



## PRIMCED Newsletter

No. 5 (September 2012)

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## Message from the Project Leader

### Takashi Kurosaki (Project Leader)

Here in Japan, we had a very hot summer in 2012. I hope this newsletter reaches you along with a cool fall breeze.

On June 29–30 and July 20, 2012, we held a three-day PRIMCED workshop. There was a heated discussion among PRIMCED researchers during the workshop. I appreciate the cooperation of those participants, especially considering the horrible heat outside. See the news below for details of the PRIMCED workshop. As for forthcoming events, the Asian Historical Economic Conference (AHEC 2012)<sup>1)</sup> will be held September 13–15, 2012, where many PRIMCED researchers will be presenting their research results; also, an international PRIMCED workshop will be held March 8–9, 2013, and it is open to all researchers, policy-makers, and development practitioners. The venue for both of these events is Hitotsubashi University. I hope many of you will participate in them and continue discussions on long-term economic development.

There were two reasons why the summer 2012 was particularly hot. First, the Islamic month of Ramadan fell on the period from July 20 to August 18 (the exact date of which varied slightly, depending on the location

and the timing of the new moon). During Ramadan, pious Muslims neither eat nor drink anything during daylight hours. Since the Islamic calendar closely adheres to the lunar calendar, Ramadan occurs about 11 days earlier every year. Unfortunately, in the first half of the 2010s, Ramadan occurs in the summer. In monsoon-afflicted areas of Asia—ranging from Southeast Asia to Japan—the summer heat and humidity are so horrible that we are advised to drink water regularly to avoid heatstroke. I therefore admire my friends who strictly observed the Ramadan fast under such conditions. Some of these friends invited me to an *Iftar* (the evening meal when Muslims break their fast during Ramadan). Their faces upon consuming the first piece of dates vividly revealed their feeling of achievement.

The summer was hot for another reason: the 2012 Olympic Games, held in London. It was unfortunate that the Olympic Games coincided during Ramadan. It seems that sports commercialism, which favors holding the event during the summer vacation of developed countries and the off-season of many major professional sports, was more influential than religious considerations in choosing the timing of the Olympics.

Nevertheless, I was truly excited to watch the heated competition in various sports. Personally, I am always interested in the performance of athletes from low-income, developing countries in Asia and Africa. Athletes from some African countries are favorites in athletics, while others from Southeast countries play competitively in badminton or table tennis. In contrast, athletes from South Asia, the region of my research field, have often faced difficulties in competing in the Olympics. The days when India or Pakistan, in turn, won the gold medal in men's field hockey are gone. In London, the Indian hockey team lost all games in the qualification round, while the Pakistani team was able to finish only in seventh place. However, India, the only South Asian country to win medals, enjoyed six medals, the largest number in India's Olympic history: two silvers (shooting, men's 10-m air rifle; wrestling, men's 66-kg freestyle) and four bronzes (shooting, men's 25-m rapid fire pistol; badminton, women's singles; boxing, women's fly; wrestling, men's 60-kg freestyle). This performance may reinforce the heated discussion within India as to whether or not the government should promote sports more intensively, so that the

country's Olympic performance will become more competitive. This discussion reflects the rising confidence of Indians, driven by the rapid growth of the Indian economy. From country-level data, we see that there is a positive correlation between long-term economic growth and sports performance in international athletic events. The correlation, however, is very weak; it is, for example, less significant than the positive but weak correlation between long-term economic growth and health or education-related performance. The weak correlation appears to suggest difficulties in performing as expected in international sports competitions such as the Olympics.

#### Footnote

<sup>1)</sup> See the AHEC official website (<http://ahec2012.org/index.html>) for detailed information. PRIMCED is a co-sponsor of the conference, wherein the main objective is to create a better understanding of how the economies of Asia develop through their own internal dynamics, as well as through interaction with Western industrial powers.

## Report on the PRIMCED Workshop

The three-day workshop among PRIMCED researchers was held on June 29–30 and July 20, 2012. Because 2012 falls in the middle of a five-year project—with a mid-term review scheduled for the end of the fiscal year—the purpose of this workshop was to facilitate the sharing of knowledge on PRIMCED datasets and preliminary research results based on them, and to discuss methodologies for integrating those results.

The program of the workshop comprised 19 presentations by all the members of the PRIMCED project and three guest speakers. Speakers presented their research proposals or results. The topics covered our objectives from a variety of angles: microeconomic analyses on institutions and markets in developing countries, based on the original microdata on contemporary developing countries in Asia and Africa and compiled historical data on prewar Japan; quantitative empirical analyses of the

determinants of institutions, or their impact; analyses of policy impact; and other topics. Please refer to the following program for detailed information.

During the three-day program, 32 participants actively exchanged research ideas. We hope we can continue this exchange in future workshops and the mid-term review to follow.



