its early days, the CFDT competed for market shares but gradually the other private operators withdrew (Fok and Tazi, 2004). Shortly after Independence, the new formed Malian government contracted with CFDT to be the exclusive commercial cotton ginning company in all Mali.

The actions of individuals and going concerns. During the colonial period, cotton was not as popular as it is now in Mali. One possible reason is that cotton production was then associated with violence and food shortage (Campbell et al., 2007). The expansion of this cash crop came with Mali's Independence in 1960. Under Keita's governance, who was the first elected President of Mali, an important institutional change took place with the signature of a 10-year contract agreement with the already established French parastatal in 1964. Under this rationing transaction, the Malian government entrusted the CFDT with the promotion of cotton by formalizing its monopoly rights over the purchase of all seed cotton and marketing of cotton fiber.

Outcomes and economic performance. The period 1964 to 1973 corresponded with the introduction of a cotton value chain system, where the CFDT had considerable leverage over cotton farmers by controlling, for instance, access to inputs, grading and weighting of seed cotton. The CFDT also retained considerable power in terms of how revenues from cotton exports were distributed, as very little of these revenues were paid to the Malian government and/or reinvested in the rural development of Mali. In return, farmers were guaranteed a market for their production of cotton at fixed prices set by the government. The announcement of fixed pan-regional prices before the planting season and the respect of those prices were measures taken to reduce farmers' risk aversion and to ensure that farmers would not delay their harvest in expectation of higher prices later in season, which would have jeopardized cotton quality (Fok, 2008). Even though this cotton system provided farmer incentives to produce cotton, these incentives were somewhat constrained by the lack of managerial decision making and bargaining power that farmers possessed.

In an effort to encourage farmers to grow cotton, the CFDT actively participated in the breeding of new seed varieties, in promoting the use of fertilizers and pesticides, and in investing in animal traction (Tefft, 2004). The absence of competition created incentives for the CFDT to provide extension services since benefits associated with higher cotton output and/or yields returned to them. During these years, rural economic development activities were limited to extension services and training provided by the CFDT to persuade farmers to grow cotton. The CFDT was successful in persuading Malian farmers, evidenced by major expansion and productivity growth occurred in the cotton sector during that period. Indeed, from 1958 to 1972, Malian cotton production shifted from 3 900 tons to 68 000 tons (Benjaminsen et al., 2010).

Key limiting factors. The institutional environment in the Malian cotton sector, following the country's Independence, was characterized by the high involvement of the French gin company, CFDT, at all operational levels. Through their monopoly status, the CFDT had a better control over their input supply, and, thus, was able to be economically viable. Although the period under the CFDT governance led to important increases in cotton production, the majority of these economic benefits were captured by the CFDT French owners. In addition to limited economic development due to the outflow of capital generated by the cotton sector, the absence of farmer voices in decisions related to cotton activities (such as access to inputs and the grading and weighting of cotton), was another limiting factor to economic performance.

3.2 Nationalization and Farmers' Empowerment

Looking for suitable measure to cope with internal economic problem and to induce economic development, many governments in LDCs started to get more involved in their agricultural sector in the 1970s. In this spirit, the Malian government decided to not renew its contract with the CFDT but rather to increase its level of intervention through the nationalization of the cotton sector (rationing transaction). Concurrently to the nationalization, farmers became more organized through the formation of village associations and more empowered through the transfer of managerial responsibilities from the parastatal to farmers and their associations. The key stakeholders involved in the Mali and their interactions following the nationalization of the CMDT are depicted in Figure 4 and are further explained in the next sections.

3.2.1 From CFDT to CMDT

The actions of individuals and going concerns. In 1974, the Malian government decided to nationalize its cotton sector and created the Malian Company for Textile Development (CMDT) in which the Malian government owned sixty percent and the French company (CFDT) owned forty percent. Through nationalization, the Malian government gained control over many of the economic benefits generated by the cotton sector, and, consequently could now have some control over how to allocate (ration) these benefits. With this institutional change came a transfer of ownership and a new mandate. From its old mandate of persuading farmers to grow cotton, the new mandate of the gin company evolved to "promoting integrated rural development" (Tefft, 2004). As suggested by Commons, it appears that the need to control for limiting factors, in this case cotton revenues and their allocations, was the main driver behind this important institutional change.

Outcomes and economic performance. According to Bingen (1998) this transfer of ownership was not an example of radical nationalism since this institutional change was beneficial for both parties. On one hand, this partnership ensured a more regular supply of cotton and consistency in quality, which are both necessary, but not sufficient, conditions to the success of any ginning and trading cotton companies. On the other hand, the CMDT benefited from this joint venture in three different ways. First, it took advantage of all the technical expertise, as well as the research and development done by the CFDT since its founding in 1949. Second, it gained direct access to CFDT business partners, such as COPACO, a major international trading company, which handled most of African cotton exports (Figure 4). Third, its national monopoly status in the ginning and marketing of cotton significantly contributed to State's revenues through export earnings. Through the nationalization, the Malian government has gained power over a portion of export revenues and, then, could control how and where to allocate these revenues.

Through its new mandate, the state-owned enterprise, CMDT, became highly involved in both agricultural and general development of the country by maintaining rural roads, ensuring access to drinkable water, providing stable income to cotton farmers, and negotiating purchasing prices, in addition to processing and selling cotton. Following its nationalization, the CMDT received support from the World Bank in order to strengthen its positions as public good providers (Campbell et al., 2007). Through this action, CMDT became a "State within a State" (Roy, 2010). Public foreign capital, coming mainly from the World Bank, was used to cover rural development and infrastructure activities, such as blacksmith training on ox-drawn agriculture devices, whereas private capital was free to be invested in activities that enhance profitability (Fox, 2008; Bingen, 1998).

As a result of these investments, both cereal and cotton production grew due to increases in cotton area and yields. As seen in Figure 2, the numbers of planted hectares of cereal and cotton followed an upward trend following the nationalization of the cotton gin company. In addition to improving food security through the promotion of an integrated farming system, the high involvement of the State in rural development activities in cotton regions also contributed to increase literacy rates through the provision of literacy lessons to cotton farmers.

