

## Partnerships, Learning, and Adaptation: A Cooperative Founded by Japanese Immigrants in the Amazon Rainforest

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### Abstract

*This paper discusses the case of Tomé-Açu Mixed Agricultural Cooperative (CAMTA), founded by Japanese immigrants in the Amazon Rainforest. Its origins date back to the 1920s, when the first Japanese families arrived in Pará state. Since then, CAMTA has overcome numerous obstacles. Under less severe conditions, many other organizations would have disappeared, but like the Phoenix CAMTA seems to emerge from severe crises even stronger. What conditions have led to this resilience? What are the main teaching and managerial implications emerging from this case? Our main objective is to understand the internal mechanisms of both learning and adaptation, and to approach resilience from a supporting social group perspective. In-depth interviews conducted by the authors themselves with cooperative managers and members support the discussion. Going further in the traditional bias of resilience, our main findings highlight the organizational ability to establish partnerships that grow stronger over time, which suggests the role of co-evolution of group identity and resources, particularly human resources.*

**Keywords:** collective action, cooperative, resilience, ethnicity

### Introduction

According to a Brazilian saying, the frog does not jump because it is cool to do that, but to survive. The Tomé-Açu Mixed Agricultural Cooperative (CAMTA) implemented an agro-forestry system (AFS) out of necessity, well before sustainability became part of international policy and research agendas.

CAMTA leaders encouraged research into crops that might prosper in the tropical environment (Piekielek 2010). The group carried out diversification in agro forestry systems, as the risk posed by monocultures in a tropical environment became evident. Intercrop production of pepper and cocoa was the first alternative, with other crops gradually added to the system. The current AFS combines different species such as fruit, trees, legumes, and even medicinal plants (Lopes et al. 2011).

This was not the only paradigm shift in CAMTA's history. Since the first wave of Japanese immigration came to Tomé-Açu, Pará state, CAMTA has had to overcome various obstacles such as an unknown and difficult environment, poorly developed infrastructure, and difficult political constraints during the Second World War. Even under less stringent conditions, many other organizations would have failed. Indeed, resilience is a trait stressed by almost every researcher who has studied CAMTA. Like any other social phenomenon, an organization's resilience is the result of many factors.

Social capital (Piekielek 2010), ethnic identity of the members (Silva Neto, 2007), external support, leadership, partnerships, and competence in management (Lopes et al. 2011) have all been cited in the case of CAMTA. Equally important seems to be the ability of an organization to take advantage of luck (Barney 1986, 1991). Indeed, the CAMTA case study shows that luck has been a key factor enabling the resumption of growth in times of crisis. However, as it happens to the Machiavellian prince, luck (*fortuna*) is not enough; success demands also skills, leadership, and commitment (*virtù*).

This paper aims to discuss the resilience of CAMTA and its supporting social group. We highlight three episodes: i) the arrival of Japanese immigrants in Brazil and their adaptation of a hostile environment to their culture; ii) the learning process accompanying the introduction of an agro-forestry production system; and iii) the imminent failure of the Cooperative in the 1980's and its rebirth with specialized cocoa production.

The paper has four sections besides this short introduction. In the first section, we introduce the subject of collective action in order to illuminate the conditions that gave rise to the resilience of CAMTA throughout its history. This resilience is the focus of the second section of the paper. Third section offers a suitable theoretical background, followed by final remarks.

### ***1. Theory Review: A Look into Collective Action***

Olson (1965) argues that rational — meaning self-interested — individuals only act for a collective interest if they receive personal and exclusive incentive. Nevertheless, members of diffuse groups, even with shared interests, may not pursue a common objective without sufficient motivation. Collective action does not follow the logic of self-interested agents: a free rider who does not incur an individual cost of action neither contributes to the cost of the organization can harvest benefits. Organizing a group takes effort, time and money.

Small groups with a direct interest in the collective action tend to organize and pursue their common objectives more easily. In addition to the intensity of the incentive, a smaller group is able to exercise greater vigilance and coercion over potential free riders.