*The scene of a session*

## Program

### First day (June 29, 2012)

Kyoji Fukao (Hitotsubashi University)

“How Did Japan Catch-up on the West? A Sectoral Analysis of Anglo-Japanese Productivity Differences, 1885-2000”

Yoshihisa Godo (Meiji Gakuin University)

“Human Capital in the Two-step Hypothesis about Industrialization”

Katsuo Kogure (Hitotsubashi University)

“Impacts of Institutional Changes in Cambodia under the Pol Pot Regime”

Osamu Saito (Hitotsubashi University)

“By-employment in the Comparative History of Occupational Structure: Asia, Continental Europe, and England”

Yoshito Takasaki (University of Tsukuba)

“Randomized Experiments on Maternal and Infant Health in Rural Nigeria”

Fumiharu Mieno (Kyoto University)

“Industrialization in East Asia and Corporate Finance: Toward Analyses Based on Firm-level Micro Data”

### Second day (June 30, 2012)

Kentaro Nakajima (Tohoku University)

“Industry Agglomeration, Economic Development, and Network”

Yukinobu Kitamura (Hitotsubashi University)

“Impacts of Social Security and Direct Taxation on Household Consumption”

Tetsuji Okazaki (University of Tokyo)

“Political Economy of Trade Liberalization: The Case of Postwar Japan”

Konosuke Odaka (Hitotsubashi University)

“History of Trade and Industrial Policies in Japan”

Takashi Kurosaki

(Hitotsubashi University/ Project Leader)

“Dynamics of Household Consumption, Income Shocks, and Credit/Insurance Markets in the Process of Economic Development”



*Sawada's presentation*

Yasuyuki Sawada (University of Tokyo) and Nobuyuki Fuwa (Waseda University)

“The East Laguna Village: Four Decades of Studies in a Filipino Village”

### Third day (July 20, 2012)

Motoi Kusadokoro

(Tokyo University of Agriculture and Technology)

“Asset Accumulation Behavior of Rural Households in the Reconstruction Period Following the Showa Depression: A Panel Data Analysis Using the Third-Period MAF Survey of Farm Household Economy”

Takeshi Sakurai (Hitotsubashi University)

“Panel Data Compilation in Zambia and Burkina Faso and Preliminary Research Results”

Chiaki Moriguchi (Hitotsubashi University)

“Taxation and Public Goods Provision in China and Japan before 1850”

Yutaka Arimoto (Hitotsubashi University)

“Traders' Behavior on Regional Arbitrage in the Rice Markets of Madagascar: Descriptive Results”

Ayako Matsuda (University of California, Berkeley)

“Basis Risk and the Demand for Insurance in Madhya Pradesh, India”

Ryo Kambayashi (Hitotsubashi University)

“The Role of Public Employment Services in Developing Country: The Case of 20th Century Japan”

Naohito Abe (Hitotsubashi University)

“Empirical Research on Household Consumption and Income Distortion: A Survey”

## Report on Field Surveys and Data Compilation

Report, No.7

### Spatial Economics and Economic Development

Kentaro Nakajima

(Graduate School of Economics, Tohoku University)

Spatially, economic activities are unevenly distributed. In global terms, economic activities are concentrated in the world's northern areas, in what was previously called the "North-South issue." Even in the North, economic activities are concentrated in three locales: North America, Europe, and East Asia. Furthermore, while focusing on Japan in East Asia, economic activities are concentrated in the Tokyo Metropolitan Area. At any level, economic activities are spatially unevenly distributed and cluster in certain areas. The study of spatial economics has been developed to answer why this is so; I am investigating the process of economic development and the uneven distribution of economic activities by using Japanese data from the modern industrialization period.

One of my current projects focuses on the Japanese silk-reeling industry in the prewar periods, which was one of the main engines of industrialization in Japan. This project was conducted by PRIMCED members Yutaka Arimoto and Tetsuji Okazaki. It is well-known that the Japanese silk-reeling industry at that time had large industrial clusters, and that the plants located there had higher levels of productivity than those located in other areas. This productivity differential can be explained in terms of so-called "agglomeration" effects, first proposed by Alfred Marshall. Knowledge spillovers, labor-pooling, and input-sharing in the clusters would improve the productivity of plants located there. These positive externalities would directly improve plant-level productivity in the form of "bonuses" in the agglomeration; then, plants would become more concentrated, in order to realize agglomeration bonuses. Actually, it is known that plants in these clusters have higher productivity levels.

However, current developments in spatial economics suggest another channel of economic concentration and productivity improvement. Regions that have lower entry barriers induce a large number of entrants, and incur cluster-based growth. Then, in clusters, a large number of plants leads to competitive intensification at the local level, leading to the expulsion of less-productive plants; consequently, only relatively productive plants survive and can be observed. This chain of events is called the "selection" effect.

This project looks to determine whether agglomeration or selection is truly at work here. We conducted this research by focusing on the distribution of plant-level productivity. Intuitively, the thinking is as follows. Because agglomeration has a bonus-like effect, every plant within a cluster benefits from it, and the productivity distribution shifts rightward. On the other hand, selection expels low-productivity plants, leaving the productivity distribution truncated. By comparing the forms of productivity distribution between clusters and nonclusters, we can identify whether agglomeration or selection is the main driver.

