Financial Support

Potential Sub-Sectors and Factors for Diversification in Agriculture and Agro-Processing Industry in Cambodia (Second Round of Presentation)

Nith Kosal

Young Research Fellow
kosal.nith@univ-lyon2.fr

Future Forum, June 27, 2020

** វេទិកាអនាគត**
FUTURE FORUM

Outline

Motivation

- Agriculture remains a major sector contributing to Cambodia's GDP But ....
  - Farmers and agro-processors are concerned about their productivity and income.

- Cambodian government has a policy to improve agriculture through the diversity potential agricultural product for processing and export.

- At the same time, we see that the government is seriously exporting rice and supporting the milling industry. While the new state commercial bank is still focused on providing loan to the rices sector.

- Although the financial sector in much better, farmers and agro-processors are still difficult to credit.

This Paper

- **What I Do**
  - ▶ Explore to identify key factors or sub-sectors in agriculture and agro-processing that the Agricultural and Rural Development Bank should focus on providing financial support.

- **Main Research Question**
  - ▶ What are the sub-sectors and factors in agriculture and agro-processing industry that the Agricultural and Rural Development Bank should support financially?

This Paper

- **Sub-Research Question**:
  - ▶ What products of the agriculture and agro-processing industry have the potential to develop?
  - ▶ What are the essential factors to stimulate production in the agriculture and agro-processing industry sectors?
  - ▶ What are the critical factors in the agriculture and agro-processing industry that require financial support?
  - ▶ What types of policies are necessary for the Agricultural and Rural Development Bank to respond to sustainable development in agriculture and agro-processing industry?

Background

Figure: Value in Million Riels and Growth Rates, at constant 2000 prices
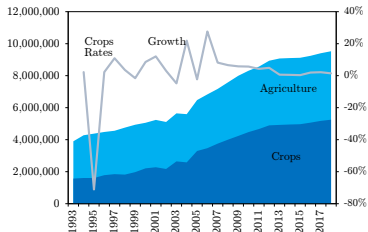

Figure 2.1: Crops value in Million Riels

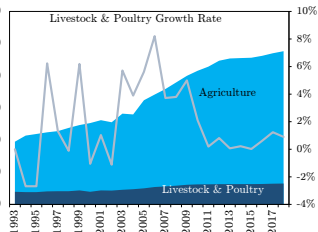Figure 2.2: Livestock value in Million Riels

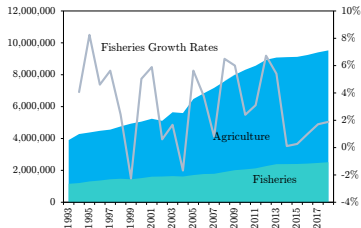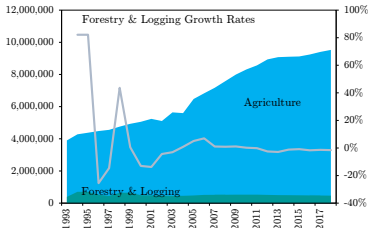Figure 2.3: Fisheries value in Million Riels

Figure 2.4: Forestry value in Million Riels

Source: Ministry of Economy and Finance 2018

Background

- The RDB ↑ its total assets by 15%, US$157 million in 2017 ⟹ US$178,28 million in 2018, and ↑ the total loans by 30%, US$122.07 million in 2017 ⟹ US$ 159.11 million in 2018 (RDB, 2018).

  - In 2018, total loans contributed to the rice sector (76.13%), rubber, maize, cassava, pepper, coffee, and sugar cane (14.89%), and microfinance, animal-raising, and others (8.97%)

- 2018: Agro-processing sector accounted for only 2.4% of GDP, or US$589.83 million, and agriculture for about 22% of GDP, or US$5.47 billion (NIS, 2018).

  - By 2015, 77.6% of 41,674 registered SMEs are carrying out in the agro-processing (Sok, 2020). However, until now, just 10% of Cambodia's agricultural merchandise is processed (Bdlink, 2017).

Background

- By 2015, the total loans to the agricultural sector is about around US$ 2.3 billion (NBC, 2015).

  Due to the difficulties in accessing financing were due to lack of collateral and high interest rates are a critical problem for the agricultural and agro-processing industry (e.g., Bdlink, 2017; Keosothea & Molyaneth, 2020; Phlong, 2009; Serey & Theara, 2016; Sothorn, 2020).

Related Literature

- Financial Constraints and Difficult Access to Credit
  - Ovesen et al. (2012), Phlong, (2009), Sam (2019), Sothorn (2020)
- Public Banks (Poor Country) are Less Profitable and Efficient
  - Shen et al. (2014), Galindo and Micco (2004), Dinç, (2005), Porta and Shleifer (2000), Micco et al. (2007), Iannotta et al. (2007)
- Public Banks are Created to Achieve Political, Public and Socially Beneficial Objectives
  - Andrianova et al. (2012), Shen et al. (2014), Stiglitz (1994), Doh and Kim (2014), Kim et al. (2004)
- Economic Diversification
  - Garía et al. (2005, 2008), Revilla et al. (2015), Kilkenny and Nalbarte (2002), Jouida (2018), Blackman et al. (2017)