Akerlof and Kranton (2000) incorporate the concept of identity in a general mode of behavior, and seek to demonstrate that socially built identity influences the results of economic activity. Depending on the case, identity can have a negative or positive influence on economic performance. The model assumes that:

- (1) the identity of actors affects payoff of each feasible actions;
  - (2) the identity of other players also affects payoffs (for instance, one can attribute more weight to a harm produced by an outsider than by an insider);
  - (3) payoffs can be persistently affected by third-party actions (such as the advertisement of goods and services, for example); and
  - (4) in some cases, it is possible for an individual to select his or her own identity (for example by supporting a sports team), but some aspects of the individual identity are not subject to choice (such as gender and ethnicity)
- Akerlof and Kranton employ the concept of identity, understanding it simultaneously as self-image and as the categories in which society places the individual. For each category or group, there is a set of prescriptions for the appropriate behavior for different individuals in different situations or social contexts.

The use perceived by the individual depends on the group to which he or she belongs, with his or her set of prescriptions, actions of the individual, and the actions of others. In the simplest case, the individual chooses his or her own actions in a manner to maximize his or her usefulness, given the group to which he or she belongs and given the conjectures about the behavior of others, who belong or not to the group of the individual in question.

With this in mind, it is quite natural to associate Japanese immigrants with a collective group with its own identity and interests, reinforced by the threats of the Rainforest. Japanese immigrants brought with them a strong ethnic identity and “social capital” which facilitated the cohesion of the community, but they faced a strange and hostile environment, aggravated by the loss of their civil rights during the Second World War. The group was reborn a few years later, and would weather a major economic crisis in the 1980's.

The next section looks at this historical process, in a three-act structure: Act 1, the setup: ostracism and identity strength in a hostile environment; Act 2: agro-forestry production; and Act 3: from bankruptcy to rebirth.

In-depth interviews conducted by the authors with members and managers of CAMTA, who together recall the trajectory of resilience of the cooperative, provide support to the discussion.

## 2. The Resilience of CAMTA and its Supporting Collective Group

### 2.1. Act 1, the Setup: Ostracism and Identity Strength in a Hostile Environment

The first records of Japanese immigration to Brazil date to 1908, with the arrival of the first ship bringing 780 immigrants. By 1920, the total of number of Japanese living in Brazil was about 24,000. It was in the 1930s that the largest contingent of immigrants came from Japan to Brazil, with almost 80,000 landing between 1931 and 1940 (Sakurai and Coelho 2008).

In 1929, the first Japanese arrived in the city of Tomé-Açu in the Amazon region (see Figure 1). From 1929 until 1938, 21 groups arrived, comprising 362 families, totalizing 2,014 people.

**Fig 1: Location of Tomé-Açu in the State of Pará; and its Location in Brazil**



Source: Webcarta.net, and Wikipedia

At this time, Japan and Brazil had an agreement regarding immigration: Brazil sought settlers to exploit the region, while Japan was seeking opportunities for an excess of peasants living in precarious conditions. Nantakun (*Companhia Nipônica de Plantação do Brasil S.A.*), the Japanese Plantation Company of Brazil, played a decisive role in this immigration process.

The success of this agreement required that Japanese immigrants deal with a completely new context.<sup>1</sup> In terms of economic issues, the chief difficulty was lack of knowledge about which marketable crops were best suited to the region's conditions. Climate and soil conditions challenged the settlers' accumulated knowledge in producing the vegetables they initially introduced to the region, such as tomatoes, turnips, peppers, eggplant, and cucumber. Furthermore, local consumers were not accustomed to consuming vegetables, and the precarious logistics available at the time had a negative effect on the quality of the produce. Nevertheless, the Japanese settlers' unfamiliarity with tropical perennial crops and the monoculture system were determinant in the failure of investments in Amazonian cultivars such as cassava, sugar cane, and cocoa. With time, vegetables became more frequent on local tables, changing consumption habits in the region.

<sup>1</sup> Japanese immigrants also had to contend with malaria, which at its worst claimed four lives per day. In consequence, about 25% of Japanese immigrants left the Amazon region for other regions of Brazil.

One leading factor to this change was the introduction of refrigerators allowing the conservation of vegetable products. Even with an accompanying increase in sales, the price fetched by the produce was not enough to meet the needs of the immigrants (Tafner Jr and Silva 2010). Bringing vegetables to market outside the region was difficult due to the distance involved and the perishability of the produce, and the community had to maintain itself with precarious subsistence. Despite this, it was easy for Japanese immigrants to continue vegetable production in a cooperative system, which resulted in the foundation of a dedicated cooperative organization. This was the birth of what came to be CAMTA, which did not formally take place until 1949, as discussed in Section 3.2.