From plant-level data in the Japanese prewar silk-reeling industry, we found the productivity distributions within clusters to be heavily left-truncated, and not rightward-shifting. This result supports the selection explanation. The presence of high-productivity Japanese silk-reeling clusters would be explained by intensive competition among plants within the clusters.

Even now, industrial clusters are still drawing the attention of policy-makers as a source of productivity improvement, since productivity improvement is a core of economic growth. In that sense, our results are not necessarily mere historical anecdotes.

Historical data always stirs the imagination, and it sometimes teaches us lessons at 100 years' remove; for these reasons, I love my projects and always approach my research with excitement.

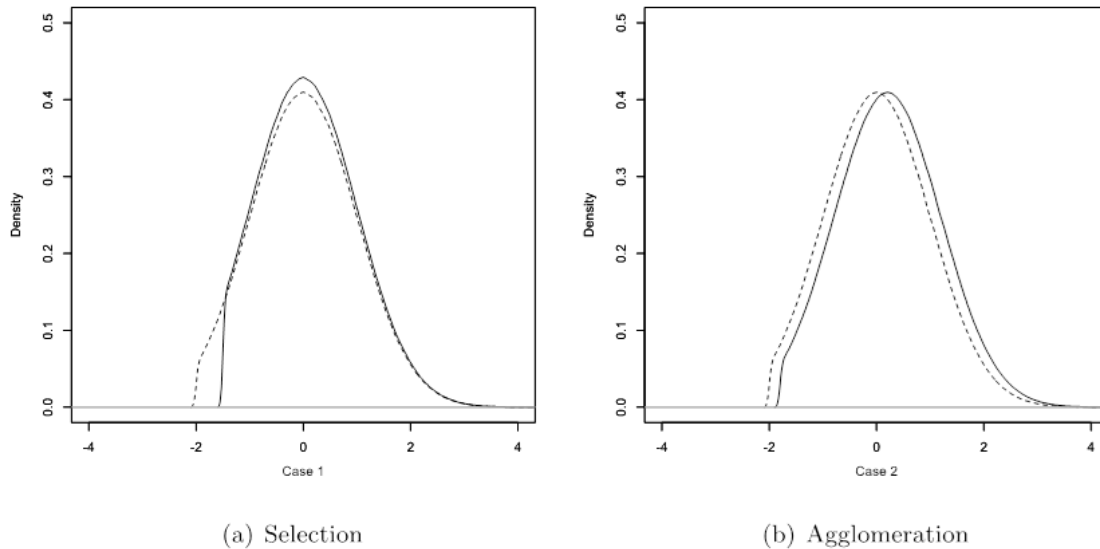


Figure: Selection and agglomeration effects on productivity distributions in the Japanese prewar silk-reeling industry (solid lines: clusters; dashed lines: nonclusters)

## Report, No.8

### On the Survey in Burkina Faso

Takeshi Sakurai  
(Institute of Economic Research,  
Hitotsubashi University)

#### Introduction

For the PRIMCED project, I have been tasked with creating a panel dataset for Burkina Faso and for Zambia, by implementing household surveys. Burkina Faso is a country in West Africa, and Zambia is a country in Southern Africa; although their locations differ, each is a land-locked country where most of its territory is in the semi-arid tropics. Moreover, they are two of the least-developed countries, as their per-capita gross national incomes (GNI) are ranked at around 160th worldwide. A comparison of these two countries would be an interesting topic, but in this essay I will introduce the PRIMCED survey currently being conducted in these countries. To summarize the uniqueness of the panel data captured through those surveys, I will detail how the Burkina Faso dataset is a long-term panel one that covers a period exceeding 15 years, but if the unpaneled part were included, the coverage period would be as long as 30 years. On the other hand, the Zambian panel dataset is short (i.e., four years) and small (48 households), but the data were collected every week and hourly rainfall data

were recorded at the crop field of each sample household. For the current issue of this newsletter, I will focus on the survey in Burkina Faso.

#### Revisiting Burkina Faso

In February 2011, I visited Burkina Faso for the PRIMCED project. It was my 15th visit to this country, including my first visit in August 1997<sup>1</sup>). Five years had passed since my most recent visit, but Ouagadougou, the capital city of Burkina Faso, does not seem to have changed greatly, even on the busiest main street: only a few new shops had appeared. Hôtel Belle Vue, where I always stay in Ouagadougou, has not changed at all since 1997; it had a “used” appearance the first time I went there, and it retains that appearance now. However, WiFi—which was not available five years ago—is now freely available. In addition, free airport transport is now available, as the hotel—which is a relatively cheap one—had purchased a minivan (second-hand, of course). Walking around the hotel, I found a cluster of cellular phone shops in the market where merchants used to deal in miscellaneous goods. According to the statistics, this country had experienced smooth economic growth over the last five years: the average annual growth rate in real gross domestic product (GDP) had exceeded 5%. So, significant changes should surely have happened, although they are invisible. However, are such

