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Abstract:
The cooperative model of Gujarat, also called the Amul Model or the Anand Pattern, has been a source of great interest to academics and politicians alike because of its potential for replication in India and elsewhere. The Amul Model is founded on six principles in the internal and external environment, which can be interpreted as requirements for individual farm producers to successfully engage in group action.

This paper examines the adaptation of the Amul Model by East African dairy cooperatives, beginning with a description of the organizational history of Amul, the largest food brand and dairy cooperative in India, while taking a cooperative life cycle approach. The cooperative life cycle comprises five progressive stages: 1) genesis, 2) organizational design, 3) growth and heterogeneity, 4) recognition and introspection, and 5) choice. Amul, which operates a three-tier federation, has experienced a series of life cycles, each culminating in a critical, revolutionary event to ignite new life cycles characterized by incremental growth. The analysis of organizational data informs a property rights framework to help define the individual steps and stages of organizational growth and decline for cooperatives, thus outlining the paths of degeneration or regeneration for different types of property rights structures, which comprise various combinations of residual claim and residual control rights.

While Amul originally started as a defensive bottom-up type of organization to solve a market failure, following the same founding justifications as for many European and American cooperatives, the Amul Model being replicated in East Africa is a top-down approach with a strong emphasis on macro-level direction to spur micro-level development. The history of Amul generates a range of lessons applicable to agricultural cooperatives at various stages of the cooperative life cycle, from genesis to choice, which includes the options to adjust or convert the organizational form. The lessons are subsequently applied to three specific dairy cooperatives in Kenya, which currently linger somewhere in the first cooperative life cycle; possible steps are identified to prevent demise and help progression to advanced stages of growth and development in the cooperative life cycle.

Keywords: life cycle theory, property rights, dairy cooperatives, collective action, vertical integration


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Genesis and Growth of Amul: 
Life Cycle Lessons for Kenyan Dairy Cooperatives

I. Introduction

In the West, the foremost reason for farmers to engage in collective action has historically been to solve a market failure (Sexton and Iskow, 1988); the traditional cooperative, which is fully member-owned and member-controlled, therefore has defensive roots. However, the reasons for collective organization by farmers in the developing part of the world are likely to be more diverse and numerous as pervasive market failures make the cost of transacting too high (De Janvry et al., 1991; Markelova et al., 2009). Meanwhile, massive restructuring is changing the landscape of the food production sector to further complicate the livelihoods of small farmers (Reardon and Timmer, 2012).

The organizational life cycle is commonly used to describe the evolutionary paths of organizations in both developed and developing markets (Lester et al., 2003). With the perspective on agricultural cooperatives, Cook (1995) identified five distinctive and progressive life cycle stages: 1) genesis, 2) organizational design, 3) growth and heterogeneity, 4) recognition and introspection, and 5) choice, at which point organizational redesign is induced by increases in ownership costs. The analysis of organizational paths of degeneration or regeneration has potential to inform the theory on optimal property rights structures, which comprise various combinations of residual claim and residual control rights (Chaddad and Cook, 2004; Chaddad and Iliopoulos, 2013).

This paper presents three case studies of dairy cooperatives in the developing world in efforts to combine the theories on organizational life cycles and property rights structures. The benchmark example is set by Amul, the largest food brand and dairy cooperative in India, because of its success in a developing market characterized by structural gaps and failures. The emergence of Amul, which has accommodated the needs of its members and withstood the pressures of its environment by readjusting its property rights structure, generates a range of lessons learned applicable to dairy cooperatives in similar settings of development. The lessons learned, which we term the “Amul Conditions”, are subsequently applied to two dairy cooperatives in Kenya to primarily test the strength of our hypotheses.

II. Life Cycles of Firms and Cooperatives

According to Lester et al. (2003), the appeal of the life cycle is obvious as organizations go through the same stages as all organisms, most notably birth and death, with different forms of growth in between. While forming a summary of nine organizational life cycle models, Quinn and Cameron (1983) noticed the unique character of each individual stage; from inception to maturity to decline, each stage comprises a particular set of organizational activities, as well as different threats and opportunities (Jawahar and McLaughlin, 2001).

Compared to firms, “peculiarly little attention has been spent on understanding the role of cooperatives and other non-corporate forms of organization” (Holmström, 1999). However, despite the discrepancy in attention, Hansmann (1999) refuses to consider the cooperative a peripheral or incidental form of organization, citing its widespread success in the capitalist system of the United States and Europe. There is good reason to believe in a distinct difference in the core functions and objectives of firms and cooperatives: Helmberger and Hoos (1962)
consider the provision of products and services to its members the foremost goal of cooperatives, while the pure function of the firm is profit maximization, or, indirectly, utility maximization by expanding the possibilities for consumption activity (Demsetz, 1983).

The difference between firms and cooperatives also extends to the organizational life cycle (LeVay, 1983; Ortmann and King, 2007). In efforts to address the lack of a formal theory on the cooperative life cycle, Cook (1995) proposed a five-stage cycle to illustrate the unique challenges and opportunities for agricultural cooperatives in the future. The first stage describes the economic justifications for the existence of the cooperative; historically, farmers get together to collectively take control of supply, or to countervail a market power by means of vertical integration. During the second stage, organizational design, the bylaws of the cooperatives are set to formalize the organizational identity and structure. The third stage is characterized by growth and heterogeneity, both of which increase proportionally. In the process of becoming more and more successful in solving the market failure, sometimes even to the point of establishing market dominance, the cost of transacting inside the cooperative as a patron is likely to increase. These transaction costs, which can also be described as ownership costs (Hansmann, 1996), are generated by five types of problems: 1) the free rider problem, 2) the horizon problem, 3) the portfolio problem, 4) the control problem, and 5) the influence cost problem. The fourth stage, recognition and introspection, is about the growing member awareness of relatively high ownership costs, as well as the lost profits if the cooperative were to continue on its path. Choice is the central theme of the fifth stage, in which the cooperative has three options at its disposal: 1) tinkering its operational or constitutional identity, 2) reinventing its ownership structure by adjusting the residual claim and control rights, or 3) exiting by liquidation, bankruptcy, or conversion to a different organizational form.