Between 1938 and 1942, the Brazilian government imposed severe restrictions on the activities of immigrants as it sought to assimilate the significant numbers of Japanese and Italian immigrants in the country. Teaching of foreign languages was forbidden, and immigrants were prohibited from speaking their native language in public. Brazilian government banned meetings with more than five people, leading to the dissolution of immigrant associations. Police authorities monitored everyone who possessed a radio receiver.

In 1941, before Brazil declared war against Germany and its allies Italy and Japan,<sup>2</sup> the last ship from Japan (named *Buenos Aires Maru*) landed at Santos, the official port of entry for immigrants to Brazil. As of 1942 diplomatic relations between Brazil and Japan were suspended, and Japanese immigration would only resume in 1952.

Japanese and Italian families in São Paulo city were removed from their residences.<sup>3</sup> Police officers belonging to the feared DOPS<sup>4</sup> (Department of Political and Social Order) delivered eviction orders for “reasons of national security”, which were executed immediately. Japanese and Italian immigrants, and their Brazilian-born children, were confined in internment camps, such as one located in Santos.

In Tomé-Açu the repression of Japanese immigrants was no different: Japanese families in the Amazon region were interned as well.

It is worth noting that the ethnic identity is not exempt from conflicts. A dramatic case was the creation of a secret society, *Shindo Renmei*<sup>5</sup>, formed by immigrants who denied the Japanese defeat in the war and attacked Japanese-Brazilian leaders— sometimes violently—as traitors.

## 2.2. Act 2: The Agro-Forestry Production System

In 1933, the plantation of pepper began, imported from Singapore. One story holds that due to a death on board a Brazil-bound ship was forced to stop at Singapore, where the ship’s captain acquired 20 seedlings of the spice. However, it was not until 1949 that the Cooperative began to see considerable returns from the cultivation of pepper, known as the “black diamond” of the Amazon. At that time, the members of the Cooperative decided to name it the Mixed Agricultural Cooperative of Tomé-Açu (CAMTA).

With the war’s devastation of pepper production in traditional growing countries (Malaysia, Indonesia, and India) the critical post-war phase was attenuated in the region of Tomé-Açu by the rise of prices by up to 2000% (Figure 2).

Beginning in the late 1960s, Asian production of pepper showed signs of recovery, causing prices on the international market to plummet. Furthermore, outbreaks of *fusarium* fungus destroyed most of the plantations in the region. These factors combined to end production of the “black diamond”.

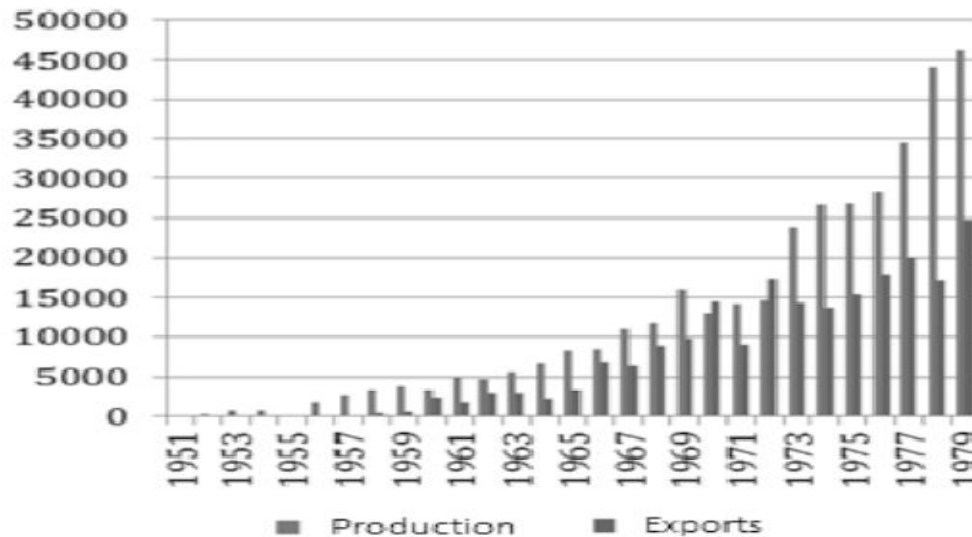
During the 18 years of economic boom, producers associated with the Cooperative carried out a series of improvements in the city. Installations and a storehouse for the Cooperative were constructed, and the city prospered with the building of a school, hospital, and other infrastructure, all paid for by pepper exports.