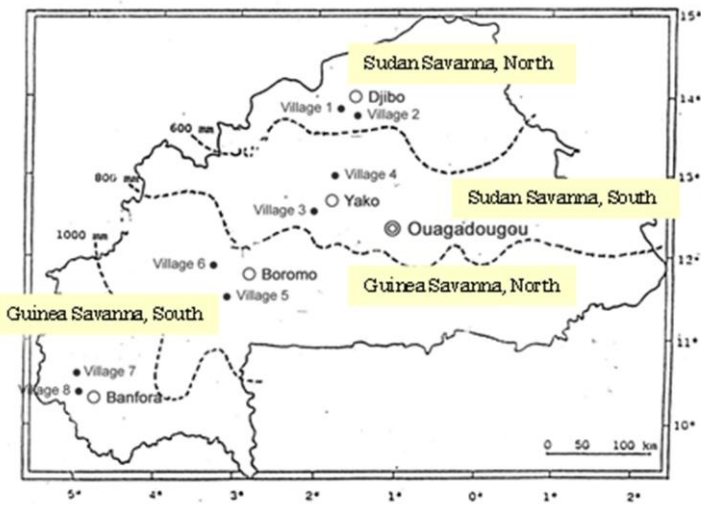


Figure 1: Study Villages in Burkina Faso



A cacao plantation certificate. A returnee from Côte d'Ivoire showed it to me. It indicates that this cacao plantation was established by him, but that this document is not a title of land ownership. However, he did not seem to understand it.

changes occurring in rural areas, and has poverty in rural areas been reduced? Such matters are more “invisible” in rural areas than in urban ones. As part of the PRIMCED project, we would like to measure the changes in economic welfare among the rural people of Burkina Faso, based on the microdata collected via agricultural household surveys, and to identify the determinants of those changes.

**The PRIMCED Project**

In Burkina Faso, the PRIMCED project will resurvey the sample households of existing panel data, so as to extend the panel. The existing panel data were collected in eight villages spread over four different agro-ecological zones of Burkina Faso, i.e., two villages per zone (Figure 1). The number of sample households is 32 per village, and hence the total sample comprises 256 households. Based on a preliminary survey conducted in 1998, repeated household interviews for the survey continued for nine years, until 2006. During that nine-year period, the survey relied upon various kinds of funding, such as that from the Development Aid Study Fund of the Ministry of Foreign Affairs (Japan), the Global Environment Study Fund of the Ministry of Environment (Japan), and the Africa Rice Research Project of the Ministry of Agriculture, Forestry, and

Fisheries (Japan), through the Japan International Research Center for Agricultural Sciences. Since the gathering of panel data relied upon a diversity of funding sources, we refer to the dataset as the “JIRCAS-UO dataset,” after the institute to which I then belonged (i.e., the Japan International Research Center for Agricultural Sciences, or JIRCAS) and the institute to which Kimseyinga Savadogo, the Burkinabé collaborator, belonged (i.e., Université de Ouagadougou, or UO). Similarly, the dataset to be created by the PRIMCED project will be called the “IER-UO dataset.”

The JIRCAS-UO dataset has two important features. (1) Except for the two villages located in the Guinea Savanna south zone, all of the villages are those in which ICRISAT conducted a household survey in the 1980s for its panel dataset<sup>2</sup>. (2) In the midst of the survey period, in September 2002, a civil war took place in neighboring Côte d'Ivoire. Both of these features were intentionally incorporated in my data-capture activities: when I planned the JIRCAS-UO survey in 1998, I chose the same villages as ICRISAT, in order to compare the situation as of 1998 with that during the 1980s, when the ICRISAT survey had been conducted. Moreover, because the Ivorian civil war took place in September 2002, I newly

