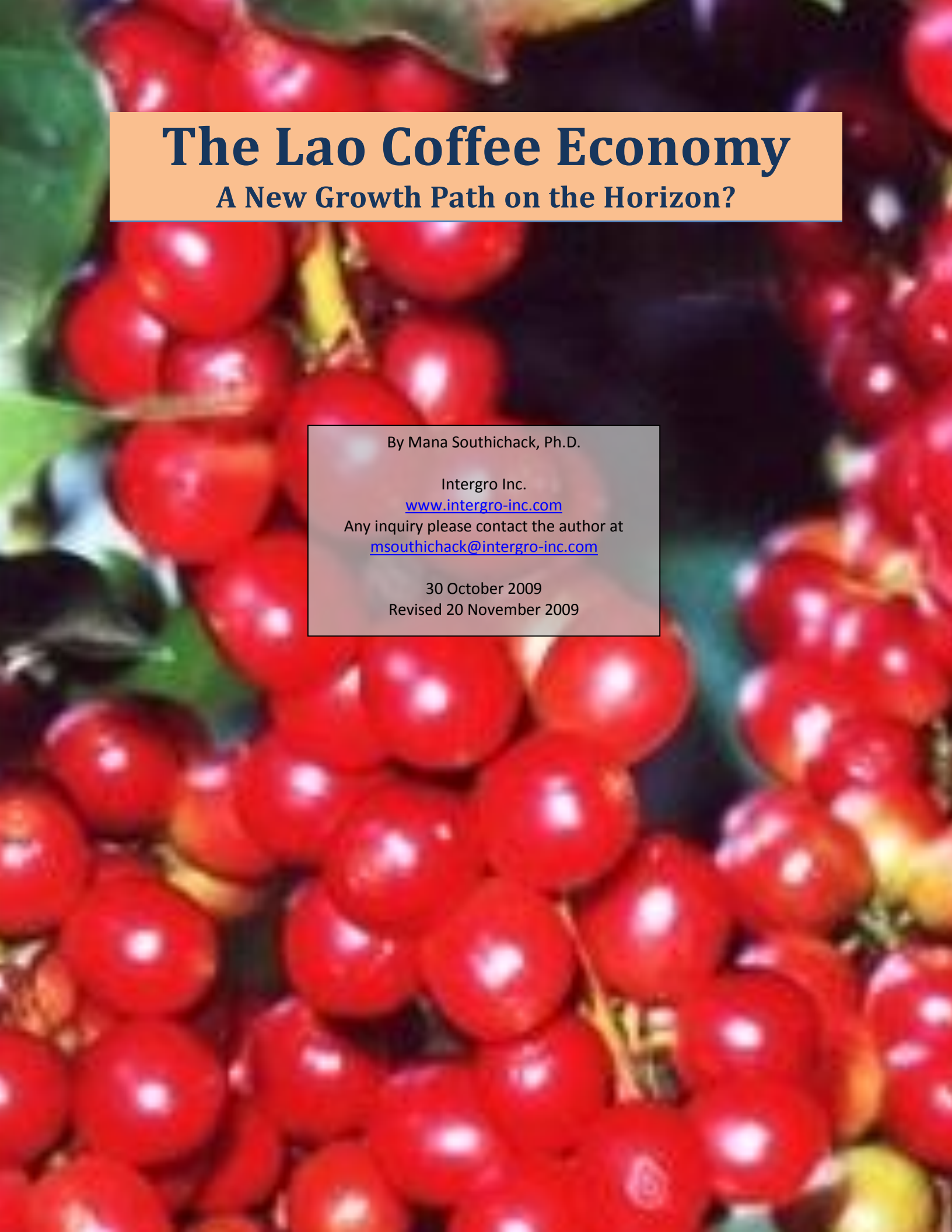

The Lao Coffee Economy

A New Growth Path on the Horizon?

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ABSTRACT

Coffee is one of Laos' top-five export earners and agricultural largest export commodity. The Lao coffee farm community is comprised of more than 20,000 smallholders operating 1-3 hectares, a much smaller number of plantations with 4-10 hectares and several emerging large, domestic- and foreign-invested plantations cultivating more than 100 hectares. The farm industry links extensively with other related businesses and jobs throughout the coffee industry supply chain, making it a vital part of the country's economy. Any major change that occurs in the Lao coffee industry will affect many lives and the economy far beyond the coffee farm community. Boosted by government supports and inflows of resources from domestic and foreign private investments, the Lao coffee industry is on a path of growing farm output and Laos-grown brands, with increasing share of the Arabica varieties. This growth trend is driven by land expansion, growing yield, the need for value creation, and demand from the specialty coffee market. What are the development patterns of the Lao coffee industry in the past several decades? How did the global price crash in the early 2000s and entries of foreign-invested firms affect the industry and lives of village farmers and how have these changes shaped the future growth path of the industry? What are the major problems, challenges, and concerns that exist in the industry today? As the industry continues to mature, will small farmers have a fair share of the additional benefits to be created? Will the drive to attain higher productivity be achieved at the expense of the environment and the health and wellbeing of farm workers? What can policy makers, development agencies, and socially-and-environmentally responsible private coffee business owners/executives do to lead the development of the Lao coffee industry towards growth with an economic-social-environmental balance? These questions are addressed in this paper.

Acknowledgement

The author is in debt to an executive of a coffee trading company based in Pakse, Champasack Province and to the officials at the Department of Agriculture and Forestry of Champasack Province for their invaluable industry data and insight of the industry.

Introduction

Coffee is one of Laos' top-five export earners and agricultural largest export commodity. Lao coffees have been exported nearly entirely in the form of green beans, although several roasted coffee brands, one instant coffee brand, and cafés have recently emerged in the domestic market. While being one of the country's main foreign currency earners, the industry also provides tax revenues to the government that can be re-circulated in the economy. However, the most important role of the coffee industry in the Lao economy is that it provides jobs and incomes to more than 20,000 smallholders and thousands of hired farm workers in the South. Besides providing farm jobs, the industry also supports other related businesses and creates additional jobs in commerce, finance, transportation, utility services, and other services throughout the supply chain of the coffee industry (e.g., administrative, clerical, technical and labor work at the mills, transportation services, processing plants, cafés, coffee research station, etc.). Thus, any significant change in the industry will certainly have significant impacts on the lives of many people and the broader economy.

What path the Lao coffee industry is likely to take shape in the next ten to twenty years? The Lao coffee industry is on a path of growing total farm output and Laos-grown coffee brands, with increasing share of the Arabica varieties. This growth trend is driven by land expansion, growing yield, the need for value creation, and demand from the specialty coffee market. Productivity will continue to grow because coffee production in Laos is in general still operated in the lower region of the coffee productivity frontier, and more investments are being made in modern tools, machineries (mainly for milling), farming techniques, and in more productive varieties.