Key limiting factors. With the nationalization of the CMDT came its new mandate to induce rural economic development. This increase in responsibilities put increasing pressure on the cotton gin company's budget since the provision of these public goods brought extra costs but not necessarily extra revenues. Moreover, through its new role as a public good provider, the CMDT tightened its relationship with international agencies, such as the World Bank, which contributed to increased dependency upon public foreign capital. In addition to the high involvement of the CMDT in rural economic development activities, the rapid growth in cotton production also led to increased strain on the CMDT's managerial skills and on its capacities to develop and maintain a transparent and efficient operational system. The importance of the monopoly parastatal, CMDT, in the Malian national economy created perverse incentives to rent-seeking behaviors and political inference.

3.2.2 Formation of village associations

The actions of individuals and going concerns. A major institutional change in terms of farmers' empowerment occurred in 1974. Dissatisfied with the cotton grading and weighting process (limiting factor), cotton farmers, with the help of a CMDT technical agents, organized their first protest (actions of individual and going concerns). Their request was heard, and the CMDT transferred cotton grading and weighting responsibilities to the newly formed producers' organizations, known as Village Associations (AVs), located throughout Mali's cotton production regions (institutional change).

Outcomes and economic performance. In addition to providing farmers better control over important cotton-related activities, this transfer of responsibilities has indirectly contributed to village development. After the harvest, cotton is transported from the field to the village collection site, where it is graded and weighted before being loaded and transported to the nearest ginning plant. In exchange for their members' time and labor, the producer organizations receive a financial compensation that is more likely to be used on village-based collective developmental projects, such as schools, wells, and health centers. From the CMDT point of view, the main objective behind the transfer of cotton related activities to the Village Associations was not to empower farmers but rather to reduce their own operation costs.

Even though AVs became well established at the local level during this time, they did not have any legal status. Indeed, they were not governed by any official working rules. This reinforces Commons' idea that institutions do not have to be formal to set the working rules being followed by individuals and going concerns and even informal institutions play an important role in terms of economic development, in part, by maintaining order.

Key limiting factors. The cotton system established by the CFDT continued under the new nationalized cotton gin company. The CMDT was entrusted with monopoly rights while farmers were guaranteed to sell all their production at a fixed pan-territorial price announced prior to planting. However, farmers had no formal bargaining power over the determination of seed cotton prices. Price fairness remained a concern for the Malian cotton producers. Due to the lack of financial resources, access to inputs was also a constraint to economic performance. Farmers wanted to get more involved in all critical cotton-related activities.

3.3 Vertical Integration

The vertical integration of Mali's cotton sector was completed during the mid-1980s to mid-1990s. Under this fully integrated structure, an interlocked credit-cotton-input system to slack farmers' financial constraints in accessing inputs on credit, and a new price mechanism and a stabilizing fund were implemented to better control for farmers' risk aversion. As discussed by Fok (2008), the integrated cotton system was gradually established to overcome cotton farmers' production constraints and concerns, such as price fairness, risk aversion, lack of financial resources, lack of competence, and high transaction costs.

3.3.1 Interlocked input-credit-cotton system

The actions of individuals and going concerns. To overcome problems related to imperfect credit and input markets, an interlocked system tying up inputs on credit with cotton production at the village level was formalized. Unlike in the 1970s, where loans were directly allocated to individuals, the new interlocked system granted loans to AVs, which acted as a group lender (Koenig, 2008). Under this new system, all members of the AVs were responsible for individual farmer's loans received at the village level. Through the AVs, the CMDT provided inputs on credit, mainly seed, fertilizers, pesticides, and insecticides, to farmers at the beginning of the crop season on the promise of getting paid back at the harvest. After the harvest, the CMDT directly deducted credit from farmer's seed cotton payment. Loans were not directly granted by the CMDT but rather by the National Bank of Agricultural Development (BNDA). The CMDT played a facilitator role between the BNDA and producer organizations as seen in Figure 4.

Outcomes and economic performance. In addition to empowering AVs through the transfer of new responsibilities, the implementation of an interlocked system generated incentive to use inputs, since those were made more easily available. In addition to maintaining or improving soil fertility, better access and use of inputs partially explained the high cotton yields reached during the mid-1980s to mid-1990s. As seen in Figure 3, cotton yields reached their peak in late 1980s, with an astonishing national average close to 1400 kg/ha. Concurrently, the number of planted hectares of both cereal and cotton rapidly increased. This might be explained by the fact that the quantity of inputs available on credit was proportional to the number of planted hectares.

Assuming that farmers' revenues from higher yields exceeded increased in production costs due to the use of inputs, this interlocked system enhanced farmers' standard of living. Given that cotton farmers were also growing their own food, such as sorghum, maize, and millet, to meet their family's needs, diversion of cotton inputs on cereal fields is more likely to have contributed to improved food security.

However, undesired outcomes also emerged from the implementation of a group lending scheme in the provision of inputs on credit. First, although cotton remained the principal sources of revenues to repay loans, all members of the AVs, which included cotton and non-cotton farmers, were able to obtain inputs on credit. This made credit recovery more difficult to manage. Second, the presence of opportunistic farmers selling inputs obtained on credit to the black market assuming that others would cover their loss, contributed to indebtedness. Third, input diversion from cotton to cereal fields might also jeopardize farmers' capacity to cover their loans. Fourth, in the presence of an aggregate shock, such as the flooding in 1999, entire villages defaulted on their credit due to cotton crop being damaged, and therefore, the CMDT was unable to recoup the BNDA loans.

Key limiting factors. Even though the establishment of AVs enhanced farmer empowerment by transferring some responsibilities, the absence of exclusive membership and efficient sanctions against opportunistic behaviors led to high rates of indebtedness at both producer and organization levels and created disincentive to good performance. Indeed, due to the presence of a joint liability program, the best performing farmers have seen their profits diminished, since a part was used to cover other members' loses. Interestingly, the village-wide memberships of the AVs and its potential unintended impact on economic performance have been criticized for a long time (McCorkle, 1986 cited in Koenig, 2008; p.204).

3.3.2 Price determination and stabilizing fund

The actions of individuals and going concerns. The establishment of a fully integrated structure also led to both the introduction of a minimum price for cotton producers, and a stabilization fund, managed by the CMDT in order to secure and stabilize producers' revenues over time (Bourdet, 2004). The stabilization fund created under the new pricing mechanism was designed to support minimal seed cotton prices during periods of low world prices and to be replenished during periods of high world prices. It was an important institutional change intended to reduce farmer risk aversion while limiting the CMDT ginning and marketing risks associated with fluctuations in the international market.