III. Organizational Forms to Govern Transactions

Assuming the existence of contractual incompleteness, relationships in which investments tied to specific assets are relatively high and are subject to the lock-in or hold-up problem (Klein et al., 1978); if the value of the asset in its current use is significantly greater than the value in its next-best use, one party has power to engage in ex post negotiations in efforts to claim a greater portion of the appropriable quasi rents. A common solution to a relatively high cost of transacting in the market is vertical integration, which is described as “the purchase of the assets of a supplier (or of a purchaser) for the purpose of acquiring the residual rights of control” (Grossman and Hart, 1986). Hart and Moore (1990) provide a formal discussion on the optimal assignment of assets, including joint ownership or vertical integration to protect the stream of appropriable rents.

Generally, when transaction costs are low or negligible, producers and consumers use the spot market for exchanges. However, the market is increasingly less optimal if the transaction is characterized by high levels of asset specificity, complexity, frequency, and uncertainty (Williamson, 1991); when the costs relating to asset specificity and contractual incompleteness go beyond a certain point, the market is no longer the superior mode of governing or organizing the transaction.

Modes of governance can be positioned on a spectrum, with markets and hierarchies at the extremes (Williamson, 1991). While markets and hierarchies are polar opposites with unique combinations of mechanisms and instruments, hybrids are modes of governance for which subsets of assets, rights and profits are shared by individuals and organizations (Menard, 2004). The hybrid is conceptualized as a market-like hierarchy or a hierarchy-like market, or a mixture
of competition and cooperation, established to generate a return on joint activities with positive externalities on individual activities. Disagreeing with the hybrid as a two-dimensional construct, Makadok and Coff (2009) provided a taxonomy of intermediate forms by using authority (rights), ownership (assets), and incentives (profits) as the variables. Hence, hybrids are not market-like hierarchies or hierarchy-like markets, but rather modes of organization with intermediate values for each dimension. Using the term “interorganizational relationships”, Parmigiani and Rivera-Santos (2011) discovered many examples in the literature of prevalent forms, such as alliances, joint ventures, licensing, franchising, trade associations, and consortia.

IV. The Evolution of Property Rights Structures: Organizational Redesign in Cooperatives

While acknowledging the existence of the variety of governance modes between the market and the hierarchy, Chaddad (2012) promoted the cooperative as the true hybrid. He discussed three types of cooperatives — the bargaining cooperative, the processing cooperative, and the new generation cooperative — to illustrate the combinations of market-like and hierarchy-like mechanisms for creating a unique blend of control and coordination. That the cooperative is a diverse mode of organization is illustrated by Chaddad and Iliopoulos (2013), who proposed a continuum of cooperative models on the basis of residual control rights. There is no separation of control and ownership in the traditional model, but more and more control is delegated by patrons as the costs of collective decision making increase; at a higher degree of heterogeneity of member interests, the extended traditional model or the corporate model are more practical by delegating real or effective control to management. However, decreases in collective decision making costs are necessarily tied to increases in monitoring costs in efforts to counter managerial opportunism, thus making the optimal structure in part a function of the difference between the costs and benefits of adding management to the equation (Hansmann, 1996).

The property rights structures of various types of cooperatives can also be analyzed from the perspective of residual claim rights, which is pertinent because a common problem to cooperatives is the inherent equity or capital constraint (Cook, 1995; Gow and Swinnen, 1998; Hendriks and Veerman, 2001; Richards and Manfredo, 2003). In efforts to alleviate the equity constraint, many traditional cooperatives use vertical investments by creating LLCs, joint ventures, franchises, and other forms of strategic alliances while ownership rights are still restricted to members (Cook and Chaddad, 2004; Van Bekkum and Bijman, 2007, Kalogeras et al., 2013). In one way or another, organizational redesign by cooperatives implies the ownership rights of patrons are redefined and reassigned to fit the collective needs of the members (Chaddad and Cook, 2004). Such redesign is illustrated by a typology with the traditional cooperative and the IOF at opposite ends, thus explaining the range of possibilities in changing the non-transferable and non-appreciable nature of traditional cooperative shares. As time progresses, the equity constraint is likely to induce traditional cooperatives to pursue a different mode of organization, such as the proportional-investment cooperative, the member-investor cooperative, or the new generation cooperative, each of which is defined by increasing access to equity on both the internal and external market; of course, the investor-owned firm is also a possibility by transferring all ownership rights from patrons to investors.

Too often analyses of property rights structures are offered in a static spotlight, while organizations are observed to change or evolve in attempts to compete and survive in the marketplace. As such, one of the objectives of this paper is to explicitly connect the theory of property rights structures to the theory of organizational life cycles. The connection is forged by
the concept of ownership costs (Hansmann, 1996). There are costs to the ownership of enterprise: the costs of risk bearing, collective decision making, and monitoring. The amount is different for different types of owners; compared to investors, member-producers incur relatively high risk bearing costs as farm production is often dominated by a single crop, which constitutes the primary source of income in a single-purpose cooperative. However, because of the lack of risk diversification in producing a single crop, “[f]armers have both the incentive and the opportunity to monitor marketing cooperatives actively and intelligently”, which implies relatively low monitoring costs. By extension, costs of collective decision making might be considered also relatively low as member-producers of a marketing cooperative share the common objective of maximizing the of the homogeneous good. For their farm production, on the other hand, collective decision making costs could be relatively higher because of the communication and decision making costs associated with a one person one vote collective choice mechanism. Table 1 offers a comparison of relative ownership costs in firms and cooperatives.