<sup>2</sup> War was declared on August 22, 1942.

<sup>3</sup> Since this time, a high concentration of both Japanese and Italians immigrants have lived in São Paulo, concentrated in the districts of Liberdade (“Freedom”) and Bela Vista (“Lovely View”).

<sup>4</sup> Portuguese acronym for *Departamento de Ordem Política e Social*.

<sup>5</sup> Immigrant associations resisted in a clandestine way in Brazil during wartime. *Shindo Renmei* inspired Moraes (2000), a historical novel based on in depth research in newspapers of the time and police records.

**Fig 2: Production (Pará) and Exports (Brazil) of Pepper – 1951/79.<sup>6</sup>**

Nonetheless, the fungus along with 30 years of experience showed the Japanese immigrants and their descendants the burden that the monoculture system placed on the income of the producers and the health of the land.

From the 70's, with the support of the Ministry of Agriculture of Pará State, the Program for the Cocoa Project (PIPC) was launched, revisiting the planting of this culture in a diversified manner using the agro-forestry system (SAF). The conservation of the soil and the diversification of crops constitute the basis of the system. This diversity allows both the reduction of the incidence of plagues or diseases in a determinate culture, as well as increased income for the producer. From that point on, the SAF was expanded, and new crops demonstrated potential for development in the soil and climate conditions of the region. The Cooperative also received financing from the International Cooperation Agency of Japan (JICA), in a project to restructure the pepper culture, encourage the planting of cocoa, and strengthen the planting of other cultures all aimed at diversification.

### 2.3. Act 3: From Bankruptcy to Rebirth

During the 1980s, tropical fruit trees were included in this new system, which now featured cocoa, passion fruit, melon, papaya, and medicinal plants (Lopes et al. 2011). The planting began to be done in a consortium system with cocoa, pepper, palm, and forest essences, all of which made Tomé-Açu into a leader in the implementation of agro-forestry systems, earning a designation from CMTA as the agro-forestry system of Tomé-Açu (SAFTA).

To begin with, in 1982-1983, the production of fruit juices through investments by CAMTA in a manufacturing plant, financed by resources from Japan, complemented the diversification of agriculture. At that time, the Cooperative created a nonprofit entity, the Association for the Promotion of Agriculture in Tomé-Açu, to collaborate with the Japan International Cooperation Agency (JICA).

At the beginning, CAMTA leased a manufacturing plant designed to process passion fruit for the production of pulp. Some years later, with the need to inject new resources for the expansion of manufacturing to allow the processing of other products, the plant was donated to CAMTA. However, the plant was established without an economic viability study, and its capacity exceeded the output of the cooperative producers, leading to high idle capacity and inefficiency. Other fruits (açai, pineapple, acerola, etc.) were added to compensate for the difficulty in supplying of passion fruit. More resources were necessary to accomplish this, so CAMTA contracted debts. From 1994 came the debacle. Compounded by an unfavorable exchange rate, the price for pepper remained low. Even so, the cooperative made an extreme decision and decided to sell the product in order to secure cash flow to buy raw material for juices: it changed its inventory from pepper to pulp.

<sup>6</sup> Sources: Production 1951/70 – DEE-Pa, 1971/72 - EAGRI/SUPLAN and 1973/79. GCEA/FIBGE; Exports – 1956/67 – DEE –Pa, 1968/69 – FIBGE and 1970/79 – CACEX.

A little later, the price of pepper exploded in the market and CAMTA had no way to pay its producers, never mind the banks. In 1997, the crisis was so severe that for the first time in its history the cooperative considered dissolution. At that time, a new team was at the head of CAMTA, faced with the challenge of reversing this situation and cleaning up the cooperative. The leaders had to adopt a measure of austerity and reduce expenses in order to reverse the situation. Positive results rewarded in just two years the audacity of the group that assumed CAMTA.