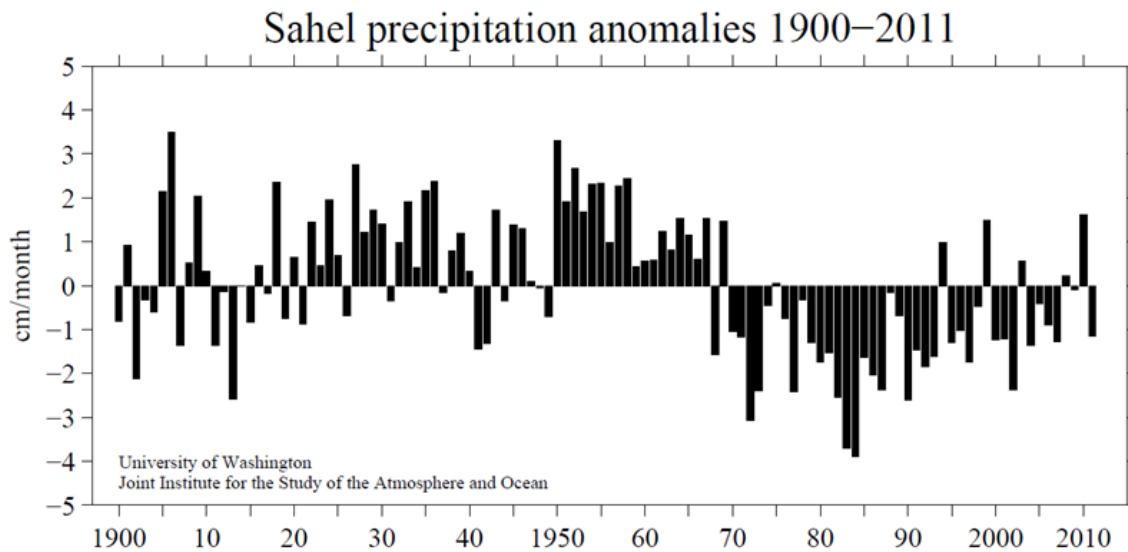


Figure 2: Long-Term Rainfall Variability in Sahel

Note: Annual rainfall is total amount of rainfall from June to October. The figure shows the deviation from the long-term (1900 – 2011) mean.

Source: Joint Institute for the Study of the Atmosphere and Ocean, University of Washington

obtained research funding from the Global Environment Study Fund of Ministry of Environment (Japan) to assess the impact of the civil war on the livelihoods of rural households in Burkina Faso. Had the civil war not occurred, the JIRCAS-UO survey would have been terminated in 2002, but due to that unexpected war, the survey period was extended to 2006.

For the PRIMCED project, we are resurveying the same households that were addressed in the JIRCAS-UO survey, following a five-year break (i.e., since 2006), in order to extend the panel data. We expect to add at most four more years, from 2011 to 2014. Finally, the dataset will cover the 16 years since 1998, when the preliminary survey was conducted. In addition, as mentioned, the ICRISAT panel data are available for six villages; it is based on a household survey that collected information from 150 sample households in six villages, in five years (i.e., 1981–85). Since the sample households of the ICRISAT survey are not identical to those of the JIRCAS-UO survey, we cannot combine the two panel datasets to make a single, large panel; however, we can still compare the villages. If we include the ICRISAT data, the dataset

constructed by virtue of the PRIMCED project will cover more than 30 years, from 1981 to 2014. Moreover, in the PRIMCED project, we newly selected 10 villages from the cotton-producing zone and drew 10 households from each village, for a total sample of 100 households. As a result, we will have a panel dataset comprising 356 sample households, from 2011 to 2014.

### Institutions, Markets, and Policies in Burkina Faso

The global objective of the PRIMCED project is to promote studies on “poverty reduction, economic institutions, markets, and policies.” Long-term panel data offer an advantage: they enable us to analyze poverty dynamics over a number of years. On the other hand, it is difficult to focus on the impact of a particular institution or policy, because there were many institutional and/or policy interventions during the long-term period involved. Not only Burkina Faso but also many Sub-Saharan African countries experienced prolonged economic stagnation during the 1980s and 1990s, with sustained economic growth taking place in those countries since the 2000s. In this section, I will describe several important events that

may have impacted the economic welfare of rural households in Burkina Faso, and relate them to the panel dataset that the PRIMCED project will construct.

### 1. Drought in the Sahel

From 1900 until the present day—the period for which the oldest rainfall records are available—the first half of the 1980s saw the smallest annual rainfall in the Sahel region (Figure 2). In particular, the amount of annual rainfall was extremely low in 1983 and 1984, and hence these years are known as those of the “severe drought in the Sahel.” The ICRISAT panel data cover from 1981 to 1985, during which the severe drought happened; as a consequence, the dataset happens to include years before and after the severe drought. Using the ICRISAT dataset, Reardon et al. (1988) did a rapid assessment that revealed that farm households in Burkina Faso were more robust than expected against the severe drought: they coped with drought shocks on agricultural income by accruing nonagricultural income and receiving remittances<sup>3)</sup>.

### 2. Structural Adjustment Policies

There is a 13-year gap between 1985, the last year of ICRISAT data, and 1998, the first year of JIRCAS-UO data. What happened in Burkina Faso during that gap was the implementation of structural adjustment programs. In many Sub-Saharan African countries, structural adjustment policies had been implemented since the 1980s by the World Bank and International Monetary Fund (IMF); as a result, government interventions in the market were reduced or removed. The policies can be largely categorized as relating to (1) trade, (2) agriculture, and (3) state enterprises.

In Burkina Faso, a structural adjustment program was introduced in 1991. (1) In the field of trade, significant liberalization took place in 1993; until 2000, tariff rates were gradually reduced according to the common tariff scheme of the Economic Community of West African States. (2) As for the agricultural market, government interventions with regard to cereal crops, oilseeds, and livestock were removed in 1993. Furthermore, between 1993 and 1996, price regulations on domestically produced agricultural products were abolished. (3) From 1991 to 1996, 31 state-owned enterprises were privatized or abandoned. However, concerning cotton, the most important

product for export, state-owned SOFITEX, was partially privatized only in 1999, and it retained its monopolistic position until 2004.