Table 1 — Side-by-side Comparison of Ownership Costs for Investors and Member-producers

<table>
<thead>
<tr>
<th>Ownership Cost</th>
<th>Firm (investor)</th>
<th>Cooperative (member-producer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Bearing</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Collective Decision Making</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Monitoring</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

While Hansmann (1996) used ownership costs to explain the dominance of the cooperative model in agriculture in a static context, what happens to the ownership costs for member-producers as cooperatives evolve? During a period of growth, we explained earlier how cooperatives face five types of problems (Cook, 1995): 1) the free rider problem, 2) the horizon problem, 3) the portfolio problem, 4) the control problem, and 5) the influence cost problem. A more thorough discussion is warranted to make the connection to ownership costs.

First, the free rider problem, which occurs when the benefits to joint organization accrue to both members and nonmembers, causes increases in the costs of risk bearing and monitoring. Second, the horizon problem, which arises when the cash flow to a specific asset is shorter than the productive life of the asset, causes increases in the costs of risk bearing and collective decision making. Third, the portfolio problem, which is facilitated by the equity constraint that limits the options of risk reduction, causes increases in the costs of risk bearing and collective decision making. Fourth, the control problem, which is magnified in a cooperative because the performance of the agent is not mediated by the value of shares on the public market, causes increases in the costs of monitoring. Fifth, the influence cost problem, which concerns the diverse objectives of member-producers, causes increases in the costs of collective decision making. Table 2 provides an overview of the relationship between the five types of problems and the three types of ownership costs.
Table 2 — Relating the Problems and Ownership Costs of the Property Rights Structure of the Agricultural Cooperative

<table>
<thead>
<tr>
<th>Problem</th>
<th>Risk Bearing</th>
<th>Collective Decision Making</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Rider</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Horizon</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Portfolio</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Control</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Influence Cost</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

Clearly, all types of ownership costs are liable to increases as cooperatives evolve. As such, increases in the ownership costs for member-producers may deem the cooperative no longer the optimal mode of organization to govern the transaction. If so, cooperatives proceed to stages four and five of the organizational life cycle. After recognition of the situation, does the cooperative exit by means of bankruptcy, liquidation, or conversion to another organizational form? Or does the cooperative redesign its property rights structure to once again create the optimal alignment of the transaction and the governance form?

The main takeaway of the previous discussion on property rights structures of cooperatives is the importance of the organizational life cycle. Because of the unique arrangement of the residual claim and residual control rights, cooperative growth introduces a number of problems that render the property rights structure less efficient. While a cooperative at the beginning of its first life cycle is likely to be characterized by the traditional model, a successful cooperative may want to transition to a less fractioned cooperative model to lower the costs of risk bearing by loosening the equity constraint (Chaddad and Cook, 2004, Kalogeras et al., 2013); additionally, a successful cooperative likely has more need of the extended model, or perhaps even the corporate model, to mitigate the costs of collective decision making (Chaddad and Iliopoulos, 2013).

V. Amul

Amul, the largest dairy cooperative in India, is synonymous to the Gujarat Cooperative Milk Marketing Federation (GCMMF), the apex organization of a three-tier federation. At the milk organization level are approximately three million dairy farmers in village societies, each of which operates a milk collection center to collectively pool and chill milk. Positioned at the middle level is the district union, which handles the processing of milk and the manufacturing of dairy products at various dairy facilities. The federation is responsible for marketing the products of its members, both inside and outside India.

Amul is an example of a successful dairy cooperative with a background in countervailing a monopsony; on the way to market domination, Amul overcame a great number of challenges by adjusting its orientation to offense. Lessons are generated for dairy cooperatives at different stages of development by describing the emergence of Amul; the first life cycle
(1946-1955) culminated in the construction of a dairy plant to expand horizontally, and the ending of the second life cycle (1956-1965) coincided with the beginning of Operation Flood, the movement to replicate the Amul Model across the country.

**Life Cycle I: Adversity and Perseverance**

The genesis of Amul is a story of the exploitation of dairy producers in Gujarat, a province in the northwest of India. In the 1940s, Polson, a private firm previously active in the coffee industry, served as the governmentally sanctioned sole supplier to the Bombay Milk Scheme, a governmental program to supply affordable milk to the sizeable population of Bombay. The low demand for milk and the high perishability of milk facilitated a monopsony, forcing the individual dairy producer to accept low prices offered by Polson. The situation came to the attention of a well-known politician, who urged dairy producers in the Kaira District to take control of milk processing and milk marketing by forming a producer cooperative. T. Patel, a Gujarati with local and national experience in the freedom movement, became chairman of the organization, and by December of 1946 he managed to establish two village societies in the surroundings of Anand, over 200 kilometers from Bombay. Not much later, he registered the Kaira District Cooperative Milk Producers’ Union Limited (Kaira Union), a district union cooperatively owned by the village societies to assume responsibility for the marketing of liquid milk. The union purchased a dilapidated dairy creamery to pasteurize surplus milk, thus putting its 400 member-producers on the path to growth.

At the time, the government of India played a key role in the development of its economy. While cooperatives enjoyed a fair amount of support by means of various policies and programs, Kaira Union happened to experience the wrath of the Milk Commissioner of Bombay Government, a man named Khurody. Just when the cooperative began to supply a modest amount of milk to the Bombay Milk Scheme, Khurody liked to delay payments and reduce purchases to endanger the survival of the union. Everything changed with the arrival of Verghese Kurien, who became Managing Director to oversee the gradual expansion of the creamery. With Patel on the community level and Kurien at the state level, the cooperative played the political game to increase its competition to Polson. By early 1952, Kaira Union became the exclusive supplier of milk to the Bombay Milk Scheme, which brought expectations of having access to millions of consumers. Kaira Union began conceiving a plan to expand its capacity, but the opposition by Khurody proved to be a constant thorn in the sides of Patel and Kurien.