The Federal Government's measures to combat inflation was one of the catalysts of the crisis, while its privatization policy brought the solution. In the late 1980s the Japanese government, through JICA, decided to inject \$3.5 million in electricity and telephone infrastructure for the Japanese community of Tomé-Açu. However, COERTA (Cooperative of Rural Electricity and Telephone for the geo-economic region of Tomé-Açu), and CELPA (Electric Centers of Pará) were advised that they were not permitted to install third-party networks. As a solution, the Cooperative decided to donate the entire network to CELPA. Nonetheless, the donation required a payment, because CELPA received assets of a significant amount and needed to pay taxes to the State Government, an amount that exceeded the financial capacity of CELPA. An arrangement in which CELPA transferred stock shares to COERTA (created and owned by CAMTA) overcame the impasse.

Upon privatization in 2000, the companies that wished to acquire CELPA needed a certain number of shares, and many approached the cooperative. Selling its shares netted CAMTA \$3.8 million, almost the entire amount invested in the cooperative. Part of this amount, \$1.4 million, was earmarked to expand and restructure the juice factory.

At this point, the growing of fruit began to present positive results. With the expansion of the juice factory and construction of a cold chamber to maintain the stocked products, the fruit juices became the flagship product of the Cooperative. In its portfolio of products, açai is the top seller, especially in the markets of Japan and the USA. In turn, cocoa represents the "safe harbor" for members, given the greater knowledge accumulated in the practices of the crop (introduced to the Cooperative in the 1970s), the durability of the plant, and its adaptation to the climatic conditions. In recent years, CAMTA has shown great evolution in its agro-industry: 26% of revenue comes from unprocessed products and 74% comes from processed fruit juices. The main products currently sold by CAMTA are pepper, essential oils, fruit pulp, and cocoa nuts.

### **2.3.1 Cocoa, Agro-Forestry, and the Sales Agreement with Meiji**

Smallholders harvest more than 90% of global cocoa production. Harvesting, fermenting and drying the beans, and maintaining the farm is all hard manual labor (Hutz-Adams and Fountain 2012).

According to data from the Food and Agriculture Organization (FAO), in 2011 global production was about 4,608,000,000 Metric Tons of cocoa. In the last decade, five countries (Côte d'Ivoire, Ghana, Indonesia, Nigeria, and Cameroon) account for about 80% of global production.

Côte d'Ivoire is historically the top producer of the commodity. Ghana and Indonesia significantly increased output since 2000, challenging each other they began for second position. Nigeria follows in the fourth position, while Cameroon, which has also seen production jump, comes ahead of Brazil in fifth position (Table 1).

Brazil was once the world leader, with peak production of 390 million Metric Tons in 1989. The following decade, however, saw the spread of the "witch's broom" ("*vassoura de buxa*") fungus that decimated cocoa growing in Brazil. The year 2002 was most critical time for the crisis, when Brazilian production was less than 200 million Metric Tons. Since then, Brazil has been showing signs of recovery, but is still well behind the top 4 (Côte d'Ivoire, Ghana, Indonesia, Nigeria), or even the jump in production obtained by Cameroon.

Historically, the production of cocoa in Brazil has been concentrated in southern Bahia state, but other Amazonian states, especially Pará, have been challenging this tradition. In fact, the role of Bahia in the national production of cocoa has been decreasing during the last few years, while that of other states such as Pará have been increasing. In 1990, Bahia and Pará accounted for 83% and 8% of total Brazilian production respectively, going to 69% and 17% in 2004 (Gomes et al. 2008), and to 62.3% and 25.7% in 2011 (Mendes 2013) (Gomes et al. 2008).

Playing its part, in 2013 CAMTA produced 600,000 Metric Tons of cocoa, about .5% of the Brazilian production expected for this year.

**Table 1: Top 5 Plus Brazil: Annual yield of cocoa. (Million Metric Tons)**

Country	1999	World (%)	2002	World (%)	2005	World (%)	2008	World (%)	2011	World (%)
Brazil	205	6.9	174	5.2	208	5.16	202	4.8	248	5.4
Cameroon	116	77.5	125	81.6	140	83.0	229	81.7	272	79.1
Ivory Coast	1,163		1,264		1,286		1,382		1,559	
Ghana	434		340		740		680		700	
Indonesia	367		619		748		803		712	
Nigeria	225		362		441		367		400	
World	2,973.9		3,320.7		4,044.2		4,239.4		4,608.1	

Source: authors based on data from FAO.