As a part of structural adjustments, currency devaluation was carried out. The former French colonial West African countries are using a common currency called the CFA Franc, which had a fixed exchange rate with the French Franc of 1 French Franc = 50 CFA Franc; this was devaluated in January 1994 to 1 French Franc = 100 CFA Franc. There have been many studies on the impact of this devaluation; however, concerning its impact on farm households, very few studies have been done, probably because there are few datasets at the household level that cover the periods both before and after the devaluation. An exceptional study was done by Barrett et al. (2006), who analyzed rice producers in Côte d’Ivoire. Since January 1999, when the Euro was adopted, the exchange rate has been fixed at 1 Euro = 655.957 CFA Franc.

### 3. Civil War in Côte d’Ivoire

Since the severe drought in the 1980s, farm households in Burkina Faso had increased their economic dependence on Côte d’Ivoire as part of an income diversification strategy. In the midst of these circumstances, the Ivorian civil war took place in September 2002, following an unsuccessful *coup* by a faction of its military. This civil war had a significant negative impact on rural households in Burkina Faso. First, they needed to receive brothers and children who were forced to return home from Côte d’Ivoire; those households lost remittances, an important income source. In addition, those who had returned expanded crop fields to secure their own food, and this had a negative effect on soil fertility management. Second, the civil war made it difficult and risky for households in Burkina Faso to make seasonal migrations to Côte d’Ivoire and to sell livestock there. In other words, farm households in Burkina Faso had lost many of its income sources, other than local crop production. As mentioned, since the JIRCAS-UO dataset covers the periods before and after the Ivorian civil war, it can be used to assess the war’s impact at the household level (Sakurai and Savadogo, 2007).

The heavy fighting of the civil war lasted for only a few of its first months, and then the country was



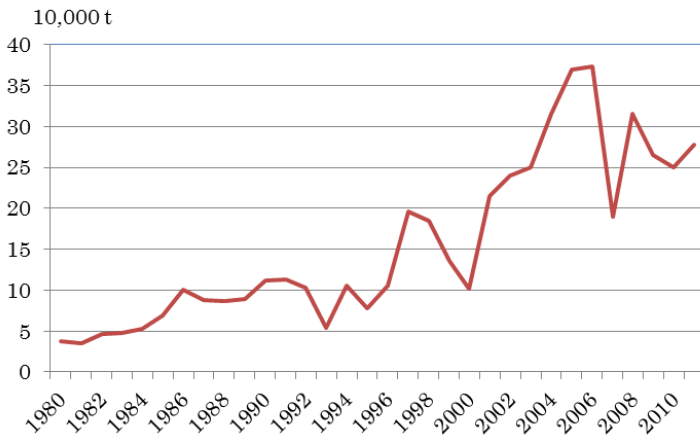


Figure 3: Cotton Production in Burkina Faso  
Source: FAOSTAT, FAO

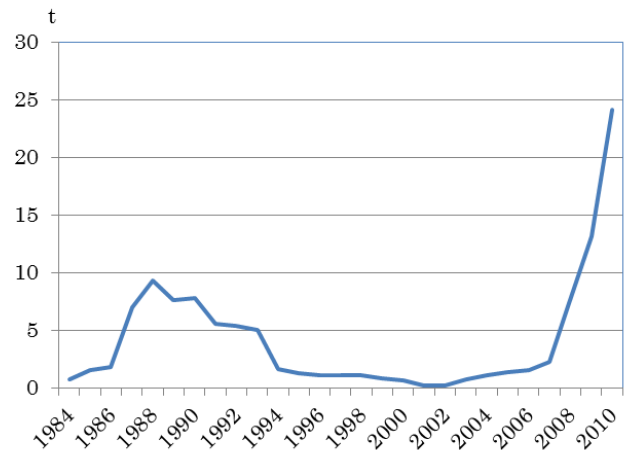


Figure 4: Gold Production in Burkina Faso  
Source: U.S. Geological Survey, Minerals Yearbooks

divided into two and immobilized: the north, controlled by the rebels, and the south, controlled by the government. Gradually, movements of people and goods between the two areas recovered, and it became possible for those who had returned to Burkina Faso to migrate again to Côte d'Ivoire to resettle in their previous places of residence. However, the country was not as safe as it had been, before the war, particularly because conflicts between indigenes and migrants from Burkina Faso constituted the causes of the civil war. In 2007, the two parties reached a peace agreement, and in 2010, they had a presidential election. Although there was turmoil following the election, the elected president finally took office in 2011; officially, this marked the end of the long, protracted Ivorian crisis that had started in September 2002. However, it did not mean that Côte d'Ivoire had become the same place it had been before the war, for migrants from Burkina Faso. Data collection as part of the JIRCAS-UO survey ended in 2006 and so, unfortunately, we cannot analyze how farm households in Burkina Faso reacted and adapted to new, postwar situations.