At this juncture, Kaira Union faced a three-dimensional crisis: 1) a plant operating over capacity, 2) a heavy dependence on one commodity, and 3) a heavy dependence on one outlet. Unaddressed, the crisis had the potential to unravel the cooperative, which generally had three options at its disposal: 1) modify its identity, 2) redesigning its ownership structure, or 3) exiting the industry. Using a variety of financial sources, Kaira Union elected to modify its operational strategy with the addition of a new dairy plant to bypass the monopsonist in the industry; construction began in November 1954 and completed in October 1955. Considering the capacity to manufacture a wide range of dairy products with buffalo milk, the plant enabled the cooperative to horizontally integrate into various segments of the food and dairy industry, a defensive maneuver to decouple its future from the whims of Khurody.
Life Cycle II: Defense to Offense

In addition to the dairy plant, Patel and Kurien introduced the brand of Amul, short for “precious” in Punjabi. Kaira Union, the district union collectively owned by the village societies, possessed the residual claim and control rights to Amul, which became its subsidiary. While members still controlled the village societies to primarily bulk milk, Kaira Union operated Amul as a value-adding business with profit objectives. This represented a key moment in the history of the organization, as the residual earnings to the brand accrued to Kaira Union, which could decide to retain or return the earnings to members.

Despite the promise, Kaira Union failed to spark a period of true growth. Its relationship with the Bombay Milk Scheme continued to be characterized by ups and downs, especially the latter. Its fate continued to rest in the hands of politicians, who opposed and supported the dairy cooperative in equal measures. In 1959, the government of India approached Kaira Union to start the production of condensed milk in efforts to keep Swiss multinational Nestle out of the market. The same year, the government also requested Kaira Union to manufacture baby food in efforts to decrease the demand for foreign products. This time the cooperative went head to head with Glaxo, a British multinational. To facilitate the production of condensed milk, baby food, and various other dairy products, in October 1959 Patel laid the first stone for the plant extension, using a combination of earnings, loans, and donations to finance the project.

In 1963, the government of India commissioned the construction of two milk drying plants in anticipation of increased demand for dairy products, one in Anand. The government only financed the project, requesting Kaira Union to assume control of the operations. However, the plant came at a cost as the government placed a huge order 2,650 MT of whole milk powder by March of 1966, forcing Kaira Union to make sacrifices in its supply of liquid milk to the Bombay Milk Scheme. Around the same time, government offered Kaira Union a grant for a cattle feed plant, designed by the government but operated by the cooperative. Built in nearby Kanjari, Prime Minister Shashtri came to inaugurate the plant. His visit proved to be a fateful event; inspired by the positive and significant impact of diminutive Kaira Union on thousands of local families and households, Shashtri wanted to spread the cooperative model across India. His wish resulted in the formation of the National Dairy Development Board (NDDB), to be established in Anand and headed by Kurien.

The appointment of Kurien as the manager of NDDB put Kaira Union at a crossroads, as NDDB effectively needed to create competition for the cooperative on the domestic market. Regardless of the conflict of interests, Kurien assigned employees of Kaira Union to become the chairman, secretary, and treasurer of NDDB, even using offices on Kaira Union headquarters for its operations. To further complicate the situation, NDDB needed to generate its own budget, but Kurien devised a plan to benefit both the cooperative and NDDB. Kurien wanted to use European milk and butter surpluses, otherwise to be sent as donations to effectively flood the market, to gradually boost the production of cheese and other dairy products. Through FAO and World Food Programme, the food assistance branch of the UN, Kurien managed to regulate the flow of commodities, thus laying the foundation for Operation Flood, the cooperative movement to eventually make India the largest dairy producer in the world.
VI. Lessons Learned

Lesson 1: Existence of Demand

If farm producers want to successfully engage in group action, there has to be a potential market to incentivize production of a sufficient amount. Before the formation of the first village cooperatives in 1946, the existence of private firms in the districts of Kaira and Kheda, which provided a direct connection to consumers in Bombay and other cities, provided the individual dairy producer with a financial incentive to produce milk. The nearby presence of a sizeable market contributed to making Kaira and Kheda a premier dairy district, notwithstanding the exploitation of suppliers by firms.

This proposition has no direct relation to the “law of markets”, the meaning of which is rather ambiguous (Baumol, 1999). Two famous economists, Jean-Baptiste Say and John Maynard Keynes, engaged in a discussion on supply and demand to determine which came first. According to Say, supply creates demand, while Keynes maintained that demand creates supply. Since supply and demand are fully interrelated, with the expenditure of one being the income of another, nobody has provided a conclusive answer on the subject. However, when both production and consumption is characterized by multiple constraints, not just a scarcity of resources, success is primarily a function of targeting the most binding constraint (Shah, 1996).

Per capita dairy product consumption in the developing world is approximately a third compared to the developed world, suggesting that increases in demand are driven by increases in income (Delgado, 2003; Dong, 2006).

Lesson 2: Distance to Demand

Not only is the existence of a market critical, but also the distance to a market. Close proximity to a large consumer market is hypothesized to have a negative impact on performance; the presence of hawkers, vendors and retailers in the city serves as a deterrent to milk production in the country as middlemen are in perfect position to intercept milk by offering a better price to individual dairy producers. Based in the smallish Anand, Kaira Union experienced no direct interference by the hundreds of middlemen in Bombay. Furthermore, with 200 miles separating Anand and Bombay, the cooperative needed to make investments to ensure its milk reached the consumer. Since the adoption and diffusion of technology is best explained by the expected net benefits of adoption, investment in transport and pasteurization is only induced if distances are large enough (Sunding and Zilberman, 2001).