Outcomes and economic performance. This price mechanism provided relative stability to cotton growers, albeit at a high opportunity cost, in terms of development actions and lower long-term growth (Tefft, 2004; Badiane, 2002). With the sharp decline in international prices, the parastatal company had less room for manoeuvre to maintain the stabilizing funds and to pursue investment in profit-related activities. In addition to minimum prices too high in comparison with world market prices, mismanagement of the funds contributed to its limited success. Indeed, surplus accumulated during high world prices often disappeared when the money was needed to support floor prices guaranteed to producers (Goreux and Macrae, 2003). Due to mismanagement and/or corruption, the stabilization fund acted as a tax to producer in periods of high world prices while producers struggled to get compensated during periods of low world prices (Kelly and Tschirley, 2008). As a result, the government, with support from international donors, such as the French Development Agency (AFD), injected money in the fund to keep it going.

The depletion of the stabilization fund due to the combination of low world prices and mismanagement shed light on the issues facing the pricing mechanism and more importantly, on the overall poor financial performance of the CMDT. The bailout of the stabilization fund was only the peak of the iceberg. Indeed, the Malian government and international donors both invested heavily in the CMDT to avoid its bankruptcy. Following each reinvestment, the State saw its share in the CMDT increased. Even though the CMDT benefited from the CFA currency devaluation, its financial situation remained critical with unsustainable debts in the mid-1990s. Given the differences in bargaining power and the lack of transparency in the floor price determination and transmission mechanisms, cotton farmers benefited the less from the CFA increase. Indeed, following the CFA devaluation, producers received only a 30 CFA/kg increase while world prices augmented by 463 CFA/kg (Tefft, 2003). Not only could the low prices paid to farmers could be qualified as unreasonable, they limited productivity. Lower prices reduced farmers' capability to acquire productive assets, to use chemical inputs, and to refund their loans. In cotton sectors characterized by the presence of a monopolistic ginning company, such as in Mali, prices paid to cotton farmers are lower than under concentrated or competitive market structures (Tschirley et al., 2010).

Key limiting factors. Farmers remained discontent over the pricing mechanism, since it neither led to high enough prices nor led to a more reasonable distribution of the profit between farmers and CMDT. Mismanagement and lack of transparency in the cotton gin company led to rent-seeking and opportunistic behaviors. These combined with low international prices, contributed all to the disappearance of surplus in the stabilization fund and to the accrual of CMDT's deficit. The pricing mechanism did not succeed in securing and stabilizing producers' revenues in a sustainable manner over time or in limiting CMDT's correlated risk with changes in the world market. However, it did shed light on the poor financial performance of the CMDT, and, thus, contributed to put the reforms, within the structural adjustment program framework, back on the agenda.

3.3.3 First major farmer strike

The actions of individuals and going concerns. During this period, producer organizations grew more empowered, while their discontents on both short-standing issues (e.g., CMDT technical agent dishonest behaviors) and long-standing issues (e.g. cotton grading and pricing process) were on the rise, disturbing the social, economic, and political order. By 1991, cotton farmers' frustrations reached their peak. Producers united to demand resolution of 12 grievances on production and marketing issues and organized their first cotton boycott (individual and concern actions) just before the start of the season (Tefft, 2004). The farmers' action to protest was certainly induced by the inability of the previous reforms to take care of their concerns.

This first strike movement occurred at the same time as the modern advent of democracy in the country, following the coup d'état of March 1991. In accordance with Commons' reasoning, the market development in the cotton sector-, resulting from individual and concern actions, was a driving force behind the democratic movement (Kemp, 2002).

The credibility of the new democratic era depended on the ability of the government "[…] to seek a compromise between the CMDT and the producers that balanced its commitment to democratic principles with the country's compelling economic and financial dependence upon cotton production and marketing" (Bingen, 1998; p.269). It is as true that the democratization process contributed to the emergence of the National Union of Cotton and Food Crop Producers (SYCOV) as it is true that farmers' empowerment encouraged the new government to commit to democracy. This institutional change in the Malian cotton sector (emergence of SYCOV) has been shaped by the interaction between the agents of change (farmers demanding policy reforms) and the institutional environment (from a military-led regime to a democracy).

Following the farmers' strike, 9 out of 12 grievances were quickly solved on the promise of pursuing the negotiation on the three other demands (Tefft, 2004). Discussion between CMDT, Malian and French governments and other donors led to the approval of a legally recognized producers' organization, SYCOV, which would be participating in all relevant CMDT decision-making units.

Outcomes and economic performance. The rise of producer representation in the decision-making process came along with the emergence of leaders that did little to serve and defend the interests of the majority. Unlike typical cotton farmers, SYCOV leaders were mostly all educated, knowledgeable of the bureaucracy rules, and able to communicate in French (Roy, 2010). An unintended effect of the creation of SYCOV was, therefore, the consolidation of cotton elite that had its own interests to defend before those of all cotton farmers.

Key limiting factors. Although the creation of SYCOV might have helped to increase farmer participation in important cotton decisions, it certainly led to the emergence of a "cotton elite". Roy (2010) argued that the principal progress made in farmer empowerment was not due to leaders' involvement, and even questioned their real motivation given their well-known participation in clientelism, corruption, and cooptation. Thus, more work needed to be done to improve farmers' involvement in critical cotton decisions.

3.4 Ongoing Market-Oriented Reforms

In response mainly to the large accumulated deficits of both the CMDT and the State, the Bretton Wood Institutions strongly advocated for the ending of government support to the CMDT, and for the privatization and liberalization of the sector. Following Commons' theory on the evolution of institution, the recommendation of the IMF and World Bank were "actions" to undertake in order to control for limiting factors that undermine economic performance.

It is assumed that the liberalization and privatization of the cotton sector would enhance competitiveness and efficiency (Kovach and Fourmy, 2006). Increasing the degree of competition in the ginning activities by selling gin facilities to private operators should reduce incentives to rent-seeking and opportunistic behaviors and lead to higher efficiency. The establishment of a new pricing mechanism should also contribute to improve the financial situations of the ginning facilities, while reducing the government fiscal burden. With the dismantlement of the state-owned enterprise, input distribution and transport should be taken over by the private sector, and research and development activities taken over by the government. The gin facilities would be focusing only on ginning and marketing activities and, thus, would withdraw from rural development activities, which are considered to bring extra costs but not direct revenues.