Since 2009, CAMTA has had a sales partnership with Meiji Seika of Japan, one of the biggest companies in the food sector of that country.

The initiative to sell cocoa to Meiji was motivated by the market niche of fine cocoa, in which there is a better remuneration for producers. The market distinguishes between bulk cocoa and fine flavor cocoa, which offers a preferred flavor or other characteristics and often receives a premium price. Fine cocoa makes up just 5% of the world's cocoa production (Hütz-Adams and Fountain 2008).

Environmental sustainability is a necessary, but not sufficient, condition to produce high quality raw cocoa beans. Indeed, Meiji's R&D staff considered more than 20 countries as they searched for a cocoa bean that meets the standards of Japanese consumers.

CAMTA's distributor of fruit pulp in Japan, which sells to one of the subsidiaries of Meiji, send a sample of the cooperative's cocoa to the Japanese company. Meiji greeted the product with interest, even before knowing that descendants of Japanese immigrants produced the beans in the Amazon Rainforest. Until then, the cocoa used by Meiji in the production of its chocolate came exclusively from Ghana, about 20,000 Metric Tons per year.

The relationship between CAMTA and Meiji overcame initial problems with the quality of the bean supply (especially in terms of fermentation). The only solution was long-term investments by both parties in the generation and dissemination of knowledge.

Meiji sent researchers to Brazil who began to develop best fermentation practices together with the producers. Two years (2009-2011) of investments in research and extension were necessary for the cocoa to achieve the desired quality in terms of the fermentation of the beans.

CAMTA, in turn, devoted area facility for cocoa production and infrastructure to conduct fermentation tests. Furthermore, the cooperative, through its board of directors, played a decisive role in the involvement and engagement of the producers with the new practices. One of the directors of CAMTA, the current Agriculture Secretary for the city of Tomé-Açu and an important producer of cocoa, supplied the raw material, infrastructure, and labor for the research. The first fruits were harvested in 2010, when the variety of cocoa produced by the Cooperative (type C-27) was awarded the International Cocoa Award for Excellence in France, recognizing the cocoa from CAMTA as one of the best in the world.

Encouraged by the results of this partnership, which does not rely on public investments, Meiji launched a specific line of chocolates under the Agro-forestry System of CAMTA.

In terms of volume, the main client of the cooperative is Miller Delfi Cocoa Brasil Ltda., absorbing 61% of the CAMTA production, but the volume destined for Meiji is increasing. Contractually, the agreement stipulates 150,000 Metric Tons/year for 10 years, with a possibility of cooperative variations, without the imposition of penalties in the case of not meeting the volume.

The first lot, in 2009, was 100,000 Metric Tons. In 2010, 150,000 Metric Tons were sold to Meiji, representing approximately 24% of production. In 2012, Meiji Seika merged with another Japanese giant, Nyugyo, to form the biggest food company in Japan. The agreement between Meiji and CAMTA was not affected by this change. The optimism relative to the Meiji deal has led the board of directors of the cooperative to make ambitious forecasts: 300,000 Metric Tons per year of cocoa to be exported to Japan.

CAMTA buys the cocoa of all its members, classifying it upon delivery. Product that does not meet the quality standards remains in the internal market. There is a 30% surcharge for Meiji, but there is no extra charge to produce greater quality (more care with the product).

At first, the members were forced to deliver all of their production to CAMTA, but the cooperative has loosened this restriction given the need of some producers to be paid sooner. There are many cocoa buyers in the region. At the Cooperative, the members are paid after the product is sold. In the case of selling to Meiji, payment is made before the product arrives in Japan, so the member producer only receives payment 1 or 2 weeks after the sale.

### **3. Theoretical Background**

A deficient supply of public and collective assets in the Tomé-Açu region constituted an incentive for the organization of the association that preceded CAMTA. The small number of families involved should have facilitated the organization, as well as the group's unfamiliarity with the new environment in which the Japanese immigrants settled.

According to Piekielek (2010), there existed in Japan a strong cooperative tradition, and stemming from this culture Japanese immigrants have spread agricultural cooperatives in Brazil as a form of better adapting to a new social and economic environment. The success of these cooperatives has reinforced the important role that these kinds of organizations can assume in rural development and in reducing income inequality in Brazil.