This assumption runs counter to the popular Von Thunen Model of agricultural land use, developed before the Industrial Revolution (Nelson, 2002). According to the model, a city is surrounded by four rings of agricultural activity; the ring closest to the city is composed of dairying and intensive farming, the products of which need to reach the market fast. However, the assumptions of the model can be slackened by introducing the variable technology. Dairy products can be chilled and stored for a considerable amount of time, long enough to transport to distant locations. Hence, a dairy farmer can be situated in a rural environment, especially if the urban environment is host to agents that make the pooling of milk a difficult task. Nonetheless, real income is hypothesized to be reduced by remoteness to centers of economic activity (Venables and Limao, 2002).
Lesson 3: Pump Priming

Young cooperatives in the first life cycle have a greater chance of success if receiving dairy commodities as donations from outside organizations, as with UNICEF and Kaira Union in 1953 (Shah, 1996); the deal, which involved the donation of both equipment and commodities, enabled the expansion of its operations by building a new dairy plant in 1954. Before the donation, the cooperative had insufficient access to resources to make future investments of such magnitude. The same happened with the design of Operation Flood, facilitated by European milk and butter surpluses (Singh et al., 2001).

Using external resources to launch the cooperative is called pump priming, originally a term to describe public investment in the private sector. Pump priming in this context is meant to facilitate a top-down operational process of marketing, processing, procuring, and organizing. A distinctive aspect of the principle is the use of donations to help the cooperative become self-sustainable in its development (Brautigam, 2000). Unfortunately, while donations can be effective, aid or donor dependency is often observed at both the local and the national level (Roodman, 2007).

Lesson 4: Vertical Integration

When a market is characterized by a monopsony or oligopsony, a marketing cooperative is normally superior to a bargaining cooperative in ameliorating the market failure. Amul proved this on two occasions, once in the form of a success and once in the form of a failure. During the first life cycle, the Bombay Milk Scheme served as the main outlet for surplus milk, and Amul had zero power to control the wide variation in the purchases. During the second life cycle, Amul became a true marketing cooperative by adding a subsidiary to its organizational structure, thus completing a vertical integration; the subsidiary, whose ownership rights belonged to the district union, enabled Amul to meet demand for a variety of dairy products in India by eliminating the middlemen.

When doing business in the market is too costly, transaction cost theory prescribes vertical integration to internalize the externality (Williamson, 1971). Emphasizing the importance of microeconomics, Stiglitz (1989) believed the explanation for differences in low and high performance “lies largely in matters of economic organization”. In terms of organization, the purpose of the bargaining cooperative is primarily to negotiate terms of trade vis a vis buyers of the commodity, while the marketing cooperative uses joint vertical integration to actively solve a market failure (Cook, 1995). For a three-agent and three-asset model in which the specific investment by the farmer is high relative to the specific investment by the processor, the first-best solution to preventing a holdup problem is farmer ownership of the assets in the processing stage, which implies a marketing cooperative (Hendrikse and Bijman, 2002).

Lesson 5: Good Cooperative Leadership

Throughout its history, Amul demonstrated the importance of good, if not great, leadership. Even before the official registration of the first village societies, Patel used his reputation as a former participant in the freedom movement to create connections on the community level by meeting both members and non-members; he got increasingly more people to join the cooperative as time progressed. His personal relationship with the villagers forged a sense of loyalty and
commitment, which helped to avert hawkers. Meanwhile, Kurien played a crucial role on the state level, the national level, and sometimes even the international level. Amul had much interaction with politicians in both positive and negative ways. Confronted with obstacles at every turn of the road, Kurien used a combination of vision and dedication to steer the cooperative in the right direction. Without his efforts to secure donations and navigate regulations, the cooperative would likely have succumbed to the pressures of the political environment.

Considering the differences in the property right structures, cooperatives are characterized by a higher degree of conflict, vagueness and complexity than corporations, thus imposing a unique set of requirements on leadership in cooperatives (Cook, 1994). The magnification of the principal-agent problem in cooperatives is recognized by Harris et al. (1996), who described the difficulties of aligning the interests of the member and the interests of the organization, especially in times of growth and development. As such, a good understanding of member attitudes and behaviors is a must for cooperative directors and managers (Bhuyan, 2007; Österberg and Nilsson, 2009).

**Conditions for Cooperative Success**

There are two reasons why the early history of Amul is useful as a case study: 1) Amul was formed to solve a perceived market failure, which is the most common explanation for group formation by farmers, and 2) most markets or economies in underdeveloped nations are characterized by some sort of market failure. Thus, while each situation is unique, the emergence of Amul serves as a good example for dairy cooperatives in a similar environment which are likely to experience the same type of threats and opportunities on the way to success. As such, we interpret the lessons learned as conditions for cooperative success in a developing market. This is not a complete list of success factors, however they proffer a unique set of conditions that fit the cooperative model. Table 3 presents the Amul Conditions for cooperative success in a developing market.

In efforts to solidify the connection between the theories of property rights structures and organizational life cycles, the lessons learned must be related to individual stages of the organizational life cycle. Lessons 1 (existence of demand) and 2 (distance to demand) are clearly preconditions to group formation; therefore, both lessons relate to stage 1 (economic justification). Lesson 3 (pump priming) concerns stage 3 (growth and heterogeneity). Lesson 4 (vertical integration) is applicable to stage 5 (choice), and lesson 5 (good cooperative leadership) is applicable to every stage of the organizational life cycle.
Table 3 — The Amul Conditions for Cooperative Success

<table>
<thead>
<tr>
<th>Condition</th>
<th>Life Cycle Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existence of Demand</td>
<td>1</td>
<td>Prior to the formation of a cooperative, the member-producers need to know of potential markets to incentivize the production of the commodity</td>
</tr>
<tr>
<td>Distance to Demand</td>
<td>1</td>
<td>Considerable distance to urban centers of economic activity allows member-producers to avoid stiff competition in the informal sector by hawkers</td>
</tr>
<tr>
<td>Pump Priming</td>
<td>3</td>
<td>Grants and donations by governments and NGOs help the cooperative to achieve economies of scale and scope without the inherent difficulties of raising equity capital</td>
</tr>
<tr>
<td>Vertical Integration</td>
<td>5</td>
<td>To establish a direct connection to the consumer, graduation to a marketing cooperatives is necessary to bypass the heavy concentration of power at the processing stage of the dairy chain</td>
</tr>
<tr>
<td>Good Cooperative Leadership</td>
<td>all</td>
<td>Compared to firms, directors and managers of a cooperative need to be comfortable with extra conflict, vagueness, and complexity relating to the property rights structure</td>
</tr>
</tbody>
</table>