This article examines the Lao coffee industry's development patterns in the past several decades. It touches on how the global price crash in the early 2000s and entries of foreign-invested firms affected the industry and the lives of rural, small farmers and on how these changes have shaped the future growth path of the industry. What are the major problems, challenges, and concerns that exist in the industry today? Will the drive to attain higher output per hectare be achieved at the expense of the environment and the health and wellbeing of farm workers? As the industry continues to mature, will small-scaled family farms have a fair share of the additional benefits to be created? What can policy makers, development agencies, and socially-and-environmentally responsible private coffee business owners/executives do to lead the development of the Lao coffee industry towards growth with an economic-social-environmental balance? These are the main issues discussed towards the end of this paper.

A Description of the Lao Coffee Industry Today

In 2007, Laos harvested 33,200 metric tons (tons) of green coffee beans from 44,990 hectares of harvested area, according to the Food and Agriculture Organization of the United Nations (FAO). In the same year, Laos exported between $US 25 million (according to the FAO) and $US29 million (according to the Asian Development Bank—ADB) of green coffee beans, accounting for more than 64% of the country's total agricultural export in that year.[1]

Most of the coffees grown in Laos are exported. According to the FAO data, between 2000 and 2007, approximately 60% of Laos-grown coffees on average were exported annually. Domestic private sources, however, suggested that 80-85% of Laos-grown coffees were exported annually. For the elaboration on data disputes, see "Notes on data problems" at the end of the paper. Most Lao coffees were exported to the European market, with Germany, Poland, France, Belgium and the Netherlands as the major destinations. Export to the U.S., world's largest coffee market, has been growing since 2007. In that year $US8.15 million worth of Lao green coffees were received at the U.S. ports, a jump from $US0.106 million in 2006, according to the U.S. Department of Commerce. This would account for between 28% and 32% of the total export.[2] In 2008, Lao coffee export to the U.S. dropped to $US3.54 million as the average import price increased from $US1.39/kg (2007) to $US2.43/kg (2008).

The coffee farm community in Laos today is characterized mainly by more than 20,000 smallholders, 1-3 hectares family farms. A much smaller number of plantations with 4-10 hectares and several emerging large, domestically- and foreign-invested plantations cultivating 100-plus hectares make up the remaining portion of the farm community. Many small farms entered into a contract agreement with the processor/trader that guarantees the sale of farm output, and many others remained independent and sold to any buyer of their choice. Contracts are often verbal. Written contracts are especially for cases that farmers either received loans or other forms of farm inputs from a trader/processor. Large farms that process their own exports are also commonly engaged in a purchase agreement with small family farms. There are about ten local traders with facilities to facilitate the purchase of dried coffees from small farmers for milling/processing and exporting.

Production is highly concentrated in the Bolaven Plateau, created by ancient volcanic soil, at an elevation of up to 1,300 meters above sea level in Paksong District of Champasack Province in the south, where approximately 80-85% of all commercial coffees in the country is produced. Another 15-20% of commercial coffees are grown in the Bolaven Plateau that extends to Champasack's immediate neighboring provinces of Saravan, Sekong, and Attapeu. Coffee crops are also found in small plots in other parts of the country in the North, but they are commercially insignificant.

[1] According to the FAO, Laos' total agricultural export in 2007 valued $US38.9 million. Second to coffee was maize, $US7.7 million.
[2] It would have been 28% if based on the total export values reported by the ADB ($US29 million) or 32% if based on the FAO report ($US 25 million).

There are two main commercial coffee varieties grown and traded worldwide: Robusta and Arabica. Robusta coffee has continued to dominate the coffee farms in Laos, because of its disease-resistant and resilient qualities. However, according to the coffee experts, the Robusta varieties are in general considered to be of lower quality varieties, due to their higher level of acidity, and thus command a lower price. Nevertheless, Winston et al. (2005) suggested that Lao Robusta variety has unique characteristics, which set it apart from the Robusta varieties found elsewhere in the world. The unique qualities of the Lao Robusta variety, according to Winston et al. (2005), is a result of it having been grown for decades at high elevations of up to 1,300 meters above sea level, where the Arabica varieties would normally be found. Robusta coffees are normally grown in lower elevations unsuitable for Arabica. In 2001, the production of the Arabica varieties accounted for approximately 12% of the total, according to Lao official data cited in Winston et al. (2005). With government's support for increasing the share of the Arabica varieties, by around 2004, the disease-tolerant catimore Arabica variety was introduced and proliferated in the Bolaven Plateau with the assistance of the FAO. By 2008, the share of the Arabica variety has grown to 35% in the Champasack Province's total production, according to the Champasack's Department of Agricultural and Forestry (DAF). The cultivation of the Arabica variety is mostly controlled by several large, foreign-owned farms.

Beyond the coffee farm, recently, a small number of new brands of roasted coffees have emerged and an instant coffee has been developed and sold mainly in the domestic market. Roasted coffees wrapped in attractive packages have been appearing in convenient stores around the country. Specialty coffee development is clearly emerging in Laos in the past few years. Evidence include several newly developed coffee websites and coffee shops owned by specialty coffee developers sprouting in major cities.

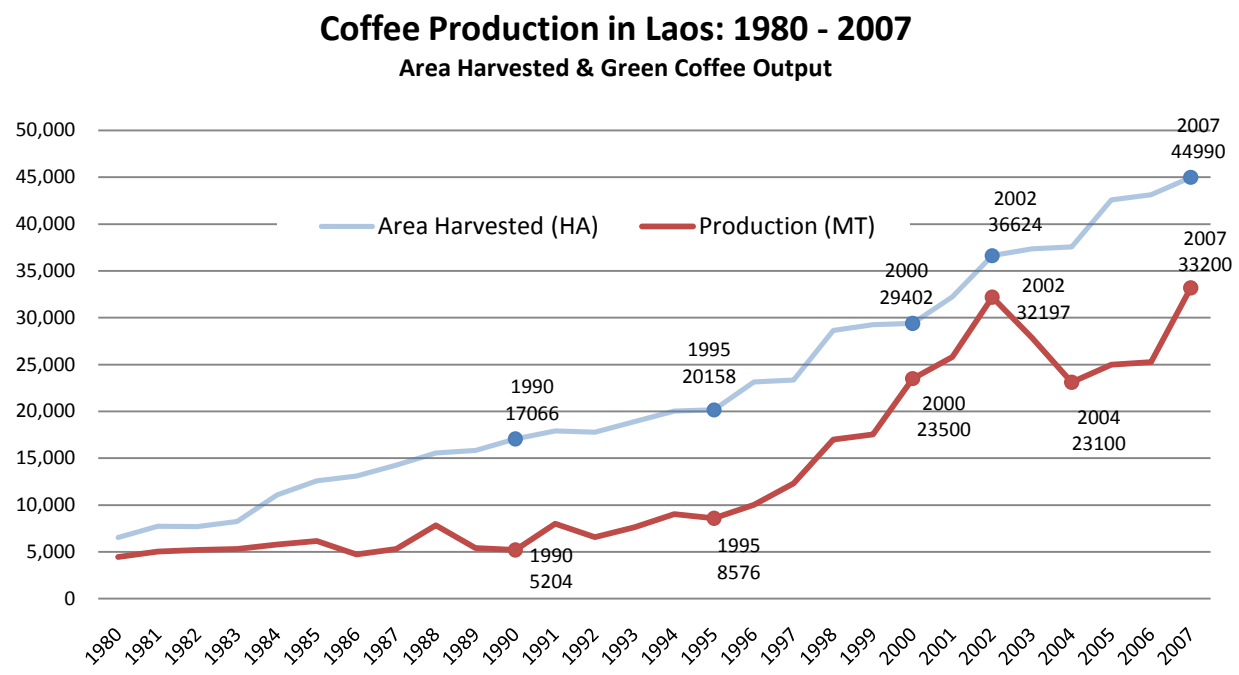
Economic Liberalization, Private Entries, and Growth