3.4.1 Second major farmer strike

The actions of individuals and going concerns. At the same time that the Bretton Wood Institutes started to advocate more strongly for institutional reforms, farmers were also showing sign of dissatisfaction toward the price mechanism and management of the Malian cotton sector by the late 1990s and early 2000s. In fact, discontent with low seed cotton prices and the discovery of embezzlement funds by the CMDT were key factors that led to the strike movement by cotton farmers during the crop campaign 2000/01. Discussions concerning whether or not SYCOV leaders should be re-elected, given their poor ability to defend farmers' interest and to negotiate higher prices also contributed to the farmers' protest (OECD, 2002).

Outcomes and economic performance. During the farmer boycott year, cotton production went down to 242 726 tonnes compared with 459 123 tonnes the previous year due to farmers' decision of planting less hectares of cotton (Figure 2). This decline in production had disastrous impacts on the CMDT and State revenues while providing more incentives to the World Bank to push further on the privatization and liberalization reforms (Roy, 2010).

Interestingly, seed cotton prices went up for several years after the boycott movement, but this upward trend did not last. Following donor pressure to liberalize, a new price determination mechanism linking more directly farmer prices to world prices was introduced during the 2005/06 cotton season. Conditionality has been one of the principal tools used to encourage the government to undertake major reforms in the cotton sector (Kovach and Fourmy, 2006). The use of conditionality can be seen as a measure of coercion, where the power of each in determining the level of exchange depends upon their relative power to wait for the other to give (Commons, 1934; p. 337). Given that the new liberalized price mechanism had negative consequences on poverty by increasing food insecurity and debts (Kovach and Fourmy, 2006) and on GDP through reduction in consumer spending (Nubukpo and Keita, 2005), it was not prolonged after 2008.

In addition to the setting of more reasonable prices, the date of payment has become a new concern for farmers. Following the 2000/01 farmer strike, the fixation of higher seed cotton prices to please producers and to avoid another boycott has appeared to the CMDT, a more relevant strategy to encourage cotton production than timely payment. Therefore, farmers have experienced important delays in their payment over the last decade (Theriault et al., 2012). Difficulties associated with the sale of cotton are limiting farmer production by exacerbating food insecurity, indebtedness, and access to inputs due to lack of liquidity. As results, Malian farmers have been either reducing the area planted or quitting cotton production.

Key limiting factors. In addition to still facing low cotton prices, farmers have been dealing with high input costs and important delays in their payment (emerging limiting factors). Although the CMDT and State representatives acknowledge the presence of important delays in farmer payment and their negative consequences on cotton supply, they appear to be powerlessness to remedy to it in the short-run. Indeed, it is more difficult to pay farmers on time, in a period of tight budget and low international prices. Even though it is well-recognized that delays in farmer payment act as limiting factors to production (Fok, 2008), it is still unclear whether they are the outcome of external factors, such as low world prices, or of the lack of incentive from the CMDT to make credible commitment.

3.4.2 From village associations to cooperatives

The actions of individuals and going concerns. A key institutional change, brought in with the cotton reform, is the transformation of the informal village associations (AVs) into formal Cotton Producer Cooperative Societies (SCPCs) in 2001 (Figure 5). In the pre-structural adjustment policy setting, many farmers and AVs suffered from internal indebtedness, due to mismanagement of credit, bad governance, and lack of accountability. Therefore, changes in the producer organization's legal structure can be seen as a response to control for the indebtedness. Unlike the AVs, the cooperative societies have legal status and are financially autonomous. Members are voluntarily chosen, representatives are democratically elected, and benefits (and risks) are collectively shared (Republic of Mali, 2001). Through the joint liability program that prevails, members of a SCPC are all liable for each other's debts. Producers with similar affinities can regroup to form their own cooperative and can legally exclude undesirable ones (e.g., highly indebted farmers). Although there was only one AV previously per village, more than one cooperative might now exist under the new working rules. The legal status also confers the rights to the SCPCs to make transactions with market operators such as financial institutions, on their own account.

Outcomes and economic performance. Some of the AVs facing internal conflicts, mainly due to internal indebtedness and divergences in economic interests, split up into several SCPCs (Lacy, 2008). However, only a minority of the conflicting AVs broke up in many cooperatives. The exclusion of insolvent cotton growers from a cooperative seems, a priori, a solution, but the strength of the social relations prevailing in villages might prevent it from happening. Even though some producers argued that traditional norms have started to erode and that familial values have slowly been substituted by individual ones, it is unlikely that a farmer would rationally put himself in the delicate position of excluding a relative from the cooperative. Solidarity remains an important feature inside villages, which has its own advantages and disadvantages. On one hand, farmers in difficulty to make payment can count on the strong mutual support from their kin to help for a few instalments (Montgomery, 1996). On the other hand, it is more difficult to restrain farmers with bad credit recovery, due to underperformance and/or opportunistic behaviours, to free ride on performing farmers when tied relationships exist. Therefore, some cooperatives still struggle to efficiently manage internal credit. Although Commons acknowledged the presence of problems related to free-riding behaviors in collective action, his ideas remain underdeveloped (Rutherford, 1983; p. 735).

The high pace, at which the AVs were transformed into cooperatives, has been openly criticized. There was a lack of training, information and consciousness from all actors, but more visibly at the producer level. The majority of cooperatives still work with an AV's logic, which partially explains why the establishment of cooperatives has not fully succeeded in resolving indebtedness issues facing many producers and their organizations. High rates of credit default still persist at the farmer and cooperative levels. Given the presence of joint liability programs within the SCPCs, profits made by performing cotton farmers have been used to cover losses from underperforming ones. The joint liability programs have been the source of tension among farmers and have resulted in the abandonment of cotton farming by some. Producers who are members of financially healthy cooperatives are really pleased with the new institutional structure whereas producers who are members of indebted and conflicting cooperatives are still desperately waiting for major improvement.