Conceptual Framework

Figure: Conceptual Framework
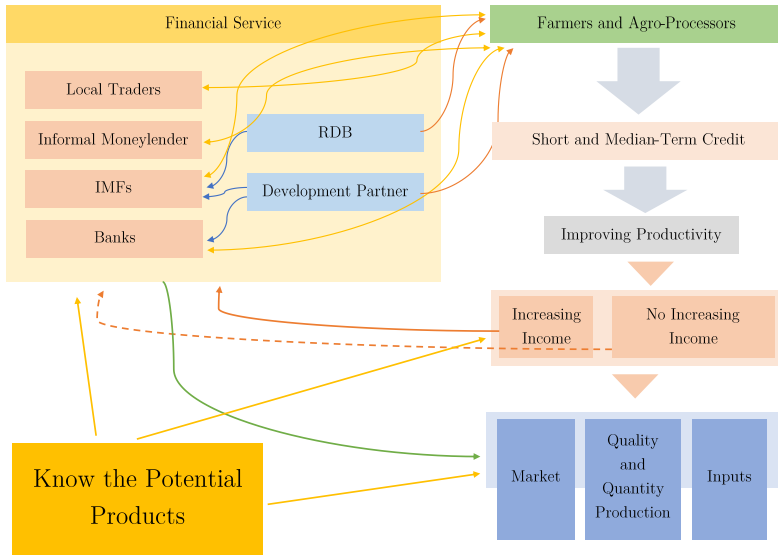
Model

- Leontief Model is a quantitative economic model
  - That quantifies the mutual interrelationships between industries in a nation's economy (Miller & Blair, 2009; Soto & Monterrey, 2008). $\Rightarrow$ Input = Output or Consumption = Production
  - The Matrix Equation:
    $$AX + D = X \Rightarrow (I - A)X = D$$
    - ▷ The logical is required the inverse of $(I - A)$ to be non-negative and non-singular.
    $$X = (I - A)^{-1}D$$
    Where A: the input-output matrix, D: the final demand vector, X: the production level vector.

Model

- Accounting for Pollution Impacts

$$x^{p*} = D^p x = [D^p L]f; D^p = [d_p^{kj}]$$

- Social Accounting Matrices and Households Account

  ▸ Production Account:

  $Q + M = C + I + X + G = U + F + I + X + G$

  ▸ Consumption Account: $C + S + O + T = Q + D + H = U + V$

  ▸ Capital Accumulation Account: $I + D + L + B = S$

  ▸ Balance of Payments Account: $X + H = M + O + L$

  ▸ Government Account: $G = T + B$

  ▸ Households Account: $V = F + T + S + O$

  Where Q: Total income generated, H: Income generated overseas, D: Depreciation or consumption, M: Total imports, O: Transfers of money overseas, L: Net lending of resources from overseas, B: Total government deficit spending, U: Total use

Model

Figure: Input-Output Transaction Table

Users / Suppliers	Producers as Consumers				Final Demand				Total Output
	S_1	S_2	S_i	S_n	Personal Consumption Expenditures	Gross Private Domestic Investment	Government Purchases	Net Exports	
Producers S_1									
Producers S_2									
Producers S_i									
Producers S_n									
Employees	Employee Compensation				Gross Domestic Product (GDP)				
Business Owners and Capital	Profits-Type Income and Capital Consumption Allowances								
Government	Indirect Business Taxes								
Total Input									

Data

- Panel Data: A time series between 2010 to 2017 or 2018 with many cross-sectional units
  - **Input**:

    Agricultural land, Irrigation, Chemical fertilizers, pesticide, weedicide and fungicide, Transportation (World Bank); Emissions, Services/Technical supports (FAO); Labor (ILO); Electricity, Oil, gas or diesel, Repair and maintenance, Rental paid, Feed for livestock-purchased, Veterinary services and medicine, Bananas, Beans, dry, Beer of barley, Cassava, Coconuts, Fruit, Groundnuts, with shell, Maize, Mangoes, mangos teens, guavas, Meat indigenous, cattle, Meat, Milk, whole fresh cow, Oil palm fruit, Oil, palm, Oranges, Rice, paddy, Roots and tuberoses, Sesame seed, Soybeans, Sugar cane, Sweet potatoes, Vegetables, freshens (NIS); Credit (NBC).

Data

▶ **Output**:

Livestock: Cattle, Buffalos, Horses, ponies, Pigs, Sheep, Goats, Chicken, Duck, Quail, Eggs (NIS); **Crops**: Bananas, Beans, dry, Cassava Castor oil seed, Chillies and peppers, dry, Coconuts, Coffee, green, Cotton lint, Cottonseed, Fibre crops nes, Fruit, fresh nes, Grapefruit, Groundnuts, with shell, Jute, Lemons and limes, Maize, Mangoes, mangosteens, guavas, Nuts nes, Oil palm fruit, Oil, palm, Oilseeds nes, Oranges, Palm kernels, Pepper, Pineapples, Rice, paddy, Roots and tubers nes, Rubber, natural, Seed cotton, Sesame seed, Soybeans, Sugar cane, Sweet potatoes, Tobacco, unmanufactured, Vegetables, fresh nes; **Crops processed**: Beer of barley, Cotton lint, Cottonseed, Molasses, Oil, Palm kernels, Sugar Raw Centrifugal (FAO); Total intermediate consumption, Taxes less subsidies, Cif/ fob adjustments on exports, Direct purchases abroad by residents, Purchases on the domestic territory, Value added, International transport margins (ADB).

Analysis

- Create dataset in Excel
- Use the Python or R program for code writing and analysis
  $\implies$ Explore to learn more about the Python and R program.
- Use regression analysis to predict the future of the agriculture and the agro-processing industry.
- Use critical and systemic thinking on the analytical policy that RDB should adopt for potential products and critical factors in the agriculture and agro-processing sector.

My Concern and Question

- If our total observation is 1200 (with the 2010-2017 time series), but there are 20 variables that cannot access the 2010-2013 data, and 30 other variables cannot access the 2014-2017 data. How can we fix that? How can we do it? Do we have a mathematical or statistical model to do it?

- We have the economic table created by the ADB; but I never see the I/O table on products or factors in one sector, so how do we know that the input of one product have an influence on the other output products?

Thank you!