Although coffee in Laos was introduced by the French about a century ago, it has never grown to become an important part of the country's agricultural economy until the 1980s, when coffee became a type of currency used for debt repayment to the former Soviet Union and Vietnam by the new communist government that championed the political struggle. Nonetheless, robust growth did not begin until the mid-1990s (Figure 1), with entries of private investments in the coffee plantation and trade, as a result of the economic liberalization policy designed to move the economy from a centrally-planned to a market-oriented one.

According to the FAO, in 1990, when the international price for Robusta was $US1.18/kg, Laos produced 5,204 tons of green coffee beans from 17,066 hectares of area harvested. Roughly, there were 13,000 households engaged in coffee farming at the time.[3] The economic liberalization policy was implemented just at the right time for the coffee industry, as coffee prices were rising (Figure 2). By 1995, the international price for Robusta increased to $US2.77/kg, a record-high for an annual average in nearly 23 years since 1986, when the annual average price was $3.24/kg.

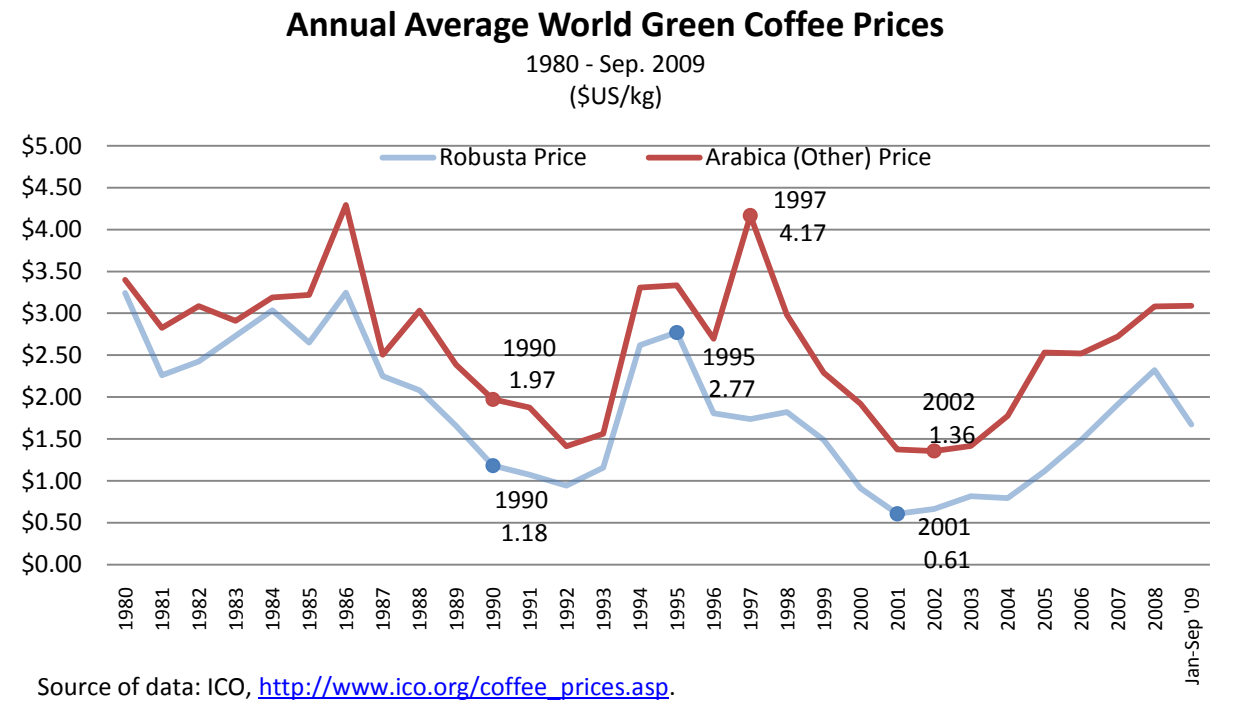
[3] Author's rough estimate based on the average farm size and the FAO reported total harvested area.

Figure 1. Coffee Production in Laos: 1980 - 2007



Source of data: FAOSTAT, FAO, http://faostat.fao.org/site/339/default.aspx.

Figure 2. World Annual Average Coffee Prices: 1980 - 2009



Source of data: ICO, http://www.ico.org/coffee_prices.asp.

Encouraged by the rising international price, private investment expanded and, as a result, the total production of green beans grew more than four folds within 10 years. By 2000, green bean total production grew to 23,500 tons and area harvested expanded to 29,402 hectares. However, the Robusta price started a series of decline after 1995, and it eventually crashed in 2000. In spite of that, production continued to grow and by 2002, one year after the Robusta annual average price bottomed at $US0.61/kg (in 2001), total output reached 32,197 tons and harvested area expanded to 36,624 hectares.