Key limiting factors. The problem of credit defaulting among farmers and their organizations was not completely addressed by the transformation of the AVs into SCPCs. Three possible explanations exist. First, the lack of consumption market mechanisms, such as access to personal credit, could be one of the principal reasons for farmers' debts. Second, the degradation of moral values could be a main cause of credit default. Indeed, it is well-recognized that some producers unscrupulously borrow money knowing that they will be incapable to pay it back. Free-riding is a common problem facing collective action and is present in this environment. Third, late payment to farmers combined with low seed cotton prices and high input costs put them in a difficult position to recover their loans, and thus, rekindles issues with the joint liability program prevailing in farmer cooperatives.

This period is associated with a loss of social capital, which is reflected by the degradation of cooperative norms at the village level and by the increase in pessimism at the producer level within a context of high uncertainty and changes. In addition to the withdrawal of many producers from growing cotton, excessive tension inside cooperatives is harming social capital among members (Giné and Karlan, 2009).

3.4.3 Pyramidal union structure

The actions of individuals and going concerns. To improve farmers' representativeness in the decision-making process, a new pyramidal union structure was implemented at the same time as cooperatives were introduced at the village level. The SCPCs are the first of five levels characterizing the new union structure implemented with the ongoing reforms. The second level is the communal union, and encompasses the SCPCs from different villages, but sharing a same commune. Then, different communes are grouped into sectoral unions, which are then merged into four different regional unions. Finally, the last level is the National Union of Cotton Producer Cooperative Societies (UN-SCPC), composed of the four regional unions. That is, representatives elected from the SCPCs form the UN-SCPC, and so on.

The former farmers' union, SYCOV, is no longer a major stakeholder under the new institutional arrangement (Figures 5 and 6). Although SYCOV still exists, it does not longer represent cotton farmers' voice in the formal cotton governance setting. Indeed, the UN-SCPC has been chosen to solely represent and defend cotton growers' interests in all decisions-making bodies and authorities. The UN-SCPC is considered to be a more democratic structure and, therefore, should provide a better voice to farmers through increase in bargaining power. From a Commons' perspective, unions are "an attempt to gain a reasonable equalization of bargaining power" (Rutherford, 1983; p. 732).

With the privatization and liberalization process, new responsibilities have been gradually transferred to the UN-SCPC. In addition to participating in the fixation of seed cotton prices, the UN-SCPC is in charge of negotiating, purchasing, and distributing agro-chemical products before the start of a new cotton season. Through the Inter Professional Cotton Association (IPC), quality, quantity and prices of agro-chemical products to purchase are negotiated between UN-SCPC, the Professional Association of Cotton Companies of Mali (APROSCOM), and input supplier companies. The final decisions should be reached through consensus. With the establishment of the IPC and this transfer of responsibilities to the UN-SCPC, the State is not supposed to interfere in any decisions related to agro-chemical inputs and seed cotton prices, anymore. Following Commons' reasoning, decisions made through collective actions, such as those within the IPC, should lead to more reasonable outcomes (Broda, 2008).

Outcomes and economic performance. In many villages, the SCPCs leaders are the same as under the AVs. Therefore, this new structure has indirectly contributed to maintain or even reinforce the social domination of cotton elite at the village level. Theoretically, everyone has the potential to be elected as president of a cooperative. But in reality, required qualifications, such as being literate and being from the appropriate caste, restrain some individuals to be more involved in the social structure of their village while acting as an entry barrier protecting the interests of the cotton elite. This supports Commons' idea that informal institutions, such as norms and custom, can constrain individual choices and actions. The success of the new producer union structure in serving and defending interests of the majority of cotton farmers is also mitigated. Given that the subscription of many cooperatives to the UN-SCPC is paid by the State rather than by farmers, some believe that the leaders are likely to listen more carefully to the politicians than to the base.

Being composed of cotton producers, the UN-SCPC possesses a great body of knowledge on production, but has a major lack of experience in contract negotiation. Therefore, there is also divergence of opinions on the success of the UN-SCPC regarding the input distribution process. On one hand, this transfer of activity is a failure, since there are major delays in input distribution, which negatively impact activities such as sowing and weeding, and therefore, yields. On the other hand, this new responsibility is seen as positive, since it gives more power and independence to the producers. Nevertheless, the UN-SCPC needs help and guidance in order to provide efficiently and promptly inputs to farmers.

Key limiting factors. Although reforms brought higher expectations on the role that the union structure can assume (e.g., management of credit and purchase of input supplies), they have not generally succeeded in meeting them (Akiyama et al., 2003). The rise of cotton elite and of a more politicized union structure has contributed to the loss of trust between the producers and their leaders, who are criticized to have served and defended their own interests first. Moreover, the low seed cotton prices and high input prices are reminder that more work has to be done to achieve more reasonable outcomes from a farmer perspective.

3.4.4 Liberalization and privatization of the CMDT

The actions of individuals and going concerns. The proposed institutional change that has drawn the most attention from both cotton stakeholders and the general public is indisputably the dismantlement of the CMDT, which would ultimately lead to its privatization. Under the market-oriented reforms, the state monopoly has gradually withdrawn from rural development (e.g., road maintenance and literacy lessons) and production activities (e.g., technical assistance, R&D) to centralize its efforts mainly toward ginning and marketing. Since the disengagement of the CMDT in the provision of public goods, neither public –private partnerships nor NGOs, have fully stepped in to ensure their continuation The provision of inputs for cereals has been transferred to the Group of Cotton and Food Producers' Union of Mali (GSCVM). The task of supplying cotton input on credit is being gradually transferred to the UN-SCPC. Once this transfer of responsibility completed, the UN-SCPC would be solely responsible to call to tender, distribute, and supply cotton inputs to producers through their cooperatives.

With the reform process, the CMDT has been split into four regional monopolistic affiliates (Figure 6). Once the privatization fully completed, each affiliate will be independently managed and owned. Each monopolistic firm will be owned at 61% by a private operator, 20% by cotton producers, 17% by the State, and 2% by the gin's employees. Commons would argue that this new form of ownership should better protect the interest of the non-monopolistic actors, for instance the farmers, by increasing their bargaining power (Parsons, 1985, p. 758). From being previously administrated as a socio-economic developmental project, the cotton sector would now be established as a private industry, with profit maximization as the main objective in each zone.