Among the underlying factors of CAMTA, Piekielek (2010) points to the development of knowledge and specific productive systems for the Amazon environment; the capacity to attract internal and external investment; ethnic identity, which is a strong source of unity for the group; and the presence of a democratic style of leadership.

The ethnic identity of the members of CAMTA incorporates values incompatible with the free rider behavior. Akerlof and Kranton (2000) describe a mountaineer, for whom confronting discomfort and extreme danger strengthens his sense of identity and his ego; on the contrary, the self-image of the free rider would be diminished in an immigrant community where families support one-another. If the opposition to the existing inhabitants defined group identity, then the maintenance of the organization in time would be threatened to the same degree that ethnic identity is weakened by integration with the wider society.

Ethnic identity can work as an instrument of screening individual characteristics, such as moral risk, and in this way reduce the costs of the transaction: transacting with members of the group could cost less than transacting with outsiders. It is very probable that ethnic identity and historical ties have favored the external investments and establishment of commercial partnerships with Japanese companies. On the other hand, CAMTA members have proven capable of responding to the demands of their foreign partners, modifying established productive practices in such a way to satisfy a standard of quality that was new to the cooperative. Nonetheless, ethnic identity might not be enough to explain the persistence of the group. On this topic, one can consider the example of Vila Amazonia, a small community in the Parintins region of Pará State (see Figure 1). Unlike Tomé-Açu, Vila Amazonia was dissolved after Brazil entered the Second World War.

Following the wave of immigration to the Tomé-Açu region, the first immigrants arrived in the Parintins region in the mid-1930s. These included 35 young people with technical formation in agriculture and three agronomists from the University of Agronomy of Tokyo. The main economic activity was the cultivation of jute, which was brought from Indonesia. After some years of working with genetic improvement of jute to adapt to the new environment, the crop proved to be viable and in 1935 this success led to the creation of the Amazonense Industrial Company, financed with resources from Japanese companies including Mitsui, Sumitomo, and Mitsubishi.

Two jute weaver machines were built in Manaus. The income from the business allowed for the completion of the urban infrastructure in the community, including a school, temple, warehouses, and a hospital, where several doctors from Japan came to work.



Aside from jute, they also cultivated gardens and fruits. In 1946, however, the assets of Vila Amazonia went to auction as the spoils of war, and the Amazonense Industrial Company was sold to J.G. Araújo Company.

The community of Tomé Açu, possibly because of the number of immigrants, was able to remain cohesive during the Second World War. There occurred in the case of CAMTA a co-evolution of a group identity and resources, notably human capital. Values reinforced by the group resulted in favorable attitudes to the fulfillment of expectations of partners.

The economic success of the partners, just as in other collective actions undertaken throughout the history of the Japanese and their descendants in Pará, contributed to reinforce the group bonds. Is it possible to imagine a scenario where a group of immigrants lost their original identity, dissolving into the wider society? Regarding the adherence by CAMTA to agro-forestry technology, it is worth noting that this type of practice, labor-intensive and based on the interactions among different species in the eco-system, is compatible with the technological trajectory developed in Japan, according to Hayami and Ruttan (1971). These authors studied the history of agricultural modernization in the United States and Japan. In the United States, the abundance of land and the scarcity of labor induced the development of agricultural technologies that economized labor: they served to increase the productivity of the land and intensified the use of it as well. Conversely, in Japan the agricultural technologies developed were economizers of the land, that is, they had the effect of increasing the productivity of the land, and intensifying labor. In the United States, research efforts were focused on agro-livestock research. In Japan, innovations were either of a biological nature or pertained to chemicals and soil fertilization, which allowed for an increase in production per unit of area.

The crucial point of the model of innovations induced by Hayami and Ruttan (1971) is the transmission of the market signals to the system of agro-livestock research. Market prices relevant to rural producers reflects the scarcity of productive factors and inputs. The problem is how producers can signal to the research system their need for technology to economize scarce factors, and thereby reduces the cost. The model of the Japanese settlement of Tomé-Açu resolved this problem without depending on the signs from market factors, given that the original group relied on existing agro-livestock research necessary for the integration of the community to the global commodities markets.