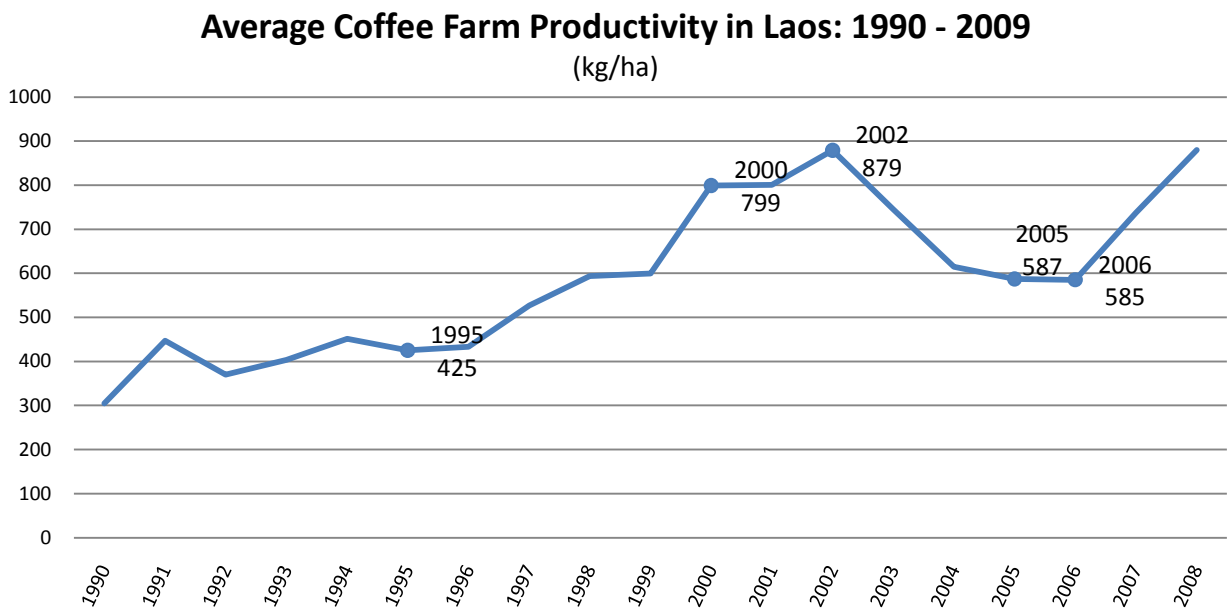
Growth in the total farm output was not only as a result of land expansion. During this growth period, farm productivity was also growing rapidly. In 1990, green coffee bean output was 305 kilograms per hectare (kg/ha). By 2000, output per hectare increased to 799 kg, an increase of 162% over 10 years (Figure 3). Farm productivity continued to grow until 2002, when output per hectare reached 879 kg. However, such a high rate of growth in farm productivity is not unusual. It's because the output per hectare in 1990 was very low by any standard. In comparison, in that year Laos' coffee output per hectare was only 57% of the world's average (535 kg/ha) and 20% of Vietnam's average (1,487 kg/ha).

Sometime between 1999 and 2000, Laos' output per hectare surpassed the world's average (Figure 4). However, the price crash caused Laos' per hectare output to again drop below world's average in 2004 until 2007. Thus, despite the strong productivity growth in the 1990s, Laos' green coffee bean output per hectare in 2007 (738 kg/ha) was still less than 40% of Vietnam's (1,970 kg/ha). Vietnam is the second largest and one of the most productive coffee producers in the world. In 2008 and 2009, Laos' average output per hectare is expected to have surpassed the world average, but will remain less than half that of Vietnam. Nevertheless, with a growing interest in the Lao coffee industry from the international body like the FAO and international investors, more investments are being made in modern tools, machineries (mainly for milling), farming techniques, and in more productive variety which will raise output per hectare.

Despite the world coffee price crash in the early 2000s and output declined after 2002 through 2006, private investments continued to expand, as evident by the continual increase in the harvested land area (Figure 1). Foreign investments in coffee trade and farming have been growing especially since 2005, with most of them having been active in Laos only within the past three years. Foreign investments have led to a continual expansion in coffee farming and, as a result, harvested land area increased to 44,990 hectares by 2007. With more land area covered with coffee orchards and were ready to be harvested, a price resurgent in 2006 has led to a strong rebound in the 2007 production, when total output reached 33,200 tons, according to the FAO data. By 2008, the country's total output may have exceeded 36,000 tons.[4]

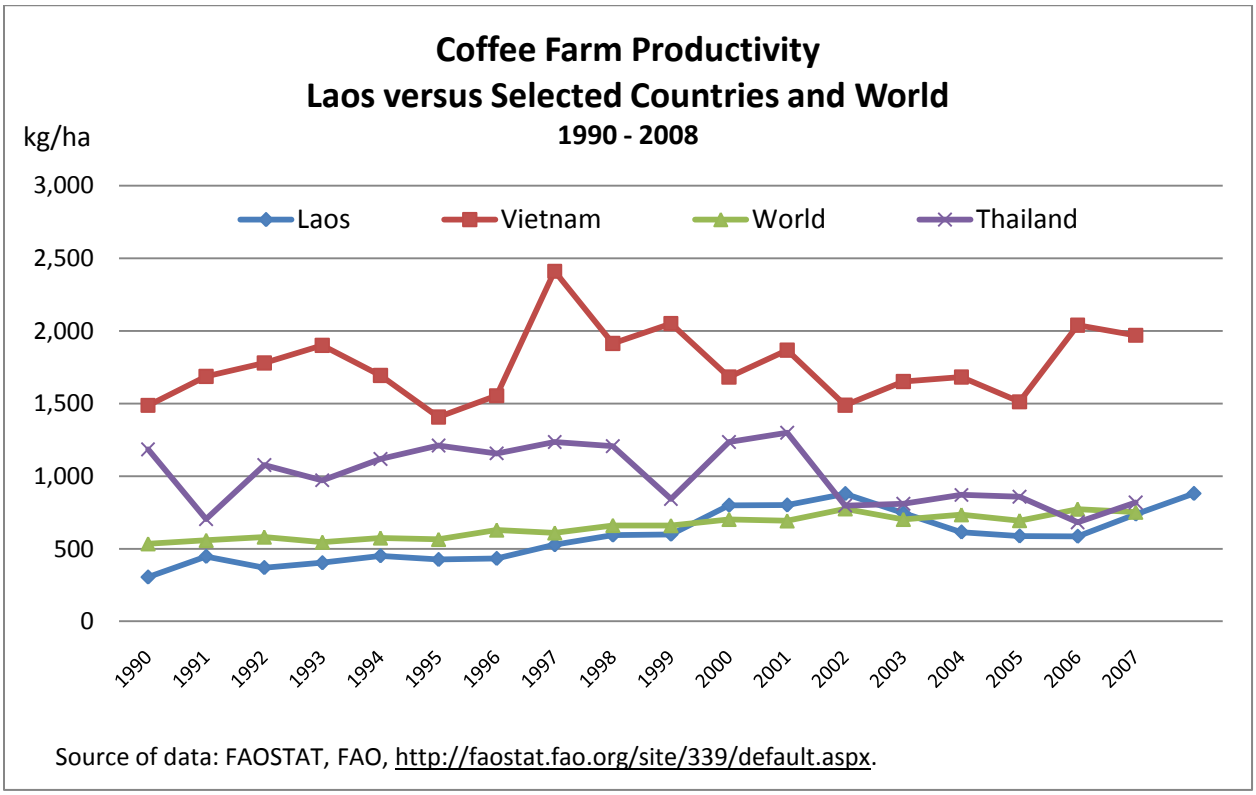
[4] This rough estimate is based on production in the Champasack Province, where approximately 29,158 metric tons of green coffee beans, including 10,170 tons of the Arabica variety, were produced in 2008, according to the DAF-Champasack Province.