Outcomes and economic performance. Given that the privatization of the cotton company has not occurred yet, it is too early to conclude whether it led to reduced costs through enhanced efficiency and competitiveness. The withdrawal of the CMDT in the provision of public goods has certainly reduced its operation costs. However, there is an indirect costs associated with this disengagement. Indeed, no other entity has stepped in to provide them yet. Therefore, cotton farmers have experienced a decline in rural developmental activities and in extension services received over the years. For instance, due to the disengagement of the State in the provision of extension services, 82% of cotton farms received technical support during 2008/09 compared to over 95% during the four previous crop years (CMDT, 2009).

The transfer to the GSCVM of all activities related to inputs meant for CMDT cereal crops have had unintended consequences. Difficulty in farmer access to cereal inputs has occurred from the inexperience of GSCVM in handling the purchase, distribution, and payment activities and from the lack of collateral that farmers can offer to input suppliers (IFDC, 2004). Before the reform process, cotton farmers were encouraged to farm in an integrated system, that encompasses livestock production with cotton and cereal cultivation, and they had access to both cereal and cotton inputs through the CMDT. Although input diversion is not a new phenomenon, it appears to have gained popularity with the recent reforms. Indeed, it is not uncommon for many Malian cotton farmers to deviate some of their cotton inputs toward their cereal fields. It might be due to either the insufficient quantity of cereal inputs available throught the GSCVM or the easiness to access cotton inputs on credit through the SCPCs and/or both. Nevertheless, a sub-optimal quantity of inputs is generally applied to cotton fields due to input diversion but also due to the high input prices. The combination of sub-optimal input use with soil fertility degradation in cotton regions have led to declines in cotton yields over the last decade.

The period at which the CMDT has gradually withdrew from the provision of public goods, such as technical advices and extension services, coincided with a decline in cotton yields as seen in Figure 3. In addition to reducing efficiency and competitiveness, the decline in yields is reflected in lower cotton revenues for the farmers, the CMDT, and the State. However, the impact of lower cotton productivity on poverty remains unclear since this latter depends on the other sets of alternatives available to farmers. For instance, input diversion might lead farmers to get lower cotton yields but higher cereal yields, which depending on the production costs and price ratio might be more profitable.

Key limiting factors. In addition to the lack of technical assistance and extensions services provided, Malian cotton farmers are facing low farm prices and high input costs, which generates incentive to apply sub-optimal dosage of fertilizers and pesticides on their cotton fields. The application of smaller dosage than recommended intensifies soil fertility degradation, while reducing cotton yields. Despite being contrary to the liberalization policies recommended by donors, fertilizer inputs have been subsidized to encourage cotton production and to increase yields at several occasions. However, some consider this action of subsidizing fertilizers as being motivated by political rather than agronomic interests. With the perpetual objective of being elected at the next electoral campaign, politicians particularly covet the support of three million cotton smallholder farmers. Under uncorrupted and democratic elections, cotton farmers, due to their large representation, have a given power to skew the electoral results.

4. Conclusions

Throughout his life, Commons worked upon drawing policy inference from his research. Therefore, to do justice to Commons' work, this research concludes by drawing relevant policy recommendations that should revitalize the Malian cotton sector based on the knowledge of (un)intended consequences and their economic impacts from key institutional changes that have occurred from the country 's Independence in 1960s to the ongoing reforms in 2000s.

The lack of adequate technical advices and extension services, high rate of indebtedness at the farmer and producer organization levels, inadequate access to inputs, discontent about low seed cotton prices, date of payment, and the highly politicized structure of the UN-SCPC, are all factors limiting economic performance in the Malian cotton sector. However, they are not all critical to economic performance in the same way at all moments.

Farmers' concerns in terms of indebtedness at both the farmer and organization levels and of unreasonable pricing mechanism are limiting factors that have persisted over the reforms. The transformation of the AVs with open membership to the cooperative structures with restricted membership to cotton producers only have not solved the problem of high credit default. Opportunistic behaviors, such as selling inputs obtained on credit on the black market, have not been confined due to the lack of credible sanctions and enforcement mechanisms.

The implementation of a linked cereal-credit system to facilitate access to cereal inputs on credit should reduce incentives to deviate cotton inputs while improving farmers' loan repayment rates without compromising food security. The application of fertilizer and pesticide dosages closer to the optimal level should increase cotton yields. With higher cotton yields, farmers' revenues should increase while reducing farmers' risk of defaulting on their loans and lessening risk of conflict within cooperatives. However, improving access to cereal inputs on credit for cotton producers would require more involvement from key cotton stakeholder such, as the Ministry of Agriculture, financial institutions, and gin companies. Sub-lending groups should also be created within cooperatives to facilitate peer-monitoring and discourage opportunistic behaviors.

The unreasonable pricing mechanism is a persisting farmers' concern that led twice to a boycott movement. Indeed, farmers' strikes in 1991 and 2000 were mainly induced by farmers' discontent toward the sector inability to set reasonable seed cotton prices. The implementation of a more liberalized price determination mechanism in the mid-2000s as proposed by the Bretton Wood Institute was not as beneficial to farmers as initially expected. Given its unintended consequences, such as increased food insecurity and reduced GDP, the liberalized price mechanism was discontinued. Setting prices that appear reasonable to both farmers and CMDT remain an important challenge for the Malian cotton sector. Following Commons' reasoning, increasing farmers' bargaining power should lead to a better protection of their interests, including the settlement of more reasonable prices and promptly payment. Moreover, assuming that the newly implemented Interprofession works as intended, decisions made through this collective action should lead to more reasonable outcomes.

An important unintended consequence that came with the rise of farmers' participation in the decision-making process is the emergence of cotton elites. Even though the implementation of a pyramidal union structure (UN-SCPC), with leaders elected through elections, was intended to be more democratic than the former union (SYCOV), it has maintained the social domination of cotton elites. Indeed, few farmers met the required qualifications to become leaders. Improving literacy rates among farmers would be a first step to address this problem by increasing the number of potential candidate to representative positions. However, with the restructuration of the cotton sector, the CMDT withdrew from providing literacy lessons and neither the private sector nor the government has fully stepped in yet.

