Chapter 1

Introduction

1.1 Rationale

Thailand is one of the largest advanced producers and exporters of food and processed food in the world. The country is a strategic hub of food production for both Asia and the rest of the world due to its varying climates and natural agricultural productivity. Its deep agricultural traditions and abundance of natural resources, combined with significant investments in international quality standards, technology, and food safety R&D, have helped Thailand to become a leading food exporter in Asia. In 2010, Thailand's focus on food export industry has generated $27 billion, a 30% increase since 2007.

Thailand has both the high potential and the key ingredients to become a major production base and distribution center for global food exports, as well as an attractive choice for international investors (Thailand Board of Investment, 2010). Entrepreneurs in Thailand's agriculture and food processing industries continue to work to introduce new technologies. Companies which supply equipment into the agriculture and animal farming sectors have increased the efficiency of Thailand's farmers and helped them to increase their sales (Chester and Chumroentaweesup, 2010).In addition, policies introduced by the Thai government have supported food production at high standards of safety and quality.

Agro-industry sector plays an important role of Thailand's economy. Although most processed food products are for export purposes, domestic consumption of processed food is also growing. Agro-industrial systems benefits farmers, producers, traders, processors and other stakeholders (FAO, 2008). In addition to direct employment, agro-industry generates jobs in supporting sectors such as agriculture, commerce and services. The development of agro-industry can also have an important

impact on local agricultural sectors as well as livelihoods of small farmers (IFAD, UNIDO and WFP, 2008).

One of the biggest producers in agro-industry in Thailand is the Royal Project Foundation (RPF) which is a non-profit organization founded by King Bhumibol Adulyadej. The Royal Project was established in 1969. It was created to carry out His Majesty's initiative to help the hill tribes through developing advanced agricultural farming to improve their lives and well-being. The Royal Project was transformed into the Royal Project Foundation in 1992 in order to become a public organization that can be operated efficiently as a private company (Petchdakul, 2010). The Royal Project Foundation operates with enterprises through the production and marketing chains. Its products are sold with its own trademark, RPF. Its agricultural centers welcome many tourists who buy flowers, organic fruits and vegetables as part of their visits. Hill tribes in northern Thailand have opportunities to participate in the production, marketing and distribution of products (ACIAR, 2003). RPF researchers develop new varieties of products by using abundant resources from 38 mountain locations. All the processed products are distributed to merchants, RPF shops, supermarkets, hotels and also western restaurants in Chiang Mai and Bangkok.

This study will apply economic modeling to analyze an innovative agro-industrial product: feta cheese made from buffalo milk. It will compare sales forecasts in terms of different functional forms and estimation algorithms. The issue of forecasting sales of feta cheese produced from buffalo milk using limited information will be addressed. We will also construct a Social Accounting Matrix (SAM) for the Royal Project Foundation (RPF), and assess the impact of the RPF on the Thai economy.

The results of this study will be presented in five chapters. After the introduction in Chapter 1,Chapter 2 introduces basic knowledge of feta cheese from buffalo milk and its history in the RPF. Chapter 3 provides econometric models for sales forecasting of feta cheese. The challenge is that accurate sales forecast must be perfomed with limited data. We thus need to figure out how many data are needed to

predict accurate sales. Different functional forms and forecasting algorithms will also be compared. Chapters 4 and 5will explore the impact of the Royal Project Foundation on the nationwide economy using the Computable General Equilibrium (CGE) model with a SAM that extracts the RPF as a separate sector.

This study is unique in many dimensions. First, the comparisons of functional forms and algorithms for sales forecasting with limited information are new. Second, there was until now no Social Accounting Matrix (SAM) that extracts the Royal Project Foundation as a separate sector in any previous study. Third, this study is the first CGE analysis of the impact of the Royal Project Foundation on the nationwide economy.

1.2 Objectives

1. To find appropriate techniques for the sales forecast with limited information.
    - 1.1 To find the sufficient number of observations that are needed for the sales forecast.
    - 1.2 To compare the functional forms of the sales forecasting model between the Bass model and Logistic function.
    - 1.3 To compare global(cumulative observations) vs. local forecasts (rolling windows).
    - 1.4 To compare the fixed and floating y-intercept methods.
    - 1.5 To compare the following estimation algorithms: Quasi-Newton, Gauss-Newton and Newton-Raphson.
2. To Construct the Social Accounting Matrix including the Royal Project Foundation as a sector.
3. To Evaluate the economic impact of the Royal Project Foundation on the nationwide economy.

1.3 Scope of the study

1. The considered innovative agro-industrial product is the feta cheese made from buffalo milk.
2. The producer of the innovative agro-industrial product is the Royal Project Foundation.
3. The dataset of feta cheese sales covers the period from January 2010 to August 2012.
4. The SAM table covers the economic transactions in 2010.

1.4 Outputs and outcomes of the study

1. The Royal Project Foundation can use the forecasting results to guide its production of feta cheese made from buffalo milk.
2. The analytical techniques can be transferred to economic or business analysts in the Royal Project Foundation to enhance the capability in quantitative analysis of the organization.
3. The results of the impact of the Royal Project Foundation on the nationwide economy will attract the government to support the foundation more intensively.
4. The results of the impact of the Royal Project Foundation will also be solid evidence to ascertain the merits that His Majesty King Bhumibol Adulyadej has done for his people.