Figure 3. Average Coffee Farm Productivity in Laos



Sources of data: FAOSTAT, FAO (1990 - 2007), http://faostat.fao.org/site/339/default.aspx; DAF-Champasack Province (2008).

Figure 4. Coffee Farm Productivity Comparison: Laos versus Thailand, Vietnam, and World



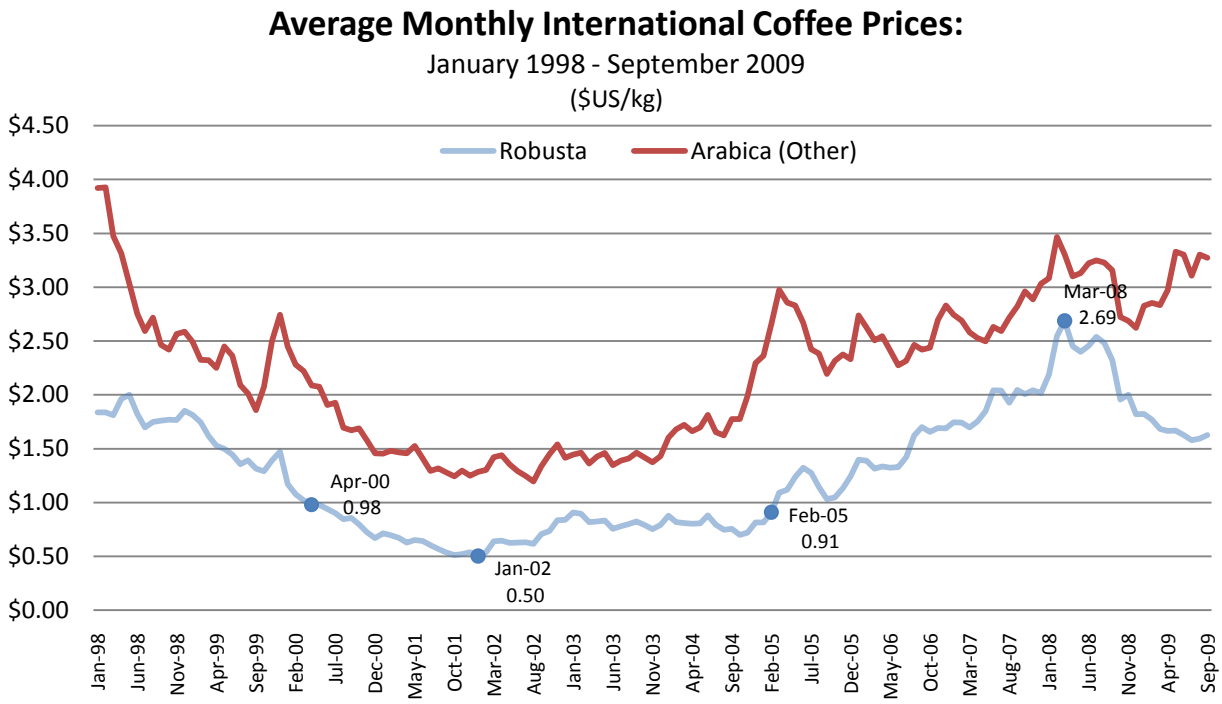
Source of data: FAOSTAT, FAO, http://faostat.fao.org/site/339/default.aspx.

World Price Crash and Its Impacts on Lao Coffee Industry (2000-04)

Growth in coffee production between 1990 and 2000 was phenomenal, as discussed earlier. However, the expansion in the late 1990s and early 2000s was unfortunate. After reaching $US2.77/kg in 1995, world price for Robusta dropped to $US1.81/kg the next year. However, the price decline did not reach its critical point until 2000, when it dropped below $US1.00/kg (Figure 5). The world price for Robusta was falling from an annual average of $US1.49 in 1999 to $US0.98/kg in April 2000, and to $US0.67/kg by December that same year. Eventually, it bottomed at a monthly average price of $US0.50/kg in January 2002. Then, price started to rise after that, but did not reach the $US1.00/kg critical level until March 2005.

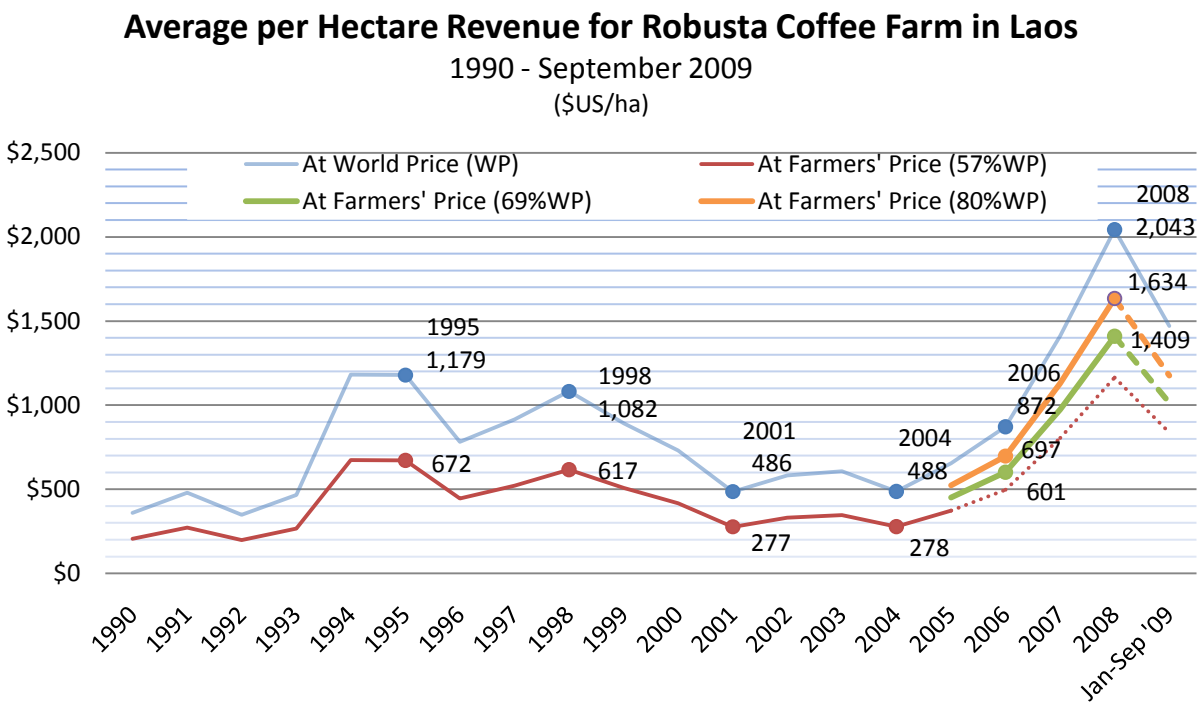
The world coffee price crash had significant adverse impacts on the Lao coffee industry, especially on farmers' livelihoods as a result of falling per hectare revenue to extremely low levels and increasing debts. The price crash had resulted in dramatic falls in farm revenue, which in turn led to farm productivity deterioration as farmers were discouraged by low prices, further worsening the farm revenue and farmers' ability to repay debts.