Through the privatization and liberalization reform process, the CMDT has refocused its activities mainly toward cotton ginning and marketing and, thus, has gradually withdrawn from providing extension services and conducting R&D. The combination of sub-optimal quantity of inputs applied to cotton field and lack of adequate technical supports offered to producers has certainly contributed to lower yields over the last decade. Addressing this problem would require finding the right balance between providing services that bring extra costs but not directly extra revenues for the cotton gin company. Extension services to disseminate information on new production technology and to assist farmers in the adoption of improved cotton production techniques are vital elements to increase cotton yields as well as R&D activities to develop production technology more appropriate to the Malian agro-climatic conditions, such as drought-resistant seeds. However, these services come with a cost than the cotton gin company should not bear alone. Partnerships with government, Ministry of Agriculture and universities should be foreseen to make sure these essential services are provided without jeopardizing the financial situation of the CMDT.

In accordance with Commons' institutional economic theory, individual and going concern actions to control for limiting factors have been the drivers of institutional changes in the Malian cotton sector from 1960 to 2010. These actions have had both (un)intended consequences impacting economic performance at the farm, gin, and State levels, which in turn, led to the emergence of new liming factors. With the ongoing privatization and liberalization reforms, lack of adequate technical advices, indebtedness, and issues related to input access, discordance between farmer and their union' leader representatives, low seed cotton prices, delays in payment and low cotton yields have emerged as the new key limiting factors.

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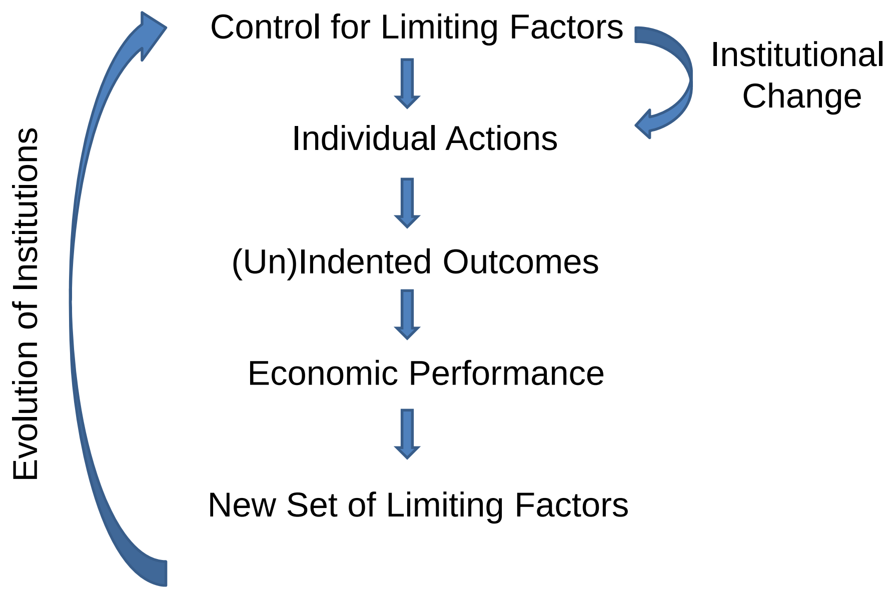

Figure 1. Commons' Evolution of Institution Theory (Source: Authors)

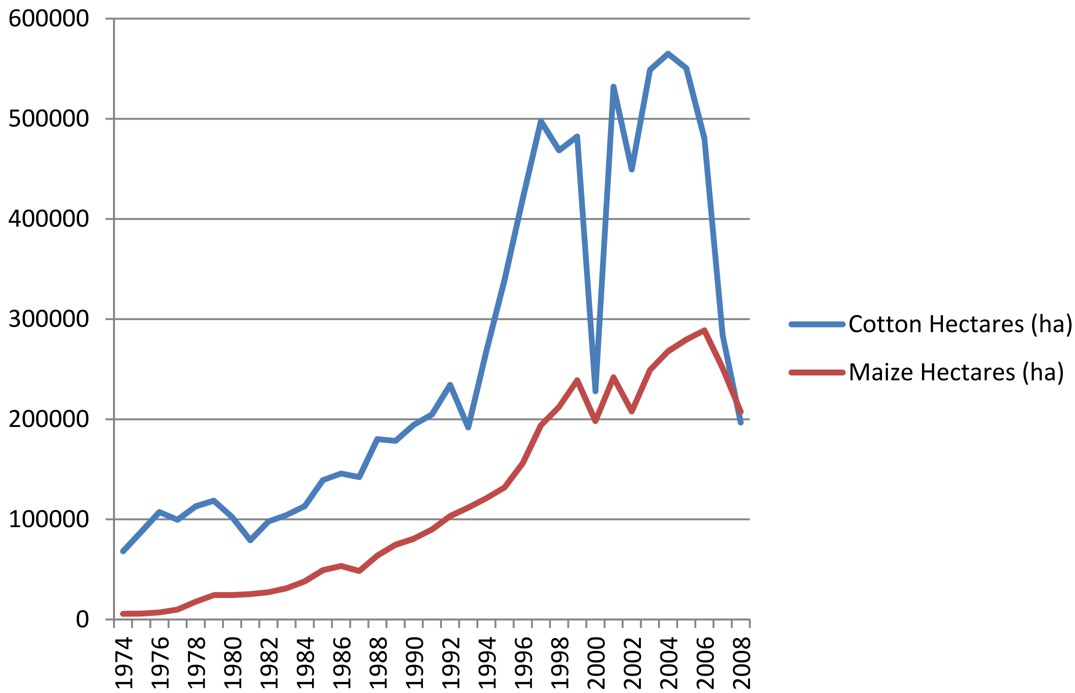

Figure 2. Evolution of Cotton and Maize Hectares, 1974-2008 (Source: CMDT)