VII. Limuru

Limuru Dairy Farmers Cooperative (Limuru) is located just outside Nairobi. Unlike most dairy cooperatives, Limuru features a centralization with a single association owned by approximately 9,700 members. The cooperative owns a limited liability company (LLC), Limuru Milk Processors, with 48% of the shares belonging directly to member producers. Its capital structure is characteristic of a member-investor cooperative, a mixture of a firm and cooperative. Long-term investments are simplified as members play a dual role of patron and investor by making risk capital contributions via retains, share purchases, and up-front payments in the LLC. Examples are the 1997 addition of a processing plant and the 2010 construction of a feed mill, financed in part by thousands of members who purchased shares in the building with expectations of a return on investment. Throughout the course of time, Limuru has experienced a series of revolutionary events that changed its identity both positively and negatively.

Life Cycle I: Stuck in the Middle

When the British officially left Kenya at the beginning of the 1960s, Kenya Cooperative Creameries (KCC) dominated the dairy industry. Then, when the new government opened commercial farming to the indigenous people, KCC expected to see a vast increase in the production of raw milk. While 80% of production went to the informal sector as unprocessed milk, KCC served as the only buyer of surplus milk in the country. However, its coverage in Kenya contained gaps, including one in the surroundings of Limuru. Sitting on a perishable commodity, a group of 76 individual dairy producers felt compelled to collectively find a solution. They registered Limuru in April 1962, but waited until the following year for UNICEF
to donate a cooler. The cooperative thus started as a bargaining cooperative, protecting the assets of local dairy producers by delaying the perishability of produced milk.

Despite the potential for a recurring cycle of growth and investment, the development of Limuru became a function of factors in the political environment; after gaining independence in 1963, the Kenyan government claimed a lead role in efforts to commercialize the agricultural sector, primarily by granting KCC a monopoly in urban environments. Limuru thus had no opportunity to expand vertically or horizontally, in part because the cooperative lacked the necessary assets and resources. Confined to its limited role of bulk cooling and marketing raw milk, Limuru had every reason to linger in obscurity, but its future changed when M. Giridu assumed the position of General Manager in 1976. Envisioning the cooperative leader as a servant, not a master, he vowed to make Limuru a service cooperative. In efforts to push member production to new heights, he emphasized the importance of veterinary care and artificial insemination. From the beginning, Giridu followed the cooperative principle of supplying the service at cost, believing what benefited the member also benefited the cooperative. Before long, Limuru gained a considerable amount of fame for the excellence of its veterinary program. The cooperative also founded K-Unity Savings and Credit Cooperative Society (K-Unity) to allocate a percentage of milk payments into savings, thus relaxing the credit constraints on the relatively poor members.

In 1993, following two consecutive years of inflation and depression, the government of Kenya began a program of economic reform and liberalization as designed by IMF and the World Bank. A change in dairy policy transformed the dairy industry, including a reduced role for the government in the manufacturing of feed. More importantly, the government also revoked KCC’s monopoly in urban environments. The subsequent rise in competition exposed the inefficiencies of KCC, which long suffered a reputation of poor management. The slow collapse of KCC forged a rich environment of opportunities in the dairy sector. Any dairy organization with a sizeable milk supply had to consider the possibility of vertical integration. Around 1995, after 32 years of no change in its operational identity, Limuru membership and management began discussing its identity of a service cooperative. While the amount of services had expanded, the cooperative never went beyond its traditional function of collecting raw milk; with the possibility of losing millions of liters of surplus milk, the cooperative needed to analyze its strategic opportunities in the dairy sector.

The final decision came by looking to the northeast, where Meru Central Dairy Cooperative Union (Meru) already built a processing plant in 1993. Inspired, Limuru decided to change its organizational structure by forming Limuru Milk Processors, its LLC. The cooperative kept 52% of the shares, with 48% made available to its member producers; shares cost KES 2 each, with a maximum of 20,000 to prevent the formation of large shareholder blocks. A household survey of 174 member households showed 67.8% (N=118) had purchased shares; the possibility of a return on investment served as the primary reason for investment (99.2%), while non-investors cited a lack of funds (33.9%), a lack of confidence in leadership (17.9%), and a variety of other reasons for not purchasing shares (see Exhibit 7). 93.8% of the investors used the check-off option, meaning payment in milk. The cooperative selected a plot of land 500 meters away from headquarters; construction began in 1996 and completed in 1997.

The formation of the LLC marked a change in the property rights structure of Limuru. The cooperative held the majority of the claim and control rights, while members held a minority share, whereas the members collectively owned the primary cooperative. As such, all earnings
from the processing plant accrued to the LLC, with 52% going to the cooperative for their distribution to members.

**Life Cycle II: Back and Forth**

In the late 1990s Limuru introduced ghee and yoghurt to the market, now characterized by stiff competition. Processors fished in the same pond, while individual vendors and merchants still undermined the formal milk market by hawking. Because Limuru accepted a governmental loan to finance the processing plant, the Ministry of Cooperatives felt justified in increasing its involvement in the day-to-day running of the organization. The intrusion irked Giridu, who increasingly lost control of the values and principles he helped to establish in the 1970s and 1980s. After 25 years of service, he tendered his resignation in 1998 to follow the proceedings from the sidelines as a member.