Figure 5. Average Monthly International Coffee Prices



Source of data: ICO, http://www.ico.org/coffee_prices.asp.

Figure 6. Average per Hectare Revenue for Robusta Coffee Farms in Laos



Notes: Graphs evaluated at various farmers' prices represent estimates of farmers' gross revenue/ha. Source of data: Author's calculation using ICO world price data, FAO production data, Anderssen's (2007) farm price for 2001, and 2008 average farm price calculated from survey data provided by a Lao coffee industry executive. The 2008-09 per hectare farm revenues are author's estimates based on Champasack's output.

The impact of the price crash on farm revenue is shown graphically in Figure 6, with one graph evaluated at the world price for Robusta, and the remaining graphs pegged at various percentages of the world price providing estimates for the actual per hectare revenue farmers received from the sale of green coffee beans. The world price is used as a benchmark for measuring farmers' revenues because Lao farmers normally received a price that was set at a certain percentage of the world price. As illustrated in Figure 6, the world price depression had resulted in farm revenue per hectare to drop significantly, from $US672/ha in 1995 to $US277/ha by 2001, valuated at 57% of the world annual average Robusta price for both years, despite the fact that output per hectare nearly doubled over this period. This was devastating for farmers because they had to sell nearly twice the amount of coffee they sold in 1995 to make only 41% of what they made from one hectare in 1995. An average farm produced 425 kg/ha in 1995, and by 2001, an average farm's output increased to 801kg/ha. (Figure 6 is further discussed under a section examining the impacts of foreign investments on farm revenue.)

Discouraged by low price, farmers redirected their time from attending to their coffee farms to other activities. Many left their farms nearly unattended after the 2002 harvest until 2005. As a consequence, crop yield suffered (Figure 3). Output per hectare dropped 15% between 2002 and 2003, from 879 kg/ha to 746 kg/ha, and to 615 kg/ha by 2004, causing the total production to decline from 32,197 tons (2002) to 23,100 tons (2004).

The international Robusta price rebounded in 2005, to an annual average of $US1.11/kg, reversing the decline in farm revenue. However, farm revenue remained quite low, at $US373/ha (valuated at 57% of the world annual average Robusta price). Despite the price increase in 2005, output per hectare continued to drop until 2006 (to 585 kg/ha). Finally, encouraged by the price increase to $US1.49/kg in 2006, with a better care for the coffee orchards, output per hectare climbed to 738 kg/ha in 2007. This has led to a strong rebound in total production to 33,200 tons in that year, when the annual average price for Robusta increased to $US1.91/kg. The annual average price continued to rise up to $US2.32/kg in 2008.

The price crash has caused a considerable setback to farmers' livelihood, particularly between 2000 and 2006, as discussed earlier on falling farm revenue, and especially for those who have just entered into the coffee farming business with borrowed funds. The Agricultural Promotion Bank-Champasack Province Branch, following the government's agricultural policy, had released a sizeable amount of loans to boost coffee farm expansion in the late 1990s, approximately $US2.1 million, which resulted in a substantial increase in land area under coffee.[5] Between 2000 and 2005, coffee harvested land area expanded from 29,402 hectares to 42,580 hectares, a 45% increase within five years. However, the credit expansion to coffee farming took place when the world coffee prices were at their lowest levels, an unfortunate timing. As a result, the APB faced more than 90% non-performing loans issued for coffee farming during that period.

Entries by Foreign-Owned Firms and Their Impacts

Currently, there are seven foreign-owned firms active in the coffee business linking directly to coffee farms in Laos. Most of them have formally been in operation in the country within the past three to five years. Four of the seven firms now operate farms, with one firm from each of the following countries: China, Singapore, Vietnam, and Thailand. Farms operated by foreign-owned firms are relatively large, with more than 100 hectares in current operation and planned planting of up to several thousands of hectares. Two US-based firms and a Vietnam-based firm currently are operating green coffee beans processing facilities for export, and some of these firms may enter into farm operation within several years.

Foreign investments could bring a number of benefits to small farmers and the industry as a whole. Among them include an access to the international market and capital injections for investment on essential farm infrastructures, modern processing facilities, machineries, tools and equipment. Foreign investments could also offer small farmers a relatively high price for coffee beans, revolving funds for use during the pre-harvest and harvesting seasons, and modern farm techniques and technologies for productivity and bean quality improvement.

[5] The Agricultural Promotion Bank – Paksong District Branch, Champasack Province, released 11 billion kip between 1998 and 1999, according to Thawaensimphet et al. (2003). This is equivalent to approximately $US2.115 million, at the average of year-average exchange rates of 3,298kip/$US1.0 (1998 average) and 7,102kip/$US1.0 (1999 average).

What impacts have been made and likely will be created in the future by foreign investments in the Lao coffee industry?

Access to the market abroad: Foreign-owned firms' most important initial contribution is their role in expanding export potentials for Lao coffees, paving the way for further growth. Foreign-owned firms entering into the Lao coffee industry normally already have market networks, experience, know-how, and resources needed for getting coffees to buyers abroad. Firms with coffee business experience in developed economies, where most coffees of the world are consumed by consumers of diverse tastes, do not only have market networks already in place, they understand the market demand and the relationship between bean qualities and prices.

Know-how and capital injection: With the understanding of market demand, foreign-invested firms would know which critical infrastructures, machineries and equipment that are needed to be invested in Laos in order to obtain the required quantity and quality of supply for success in the market abroad. With that, foreign-invested firms have access to the required capital for developing processing and storage facilities and for purchasing modern equipment, machineries, and other farm inputs needed for raising productivity and bean quality. Accompanying the capital injection, foreign-invested firms possess the know-how and can acquire the necessary expertise deemed essential for improving the efficiency in farming, harvesting and storage, and for processing and value creation.

The expression of interest by foreign investors and their entries into the Lao coffee business have created enthusiasm among government officials and local farmers alike, leading to a rapid expansion in coffee farming as evident in the continued expansion of area harvested over a ten-year period between 1997 and 2007. With the assistance of the Agricultural Promotion Bank's loan injections and investors' funds, area harvested nearly doubled over this period, expanding from 23,345 hectares to 44,990 hectares. Although this expansion took place during one of the worse times for coffee growers and traders, as the world price for Robusta begun its downward spiral in January 1999 and eventually dropped under $US1.00/kg in April 2000 through February 2005, it has expanded the industry's total production capacity to a new level Laos has never achieved.