#### 4. Cotton Production

Cotton is an important export product of Burkina Faso and, as mentioned, state-owned SOFITEX had a monopoly on most sections of the supply chain, including those pertaining to input supplies to producers, output purchases, processing, and exporting. In 1999, partial privatization was initiated and in 2004, a regional monopoly was introduced by establishing several cotton companies. In the midst of

this liberalization process, in 2002, the Ivorian civil war took place. According to Kaminski et al. (2011), the number of cotton-producing households increased from 98,520 to 176,570 in the 10 years from 1996 to 2006, inclusive, and the area planted to cotton per household increased slightly from 6.06 ha to 6.92 ha during the same period. Kaminski et al. (2011) estimate that institutional reforms such as privatization accounted for 65% of the expansion in cotton, while the Ivorian crisis, combined with institutional reforms, accounted for 35% (i.e., due to the increased number of returnees). These findings could be confirmed through analysis of JIRCAS-UO data, but we have not yet done so.

It is known that in the 2000s, the producer price of cotton offered by SOFITEX was higher than the international price; this resulted in a rapid increase in cotton production after 2000 (Figure 3). In 2006, cotton accounted for 70% of all exports from Burkina Faso, in terms of total value. However, since 2006, SOFITEX has adopted a new scheme by which its producer prices more closely reflect international prices. On the other hand, the prices of chemical fertilizer and seed have increased during that time; as a result, cotton production in Burkina Faso declined sharply in 2007. Our own interviews, as part of the survey execution, confirmed that cotton producers had lost interest in cotton production, due to unfavorable input and output prices. Then, from 2010, the international price of cotton—which had always stayed low—started to increase; hence, Burkina Faso's cotton production also started to increase again. Newly collected PRIMCED

data will cover recent changes in cotton production and be used in analyses of the impact of institutional reforms and of international prices on cotton production in Burkina Faso.

### 5. Surges in Resource Prices

Of the events occurring between 2006 and 2011, the most influential one was probably the surge in international resource prices. In Burkina Faso, like in other West African countries, urban riots took place in February 2008, caused by increases since 2007 in food and fuel prices. However, in Burkina Faso, the gold price also had a significant impact: it had stabilized at around 300 Euro per ounce until 2005, but it has since skyrocketed four-fold, reaching 1,300 Euro per ounce in 2012. Burkina Faso used to be a gold-producing country, but in a 10-year period starting in the mid-1990s, the country had produced almost no gold. Concurrent with an increase in the gold price, mining companies from developed countries started gold-mining operations in Burkina Faso in 2007. As shown in Figure 4, Burkina Faso's gold production volumes increased four-fold in the four-year period of 2007–2010. Consequently, gold accounted for 63% of Burkina Faso's exports in 2010, in terms of overall value.

In addition to modern mining companies, there are many informal gold mines in Burkina Faso. It is estimated that gold production from informal mines amounted to 1,600 tons in 2009—about 12% of the country's total gold production in that year. Even in 2010, when production from modern mines increased, the share of informal mines stood at approximately about 7%. Informal gold mines in Burkina Faso provide farmers with new income opportunities during the dry season. According to JIRCAS-UO data, none of the households surveyed had been involved in gold-mining before 2006; however, IER-UO data show that 17% of nonagricultural jobs among the sample households were gold-mining in 2011. Hence, the “gold rush” in Burkina Faso should have a significant impact on the welfare of farm households.

### Did the Villages in Burkina Faso Change?

It was at Michigan State University (MSU) in 1994 that I first met Kimseyinga Savadogo of the University of Ouagadougou, my long-term collaborator in Burkina Faso. At that time, he was a visiting scholar at MSU

and was analyzing the determinants of agricultural productivity in Burkina Faso, using the same ICRISAT dataset I was tackling. I remember asking him: “Those villages must have changed a lot now, 10 years after the survey. This dataset is a kind of an old one, isn't it?” He replied, “Uh, they do not change. They are almost the same.” Since his answer was contrary to my expectations, this conversation impressed me very much.

As noted in footnote 1, I visited the ICRISAT villages for the first time in 1997. I did not see those villages when ICRISAT conducted its survey in the 1980s, and I could not tell whether or not they had changed in appearance. However, according to the data, the villages still lacked schools and electricity in 1997, identical to 10 years previous. However, with respect to agricultural technology, intensification was obviously taking place.

By 2006, when the JIRCAS-UO survey was terminated, schools had been constructed in most villages, as school construction was one of the most convenient forms of foreign aid. On the other hand, there remained a lack of electricity service. In 2011, I visited those villages again for the PRIMCED project and they appeared “unchanged”; it felt as though poverty had not been reduced. However, I realized that people had started to mine gold and take part in vegetable production, instead of migrating to Côte d'Ivoire. They have always depended on nonagricultural income, but they changed its sources. However, since the self-employment in such nonagricultural jobs does not require much education, they will not induce villagers' investment in education, unfortunately. The PRIMCED project will investigate how households' welfare status has changed based on the panel data to be constructed.

Moreover, as summarized in the previous section, rural areas of Burkina Faso have experienced various kinds of shocks and institutional changes since the 1980s, when ICRISAT conducted the first household survey. The recent history of Burkina Faso is not especially unique among Sub-Saharan countries; rather, it is considered quite typical. Now, a challenging question is emerging: How has long-term economic development taken place at the household level in Sub-Saharan Africa?