Around 2002 many individual dairy producers, whether organized or unorganized, still enjoyed no reliable buyer of surplus milk. There are a number of possible explanations: 1) processors had no capacity for additional milk, 2) no demand existed for more processed or unprocessed milk, or 3) no processor served the region. Bottom line: supply exceeded demand. Considering the state of the dairy industry, still characterized by gaps and uncertainties, the government of Kenya wanted to revive KCC as a stabilizing agent. As KCC became New KCC, its revival had a positive impact on both milk price and milk intake over the next years. Meanwhile, Limuru experienced a period of rough sailing. Following the departure of Giridu, new management changed the direction of the organization. The early 2000s saw a rise in the number of meetings and committees, which suggested a rise in managerial opportunism. At a certain point, members went unpaid for three consecutive months. Finally, in 2004 things came to a head as membership used its control rights to dismiss the entire board.

The ugly incident left a permanent mark on Limuru, which continued to struggle with issues of governance and management in the upcoming years. Members lost confidence, creating a downward spiral in which supply decreased, per unit production cost increased and producer milk price decreased. Of the available 200,000 liters of milk in its milk shed, only 20,000 liters went to Limuru, meaning its processing plant operated at 28% capacity. At this capacity usage, the cooperative failed to cover its expenses. The lack of volume is explained by various circumstances: 1) a large increase in producer option, 2) a lack of member loyalty, 3) a low milk price, and 4) a lack of a strategic plan. Limuru thus faced a multi-dimensional crisis of paying a low price, collecting a low volume, experiencing a negative return on investment, and experiencing a low level of member engagement as the LLC failed to return earnings for its investors, thus diminishing the desire to patronize the cooperative. Management made a tough decision by returning to its roots as a service cooperative. In the summer of 2012, the cooperative took the addition by subtraction approach by leasing its processing plant to Brookside. Sometimes, they reasoned going forward necessitates a step backward.

**Conclusion**

Limuru is a fascinating case study because of the paradox: the cooperative has the financial flexibility to be offensive in its orientation, yet its recent decision to lease the processing plant to Brookside is more defensive. Put differently, the organizational structure is incongruent with its behavior; Limuru has the capital structure of a member-investor cooperative, which allows the
member to act as both patron and investor to loosen the equity constraint, but outsourcing the processing plant implies a return to its days of being a bargaining cooperative; the financial flexibility is almost redundant. The main explanation for its inability to turn offensive is a serious lack of member commitment and involvement; a spike in milk intake is prevented by members who deliver milk to other institutions in the industry, hawkers in particular.

How can Limuru solve its problem of low milk collection? Can the cooperative return to form by specializing in input supply and veterinary care? There are several possibilities, including a readjustment of the property rights structure to return control to the members if necessary. Also possible is the creation of a hybrid mode or organization in which its subsets of rights and assets are linked to other subsets of rights and assets, thus creating a partnership of sorts. Of course, there is a good possibility the answer lies in the external environment, which today is still characterized by a relatively low demand for milk products. Whatever the character of the problem, its persistence or disappearance will determine if Limuru will degenerate or regenerate.

VIII. Meru

Located on the slopes of Mount Kenya, Meru Central Dairy Cooperative Union (Meru) provides a raw milk market to approximately 20,000 individual dairy producers in the region. Meru is a two-tier federation; the union is home to 15 primary societies, each of which operates a number of collection points. The chairmen of the primary societies are board members of the union, whose chairman is also the CEO. All societies are open-membership cooperatives with permanent equity or collective capital; there is no revolvement of retains. The most fascinating aspect of Meru is its organizational structure, which has undergone a number of drastic transformations over the years. At a capacity of 100,000 liters a day, the processing plant is one of the largest in the country, but under utilization leads to below per unit cost of production; confronted by a binding equity constraint, the cooperative relies on a variety of loans to fund its survival.

Life Cycle I: Brothers in Arms

While the union itself has a relatively short history, its roots go back to the 1960s. At the time, Kenya Cooperative Creameries (KCC) possessed the monopoly rights to serve the urban centers of the country. However, KCC operated no cooler or processing plant in the region of Meru. By the time milk reached the processing plant in Nairobi, the product had often curdled. The existence of temporal asset specificity served as justification for individual dairy producers to engage in group action. Sometime in the 1960s, the movement resulted in the formation of three primary cooperatives — Katheri, Naari and Buuri. In 1967, the three came together to form Meru Central Dairy Cooperative Union (Meru) with the objective of gaining countervailing power and scale economies of transportation. The formation of the two-tier federation served as a defensive move to protect the income streams of local farmers, as well as achieving scale in bargaining and transportation.

At the recommendation of the government, seven primary cooperatives (three dairy societies and four coffee societies) merged in October 1970 to form Meru Central Farmers Cooperative Union (Meru Central) with the objective to form economies of scale and scope. As today, the majority of the members had a diverse portfolio with a combination of dairy and
coffee activities to maximize land usage. Meru Central grew and diversified to include Maize Mill, Banking, Merchandising, Meru Safari, and a petrol station. Needless to day, the mere formation of the union introduced a major divergence of member interests in the activities of the organization; the dairy union operated as a separate unit, but the activities of Meru Central were financed by means of cross-subsidizing. As such, the 1970 formation of Meru Central caused a formidable change in the organizational structure of the dairy union by assigning the effective control rights to a management team at the apex level.

**Life Cycle II: Filling the Gap**

By the late 1970s and the early 1980s, Meru had expanded its membership base to several thousand dairy farmers, but the union faced a problem as supply exceeded demand; without a processing plant in the vicinity, surplus milk went to waste. As other cooperatives in urban environments, Meru also suffered from stiff competition by hawkers, who enjoyed the advantage of going door-to-door for milk collection; another explanation for the presence of hawkers is the consumer preference for raw unpasteurized milk, which is typically boiled at home to be consumed in tea or coffee.

In 1982, Meru found a solution to its problems by constructing a processing plant, financed by a variety of sources: 1) equity capital from retained earnings, 2) share purchases by coffee producers, 3) debt capital from the cooperative bank, and 4) grants and donations by the Rural Dairies Development Programme, which aimed to promote the formation of rural cooperatives in environments outside the reach of KCC. The Kenya Dairy Board (KDB) granted a processing license to Meru in 1983, only the second entity in the country to receive such a license. Meru thus completed a vertical integration to fill a structural gap in the supply chain.