Improved Farm revenue: Recent entries by foreign-owned firms have also created a positive effect on price in favor of small farmers. Price data gathered from 10 local coffee buyers (for export markets), accounting for approximately 70-75% of the total supply, provided by an executive of a coffee processing/exporting company based in Champasack Province, revealed that coffee farmers received a better bargain in 2008 and 2009 than in 2001. Between March and May of 2009, farmers received between $US1.18/kg and $US1.35/kg for Robusta, valuated at an exchange rate of Kip 8,500/$US1.00. This translates into 69%-80% of the average world price for Robusta during this three-month period. In 2008, the farmers' price as a percent of the world price was roughly the same as in early 2009. Back in 2001, farmers received a price that was in the neighborhood of 57% of the world price for Robusta and 67% for Arabica, according to Anderssen et al. (May 2007). The effect of the increase in farmers' price as a percent of the world price is illustrated in Figure 6, showing farmers' per hectare revenue, with the assumption that farmers' new, higher price as a percent of the world price took place in 2005. The 2008 farm revenue is estimated based on Champasack Province's production data provided by the DAF-

Champasack. For 2009, the per hectare farm revenue is estimated based on the assumption that per hectare green bean output remained the same as for 2008. Thus, the steep drop in per hectare farm revenue in 2009 is a projection based purely on a falling world price for Robusta.

This relative price change in favor of farmers is attributable to possibly three factors:

1) Increased competition for Lao coffee beans for export;
2) Better bean quality; and
3) New entries with a niche market that can offer a higher price for better quality beans.

It is apparent that competition for Lao coffee beans for the export markets has been intensified as the number of both domestic- and foreign-owned coffee companies has grown, particularly in the past five years. The seven foreign-owned coffee farms and trading companies mentioned earlier have been in operation in Laos formally between one and five years. Thus, in the 1990s, there were fewer buyers competing for coffee from farmers for export than in 2008. Bean export quality today, although being described as "fair average quality", meaning bean quality is irregular and inconsistent, is in general much better than it was in the 1990s. With more foreign-invested firms directly involved in production and processing, investments in bean quality improvement have been made, and farmers are now made more aware about the relationship between coffee bean qualities and prices. The quality of Laos-grown coffee beans can also vary across individual exporters, as care, processing and sorting technology could vary across individual exporters. Beans with better quality normally can command a better price. This encourages an exporter that can process and sort bean qualities to offer a higher price for better quality beans as an incentive for farmers to take better care of their crops. In turns, it increases net revenue of the exporter. Another theory is that some relatively new foreign-owned firms are either subsidiaries or partners of larger coffee companies that roast and distribute the finished coffee products through their already established niche markets. The subsidiary or partnering firm thus functions as an agent to secure the desired raw materials for the roaster/distributor abroad. Such a firm is more likely to be able to offer farmers a higher price than average.

Technological transfer: Foreign investments also benefit small family farms through the transfer of productivity-enhancing farming techniques, new and improved genotypes and product quality improvement technology. Such transfers were either made directly or made possible by the foreign-invested firms with and without the assistance of the government and international aid agencies. It is in the interest of the foreign-invested firms to assist small family farms they have contracts with to improve the productivity and bean quality, since it increases net revenue. Greater productivity means more can be produced with the same amount of inputs, and higher product quality means better price. The transfer of farm technology and know-how can be accomplished in a variety of approaches. One commonly used approach for technological transfer is through a model farm that is under the control of the foreign-invested firm, which the firm also used as an assurance for securing a consistent supply of coffee beans of the desired quality. Since it is technically uneasy for an exporting firm to control the supply and coffee bean quality beyond their own processing plant (polishing and sorting beans of different grades), having their own farm operation is seen as a necessary means for maintaining the required quantity and quality of supply that can command a profitable price in the international market.

The model farm, while providing the supply assurance, also served as a learning center, demonstration and training site for contracted small family farms on farming techniques to improve productivity and bean quality. Such an arrangement benefits both the foreign investors and small family farmers.

Contending Issues

What are some of the problems, challenges, and concerns that exist in the industry today? Will the drive to attain higher output per hectare be achieved at the expense of the environment and the health and wellbeing of farm workers? As the industry continues to mature, will small-scaled family farms have a fair share of the additional benefits to be created? What can policy makers, development agencies, and socially-and-environmentally responsible private coffee business owners/executives do to lead the development of the Lao coffee industry towards growth with an economic-social-environmental balance?

Low farm price and high exposure to world price fluctuation: Although the average price Lao coffee farmers received has recently improved, it remained relatively low due mainly to quality issue. The increase in farm price was due to a combined result of growing number of exporters, both domestic-owned and foreign-invested firms, improved bean quality, and niche market as discussed earlier. However, due to high exposure to the world's coffee commodity market, Lao coffee farmers are highly vulnerable to the extreme world price fluctuations.

The world price crash in the early 2000s, which has caused per hectare farm revenue to drop by 55% from $US617/ha in 1998 to $US278/ha in 2004 (valuated at 57% of the world Robusta price for both years), has provided a good lesson for the Lao coffee industry to evolve in order to mitigate the impacts of similar extreme price fluctuations in the future. The emerging brand and specialty coffee developments that add value to and diversify the markets for Lao-grown coffees although are parts of the natural maturing processes of the coffee industry, they are also evident of the evolving industry in response to the recent global events. The price crash was an urgent call for specialty coffee and brand developments. Farmers' vulnerability to the extreme world price fluctuations can be mitigated through an industry-wide quality improvement and specialty product development. This would also further improve the price farmers received. Specialty coffee and niche markets are to some degree isolated from the world commodity market conditions, thus providing some protection to farmers catering to these markets.

Low per hectare output: Coffee farms in Laos are in general still low in productivity, measured in terms of green bean output per hectare. In 2007, per hectare output of an average coffee farm in Laos (738 kg/ha) was only 37% of per hectare output of an average coffee farm in Vietnam (1,970 kg/ha). A doubling of an average Lao coffee farm's per hectare output would still raise its productivity to 74% of an average coffee farm in Vietnam. This should be achievable without sacrificing the environment and workers' wellbeing, and it would double the per hectare revenue for an average Lao farm at any given price. An extension program to help raise output per hectare would directly benefit smallholders.

Farmers' high-cost loans: There is a pattern of cash flow fluctuations among small farm households that requires many of them to borrow in order to meet family's spending needs during the cash-deficit periods. Institutional sources for credits farmers could access include the Agricultural Promotion Bank (APB), several micro-loans or revolving funds from foreign-assisted development projects operating in the area, and some government-sponsored mass organizations. Interest rates from these sources ranged from less than 1% to more than 3% per month (Microfinance Capacity Building and Research Project, 2007). However, except for the APB, which released a large amount of loans in the late 1990s for land expansion and new planting (discussed earlier), the availability of funds from the sources mentioned is very limited far less than demand. Short term loans from the APB, for the pre-harvest and harvesting seasons are also often too difficult for most farmers to access today. A few foreign-invested firms have provided micro-loans, at interest rates between 0.5% - 1.5% per month, to a small number of smallholders that have contract to sell coffee to them. Loans were used for the pre-harvest and harvesting seasons. The majority of small farmers do not have access to institutional loan sources at affordable interest rates. This has forced cash-starved farm households to borrow from black market private money lenders at interest rates between 5% and more than 12% per month. To avoid borrowing from the black market at high rates, cash-starved farmers would sell cherries (ripen coffees still on the orchard) at a whopping discounted price. This practice is common particularly for the very low-income farmers who have an immediate need for cash for the very simple matters such as food, children's school supplies, medical bills, etc. This financial situation is a barrier to improving the livelihood of poor small farmers.