### Footnote

<sup>1)</sup> In October 1995, when I was employed by the National Research Institute of Agricultural Economics (presently the Policy Research Institute) under the auspices of the Ministry of Agriculture, Forestry, and Fisheries (Japan), I made it my first aim to “visit Burkina Faso,” because I had been awarded a Ph.D. for an empirical study that used data collected from the villages of a country I had never visited. However, the opportunity to visit such a minor country as Burkina Faso was not easily found. Finally, in August 1997, I went to Burkina Faso and visited three ICRISAT study sites very quickly, taking the opportunity to visit its neighboring Côte d’Ivoire in preparation for the West Africa Rice Research project (for ICRISAT, please refer to footnote 2). When I visited the villages, twelve years had passed since the end of the ICRISAT farm household survey, and the huts made of sun-dried bricks where the enumerators had lived had fallen to pieces. However, the villagers had remembered the survey quite well. From brief interviews, I was able to confirm that farmers had adopted the use of animal traction and chemical fertilizer on a more widespread basis, and that agricultural production had been intensified more since the time of the ICRISAT survey. Immediately upon my return to Japan, I started searching for research funds, to resurvey the ICRISAT villages. Fortunately, I was awarded funding from the Development Aid Study Fund of the Ministry of Foreign Affairs, and I conducted a resurvey of the six villages in 1998. However, the households selected for the interviews were not the same as those in the ICRISAT sample households; I now regret this considerably. I had been unable to do so, partly because of the difficulties inherent in identifying which households ICRISAT had interviewed. Since the funding I received allowed me to conduct a survey for only one year and I had no idea whether I could continue the survey in the subsequent year—in order to construct a panel—I decided not to spend much time identifying the ICRISAT sample households; rather, I concentrated on finishing interviews with all the sample households, within the limited time and budget afforded to me. However—fortunately and rather unexpectedly—I obtained further funding from the Environmental Agency (at that time); it enabled me to construct a panel dataset, which finally continued until 2006. It is important to point out that the ICRISAT household survey had been carried out by enumerators who lived within the study villages and visited the sample households every week for interviews. On the other hand, household interviews undertaken for the JIRCAS-UO survey were conducted intensively, but only two or three times per year. Thus, the data collection methods were very different between the ICRISAT survey and the JIRCAS-UO survey. In the PRIMCED project, the weekly interview of ICRISAT was adopted for the survey in Zambia.

<sup>2)</sup> The International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) was established in 1972 as an

institute under the Consultative Group on International Agricultural Research (CGIAR). Its headquarters are located in a suburb of Hyderabad, India, and its main objective is to increase the productivity of crops—including sorghum, millet, and peas/beans—in the semi-arid tropics. Of course, in the field of development economics, ICRISAT is well-known for its panel dataset, which is based on a farm household survey it conducted over 10 years (i.e., from 1975 to 1984, inclusive), covering 240 households selected from six villages spread over three different agro-ecological zones on the Deccan Plateau. I need not mention how the dataset has contributed to the advance of empirical development economics. However, the semi-arid tropics is not limited to India; rather, in terms of area, the semi-arid tropics in Sub-Saharan Africa is much larger. For this reason, ICRISAT established two regional research centers in Sub-Saharan Africa, from the beginning: one is located in West Africa, and the other in Southern Africa. Branches were also established in several adjacent countries, so that they could develop crops suitable to respective agricultural environments. In Burkina Faso, in West Africa, a branch was established in 1975. The ICRISAT branch in Burkina Faso conducted a household survey similar to that conducted by the Indian headquarters, for 5 years from 1981 to 1985. The Burkina Faso panel data cover six villages spread across three different agro-ecological zones in Burkina Faso.

<sup>3)</sup> Thomas Reardon participated as a postdoctoral fellow in the ICRISAT household survey in Burkina Faso; hence, he seemed to be able to access data immediately, following its collection. Later, when he took the position of associate professor at MSU’s Department of Agricultural Economics in 1992, I was studying as a Ph.D. student there and was employed by the newly recruited faculty member as a research assistant. He gave me a set of some 20 floppy discs, which contained the ICRISAT Burkina Faso panel data in SPSS format. My job as a research assistant was to estimate the demand for drought insurance in Burkina Faso, using the ICRISAT data; this was part of the World Bank’s research project. This was my first encounter with Burkina Faso. Honestly speaking, I was completely unfamiliar with this country at that time. By the way, that World Bank research project was headed by Peter Hazell of IFPRI, and he was one of the earliest advocates of the application of index-based drought insurance in developing countries. The project members were, in addition to Thomas Reardon, Harold Alderman of World Bank and Richard Just of the University of Maryland. Then, the actual work was carried out by an Indian graduate student of the University of Maryland for the Indian case, and by me for the Burkina Faso case. Looking back, I consider myself fortunate to have been employed as part of this project, in spite of a lack of knowledge of and experience with Africa, never mind Burkina Faso. Thanks to this job, I was able to finance myself to complete my Ph. D. dissertation.



Shipping of tomatoes. Traders from Ghana purchase it.



Children

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