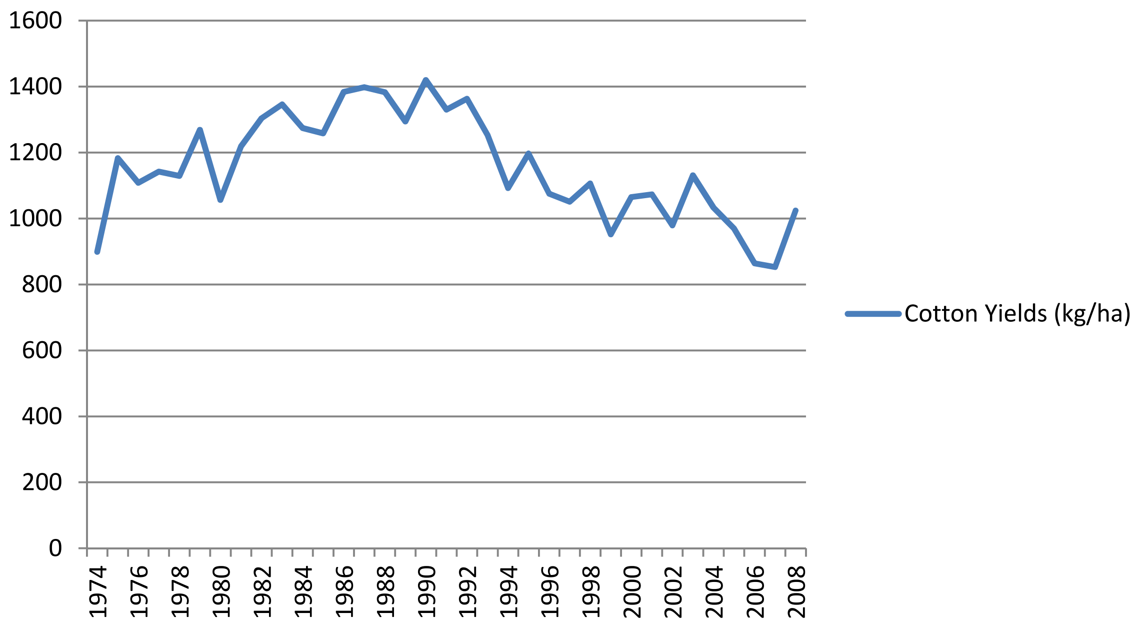

Figure 3. Evolution of Cotton Yields, 1974-2008 (Source: CMDT)

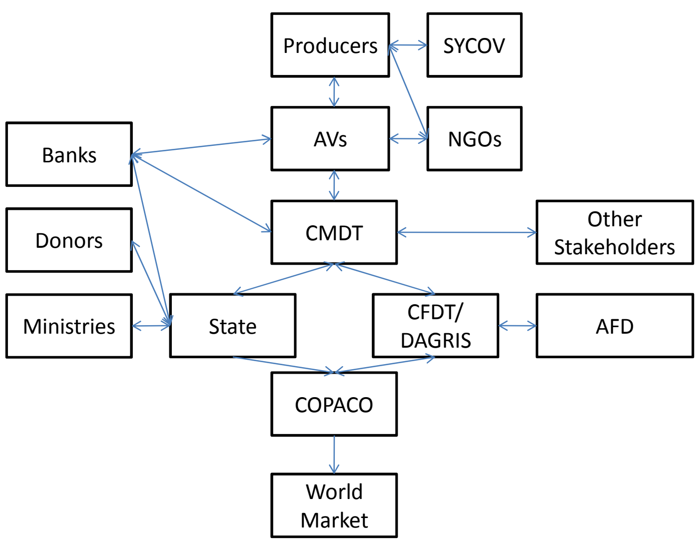

Figure 4. The Malian Cotton Sector after Nationalization (Source: Authors)

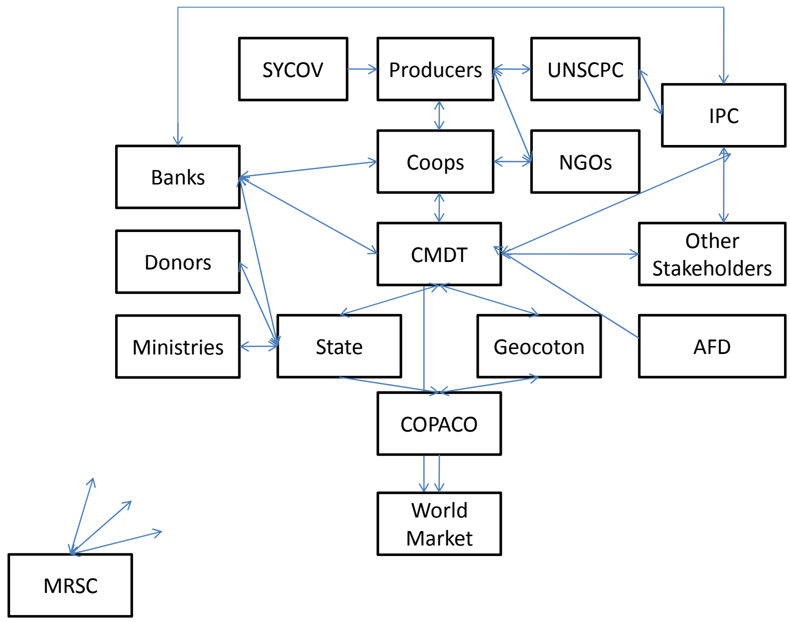

Figure 5. The Malian Cotton Sector in Transition (Source: Authors)

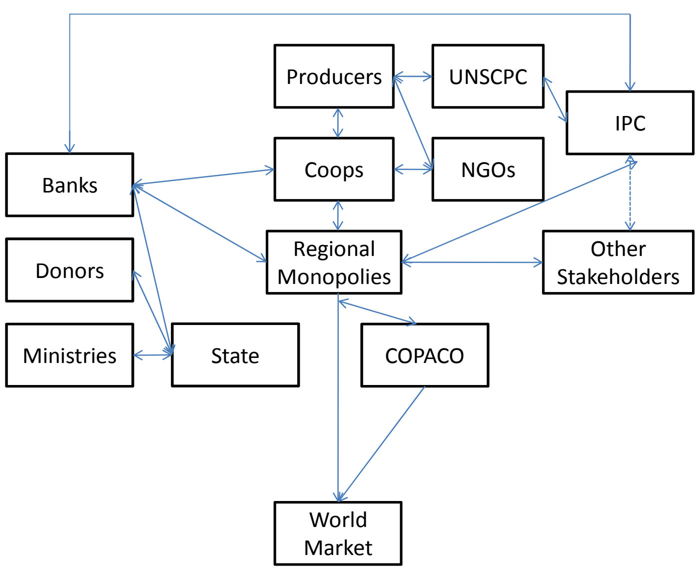

Figure 6. The Malian Cotton Sector as Expected after Privatization (Source: Authors)