CAMTA partners can exercise continuously the capacity to adapt to the agro-forestry system and the demands of partners, seen with the development of cocoa. There have already been new species introduced with the proposition of extracting vegetal oils. The oils extracted currently are nut oils, passion fruit seeds, and nuts from *cupuaçu* (*Theobroma grandiflorum*), which are marketed entirely by Natura, a major player in Brazilian cosmetics industry. The cooperative is also examining the potential future extraction of *açaí* (*Euterpe oleracea*) oil.

The ability to obtain resources through social networks and other social structures is the very definition of social capital (Portes and Mooney 2003). The sources of human capital are introjections of values shared by the community, bounded or conditional solidarity, reciprocity, and enforceable trust. The consequences are norms of observance and social control, family support, network-mediated benefits, and sometimes closure of economic opportunities to outsiders and restrictions of individual freedoms.

The economic and sociological literature provides examples in which social capital, supported by ethnic identity, results in sustainable economic performance above the mean, as in the well-studied cases of flexible production in the industrial Emilia-Romagna and the colonies of farmers in southern Brazil.

The fact that the resources obtained by CAMTA had come through networks or other social structures was decisive for the recuperation of the organization after successive crises. In fact, the immigration and the fixation of the colony in Tomé- Açu was the result of the interaction of different organizations, involving the governments of Brazil and Japan, Japanese corporations, and organizations of the immigrants themselves.

There were strong connections with the country of origin on a community level, it is certain that this predominated relative to the geographic isolation in terms of individual mobility. In the opinion of Shujui Tsonoda, president of the Cultural Association of Tomé-Açu, “the community worked out well because it was here for sixty years and remained very united.” Shigenori Moritomo, a 60-year-old retired teacher sent by the Ministry of Education of Japan for a two-year term to the countryside of Pará, was surprised “how this community remained united in such an isolated place. I found habits and customs here that don’t even exist in Japan anymore” (Paul 1993).

#### **4. Final Remarks**

At the same time that we record our awe, we try to understand the conditions that gave rise to the resilience of CAMTA. Like the phoenix, it seems to reemerge strengthened from severe crises. One of the main factors underlying the survival of the Cooperative is the ability to establish partnerships that have grown stronger over time. The partnership benefits depend on the capabilities of the Cooperative, which help to achieve the standards required by Meiji.

CAMTA's strategy of economic sustainability is based on diversification of sources of income and adding value to agricultural products. Regarding cocoa, a major component of AFS adopted in the region, the partnership for the supply of cocoa beans for the Meiji Co. Ltd. seems promising. In 2011, Meiji, a leading manufacturer of confectionery and dairy products in Japan, launched a chocolate bar called "Agroforestry Chocolate". The package states that it uses only cocoa beans from Tomé-Açu in Brazil and names the farm where the beans were grown (Goto and Tsukushima 2012).

Environmental sustainability is a necessary but not sufficient condition to produce high quality raw cocoa beans. Meiji's R&D staff considered more than 20 countries in their search for a cocoa bean that would meet the standards of the Japanese market. At the end of the search, Meiji entered into a five-year contract with CAMTA to ensure a steady supply of quality cocoa beans.

Local producers had to learn and adopt new methods of fermenting and drying the beans. As a reward, farmers receive higher prices for cocoa beans produced according to the required standard. Meiji purchases from CAMTA approximately 100 Metric Tons of beans annually, about 1% of its overall intake.

Comparative advantages associated with the environment are important, but the competitive advantages built over the history of the organization are crucial. The development of management techniques to deal with the complex agroforestry systems was an achievement without which the partnership could not be established. Before that, the community had to abandon the monoculture paradigm.

After such a hugetransformation, it is easy to see the path in hindsight. However, it is not hard to imagine that it took a lot of effort, a lot of trial and error, and a lot of flexibility to find solutions.

#### **Acknowledgements**

We would like to thank both FAPESP (São Paulo State Research Foundation) for the indispensable financial support, and Center for Organization Studies ([www.CORS.usp.br](http://www.CORS.usp.br)) for providing a fruitful environment for the development of this research. Special thanks also for the board of directors of the cooperative CAMTA, especially in the person of its president, Mr. Francisco Wataru, for the availability and collaboration in all of the phases of this investigation. The usual caveats apply.

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