To sustain growth with a distributive effect across households, a loan program devoted specifically for the coffee industry is needed, for two major areas: (a) farm loan and (b) small business loan for brand development. In addition to the clearly needed short-term (3-12 months) farm loans for smallholders, the long-term (36-60 months) small business loans for vertical integration will promote growth in the value-added activity and the specialty coffee development. A vertical integration is a consolidation of farming, processing, brand development, and marketing to the final consumers and place under one business entity. Given the growing trend and large number of smallholders, there is a window for an efficient loan program devoting to serving the coffee industry that can achieve long-term financial sustainability at an interest rate not greater than 1.25% per month, given that inflation rate is less than half of the loan interest rate.

Organic certification: There is also a growing interest in organic coffee certification and movements to promote biodiversity-friendly farming practices, backed by the government, UNDP and the FAO. Organic certification processes have started by a growers cooperative formed by a foreign-invested firm; several other large firms and the Lao Coffee Association are planning to develop organically certified coffees. Organic certification and biodiversity-friendly farming practices require producers to adopt environmentally-friendly production methods. It usually results in low output per hectare and high per unit cost of production relative to other available modern production methods that are less environmentally friendly. However, an organically certified product has a niche market of consumers who are willing to pay more for it. Nonetheless, marketing the organically certified product, which carries a higher price than the non-certified product, could be a challenge.

Organic certification will benefit the Lao coffee industry not only from the higher price organic coffee commands, but also from the environmental benefits resulting from the adoption of environmentally-friendly production methods. As the Lao coffee industry is gearing towards producing organically certified coffees, the need for developing a credible body serving the entire industry to certify organic coffees is imperative. Currently, organic certification processes are underway for some growers groups that have contracts with exporting firms promoting organic coffee. Without an organic certification body that serves all interested farmers in the entire industry, the organic certification will serve only a limited number of farmers.

Coffee bean grade standardization: The lack of coffee grade standardization, which goes with quality control, is one of the major reasons why Laos-grown coffees have relatively low prices. Although some exporting firms, especially those of foreign-invested, are investing in technology for sorting and separating coffee beans based on quality differences, most Laos-grown coffee bags today still contain beans of mixed qualities.

Similar to the organic certification, a coffee grade standardization program that allows any producer to participate on a voluntary basis will open the opportunity for all farms to take advantage of the market that offers a higher price for higher quality beans. With the lack of grade standardization program, only certain farms growing coffee for certain processing/trading companies will benefit from quality beans. Organic certification and bean grade standardization will increase the aggregate value of the coffee beans and which will directly benefit farmers. The development of a credible body to serve the entire industry for the bean quality standard control and grade certification is an essential step towards increasing income of smallholders.

Small business program to promote brand development: Coffee is a unique agricultural product in that, given today's available technology and the sophistication of coffee consumers, it allows a small farm to be fully, vertically integrated to maximize total revenue from their farm output. That is, a small farm is capable of integrating into the farm operation the processing and marketing of its coffee to the final consumers under its own brand. Given today's setting in the Lao coffee industry, smallholders who have good business ideas do not have the capability to carry out those ideas due to the lack of capital and certain basic business knowledge and skills that can be learnt. A small business program that assists small and mid-sized farms in brand development will enable some small family farms to vertically integrate coffee business operations and increase total revenue. (The minimum size of a farm defined as "small" needed to be financially and economically viable for vertical integration in Laos is not yet determined. More research is required.) Although only some small family farms will be able to take advantage of the program and succeed in brand development, the program will not only contribute to distributing growth across individual households, it will create an environment to foster faster specialty coffee development that will also gradually benefit all farmers from higher bean values.

Conclusion and Trend

Boosted by government supports and inflows of resources from domestic and foreign private investments, the Lao coffee industry is on a path of growing farm output and Laos-grown brands, with an increasing share of the Arabica varieties. The increased awareness among coffee farmers of the availability of the disease-tolerant catimore Arabica variety, introduced by the FAO in 2004 with government support, and its relatively high yield and per unit bean value will lead to a continued expansion of the Arabica growing areas. This growth trend is driven by land expansion, growing yield, the need for value creation, and demand from the specialty coffee market.

Productivity will continue to grow because coffee production in Laos is still in general operated in the lower region of the coffee productivity frontier. In 2008 and 2009, Laos' average output per hectare is expected to have surpassed the world average, but will remain less than half that of Vietnam. Nevertheless, with a growing interest in the Lao coffee industry from the international body like the FAO and international investors, more investments are being made in modern tools, machineries (mainly for milling), farming techniques, and in more productive variety which will raise output per hectare.

As more brands are developed, as Lao-made specialty coffees expanded in the domestic market and can set hold in the market abroad, and as organic certification and biodiversity-friendly farm practices are propagated, the Lao coffee industry will increasingly evolve into a more complex and diversified one. There are four major areas that are essential for maintaining the growth momentum of the Lao coffee industry with distributive effect and in an environmentally friendly way. They, as briefly discussed above, include (1) an extension program to assist farmers to improve output per hectare; (2) a credible organic certification body; (3) a quality standard control program with a credible body for coffee grade certification; and (4) a coffee fund program serving particularly small family farms' short-term credit demand and for small business development, especially for processing, brand development and marketing.

Notes on data problems: The Department of Agriculture and Forestry (DAF) in coffee producing provinces collects and estimates coffee production data. Provincial Department of Commerce and Industry (DCI) is a government body that issues the required "certificate of origin" for coffees before they are exported, thus maintains export data. However, production and export data of Lao coffees often vary from one source to another. This is a result of the lack of a unified and effective data gathering and dissemination body for coffee and of taxes that encourage false reporting. Coffee farmers are taxed on land and on farm output, thus encouraging farmers to under report output (which could be part of the explanation for low per hectare output). Another common practice to avoid output tax is that farmers grow much of their coffee crops in unused state-owned land. Output from this part of coffee production normally was not reported. Farm output is taxed when a transaction is made and coffee is moved from its origin (district). Export is also taxed separately, which encouraged cross-border smuggling, mostly going to Vietnam. FAO export data for Lao coffees, which is obtained from Lao official

sources, is for most years considerably lower than what long-time coffee business professionals in Laos believe is likely due to smuggling.

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