**Life Cycle III: Freedom to Act**

While its processing plant enabled the pasteurization of raw milk, Meru remained a single-purpose cooperative with limited room for growth as demand for pasteurized and unpasteurized milk leveled. Nairobi served as the main market, but many organizations catered to the capital; Meru therefore tried to target non-milksheds in other parts of the country, primarily in the northern and eastern directions.

Everything changed with the liberalization of the economy in 1991. KCC no longer held monopoly rights to the majority of urban centers which opened the door for both firms and cooperatives to begin processing and marketing in the dairy sector. Meru became one of the first to seize the opportunity by commissioning a new processing plant with a capacity of 50,000 liters a day in 1993. The new facility enabled the production of a range of dairy products, including milk, cream, mala, yoghurt, ghee, and butter. The addition of the new plant signified a lateral integration, which caused a change in the operational identity of Meru to effectively launch a new life cycle.

**Life Cycle IV: Diseconomies of Scale**

Of course, many organizations followed Meru at the processing and marketing stages of the dairy chain. Commercial firms like Brookside fast claimed a corner of the market, and the revival of KCC (New KCC) had a rather ambiguous impact on the industry by 1) guaranteeing a
market for surplus milk but 2) entering the territories of organizations in the private sector. While having a greater capacity for milk processing, the milk collection by Meru remained a step behind. Consequently, the union experienced a severe increase in the per-unit cost of production, which often exceeded the selling price. The struggles of the dairy union introduced many conflicts in Meru Central, which led to demands for a restructuring.

In 2005, Meru Central restructured by forming four independent unions: 1) coffee, 2) Sacco, 3) multipurpose, and 4) dairy. To illustrate the difference in size, the coffee union claimed 80% of the assets. Like the formation of Meru Central in 1970, the split caused a change in the organizational structure of the dairy union. Meru Dairy once again operated as a two-tier federation, with the union serving as the umbrella for 17 primary cooperatives at the village and community level. The restructuring also implied a major change in the governance and management of the organization, the effective control of which fell on the shoulders of individuals with relatively little experience in the cooperative sector.

Conclusion

Meru fell victim to external circumstances when the government wished to form a federated union of dairy and coffee cooperatives. Meru Central had to perform a balancing act, especially when other organizations joined to form a type of network. A principal-agent problem came and remained as Meru invested in vertical integration to become a marketing cooperative. As the processing plant operated at 30% capacity, the house of cards collapsed to facilitate the disintegration of Meru Central.

Today, as Meru is in its fifth life cycle, the main problem is low volume as a consequence of increased competition in the formal sector. How can Meru counter the attacks by Brookside and New KCC? The solution is maybe related to its property rights structure, which is characteristic of a traditional cooperative; Meru has never considered a redistribution of the ownership rights to improve its equity acquisition on both the internal and external market. The cooperative can consider a restructuring to become a member-investor cooperative, a new generation cooperative, or even an investor-share cooperative by making ownership rights accessible to non-patrons.

IX. Applying the Amul Conditions

In the case of Limuru, a maximum of two conditions are satisfied today. Demand for dairy products is generally low, but future increases are likely; Limuru is located on the outskirts of Nairobi, which is home to thousands of vendors in both the informal and formal sector of the dairy industry; the cooperative has received a number of donations to facilitate the addition of assets, but self-sustainability is questionable; while operating as a marketing cooperative in its third life cycle, the outsourcing of the processing plant resulted in a return to bargaining; the departure of a long-time manager in 1998, the involvement of the government after the addition of the processing plant, and the dismissal of the board in 2004 are prime indicators of poor governance and management of the cooperative.

Meru represents a more positive case as two to four conditions are satisfied. Demand is low both regionally and nationally, but demand is rising in the northeast; Meru is outside the immediate reach of middlemen in and around Nairobi, although the city itself is home to many hawkers; pump priming has occurred in the form of loan forgiveness by the government of
Kenya, but the cooperative has historically not been the beneficiary of donated commodities; the union is a marketing cooperative, providing a range of dairy products to the market on behalf of the members of the primary cooperatives; the reformation of Meru in 2005 facilitated the introduction of new management, many of whom are inexperienced in the cooperative sector.

The application of the lessons learned to the two dairy cooperatives in Kenya reveals how the number of satisfied conditions is indicative of the existence of problems for both Limuru and Meru, thus giving a fair indication of the predictive power. Table 4 presents the application of the Amul Conditions to Limuru and Meru.

**Table 4 — Testing of the Amul Conditions for Limuru and Meru**

<table>
<thead>
<tr>
<th>Amul Condition</th>
<th>Limuru</th>
<th>Meru</th>
</tr>
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<tbody>
<tr>
<td>Existence of Demand</td>
<td>No/Yes</td>
<td>No/Yes</td>
</tr>
<tr>
<td>Distance to Demand</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Pump Priming</td>
<td>No/Yes</td>
<td>No/Yes</td>
</tr>
<tr>
<td>Marketing to Solve Failure</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Good Cooperative Leadership</td>
<td>No</td>
<td>No</td>
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**X. Conclusions**

As the largest food brand in India, Amul is a great example of a successful dairy cooperative; its first two life cycles provide a wealth of information on how to overcome market failures, as well as how to navigate gaps in the market. Starting as a bargaining cooperative, Amul became a marketing cooperative and used value-added business to improve the livelihoods of its members, in part by applying a corporate model to the organization (Chaddad and Iliopoulos, 2013). The case studies of two dairy cooperatives in Kenya prove the Amul Conditions have predictive power, but more research is necessary to determine if the conditions for cooperative success are applicable to other dairy cooperatives in the developing world.
References


