UNIVERSITI PUTRA MALAYSIA

PRODUCTIVITY AND COMPETITIVENESS OF THE FOOD MANUFACTURING INDUSTRY IN IRAN

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By

MAJID SANAEI TORGHABEH

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor Philosophy

June 2008
Dedications

This thesis is dedicated to my late parents who always wished the best for me and to my wife and sons, Amir Hossien and Mohammad Moien for their support and encouragement throughout this study.
Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Doctor Philosophy

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Chairman: Associate Professor Mohd Mansor Bin Ismail, PhD
Faculty: Agriculture

Food manufacturing industry is an important industry in the Iranian economy and has been identified as a thrust area for development. The country has enormous potential in the production and export of various food items due to the abundance of resources and available markets in the world, particularly in the Middle East. In recent years, the government has encouraged the expansion of this industry in an effort to reduce its dependency on oil exports. However, there are various kinds of challenges which need to be addressed immediately to achieve this objective. These challenges have emerged due to the opening up of the economy leading to an influx of imported processed foods from other countries. In addition, much of the raw material is not fully utilized due to low processing level and there has been an ever increasing demand for food in the country every year.
This study therefore attempts to evaluate the productivity and competitiveness of food manufacturing industry in the country so that necessary actions can be taken to improve its performance. There are two empirical analyses carried out namely total factor productivity (TFP) and Revealed Comparative Advantage (RCA). The TFP analysis of this study is based on the non-parametric approach of DEA and Malmquist index which allows for the decomposition of TFP into three constituent elements for different sources of productivity growth: technological progress (TECHCH), scale efficiency change (SECH), and pure efficiency change (PECH). Data were collected from the Statistical Centre of Iran and they were annual data of 22 four-digit industrial groups (ISIC Rev. 3) which made up food manufacturing industry in the country from 1997 to 2002. The RCA analysis, on the other hand, seeks to identify which industries in the country have a comparative advantage status in producing food commodities in the world market. The analysis was based on annual data from 1999 to 2003, published by the UN COMTRADE.

The results of this study reveal several important findings. First of all, there was an improvement in the food manufacturing industry’s TFP growth. The highest and lowest TFPCH were 10.7 and 5.6 per cents, respectively, with the former being for the medium-sized firms in the private sector and the latter being for the medium-sized firms in the public sector. Secondly, most of the productivity growth measured for the food manufacturing industry as a whole was due to TECHCH whereas EFFCH was not found to exert a positive effect on productivity growth. On average, technical efficiency
scores were estimated to be 0.94 and 0.92 for the large and medium enterprises, respectively. This implies that technical inefficiency could be reduced by 6 and 8 per cents through improvement in scale efficiency and elimination of pure technical inefficiencies, respectively. Thirdly, food manufacturing firms in the country had been scale inefficient due to slacks in production labour, fixed capital and energy use. To overcome this problem, there is a need to work on the optimal levels of input mix and to rationalize the process of acquiring and usage of inputs.

Meanwhile, it was found that the growth in the number of food sub-sectors with an RCA index above 100 had been stagnant over the study period. In addition, food manufacturing industry as a whole had a comparative advantage in less than 20 per cent of all of its exported products in 2000 through 2003. Despite the advantages of abundant raw materials and cheap labour in the country, many food firms had not been able to expand and increase their market shares. This calls for the adoption of high-tech machine and technologies and the development of infrastructure to improve their competitiveness. Certain individual groups of commodities however, featured a very high comparative advantage status. These groups of commodities were Caviar and caviar substitutes, Frozen shrimps and prawns, Cucumbers, Apple juice and juice of other single fruit, Sunflower seed and safflower oil, Prepared cereals in grain form, Black tea, Sweet biscuits, Waffles, and wafers, Vegetable fats, and Inactive yeasts.
As a conclusion, policy makers of the country should design a proper policy framework in addressing the identified problems of the industry. On the other hand, food manufacturers should find ways to improve the capacity utilization of factor inputs especially for raw material, capital and energy to avoid unnecessary wastage. They should also adopt proper methods of sourcing quality raw material for food production to shorten the supply chain which can reduce their production costs. Finally, Iran will be able to sustain or enhance its share in world’s manufacturing trade, however, this will depend on the capacity of its food manufacturing sector to adjust itself to the changing of world composition trade and to compete on the basis of both price as well as non-price factors.

**Keywords:** Competitiveness, Total Factor Productivity (TFP), Data Envelopment Analysis (DEA), Revealed Comparative Advantage (RCA), Food Manufacturing Industry, Iran

Kajian ini menghasilkan beberapa penemuan penting. Pertama sekali, analisis TFP menunjukkan bahawa secara keseluruhannya, terdapat pertumbuhan jumlah produktiviti dalam industri yang dikaji. Pertumbuhan produktiviti paling besar dan paling kecil adalah sebanyak 10.7 dan 5.6 peratus setahun, bagi sektor swasta dan awam, masing – masing. Kedua – dua pertumbuhan ini dicapai oleh industri bersaiz sederhana. Penemuan
kedua dalam kajian ini adalah pertumbuhan produktiviti yang dicapai oleh industri yang dikaji hanya berpuncak daripada peningkatan dalam penggunaan teknologi manakala kecekapan disebabkan faktor skala dan pengurusan tidak menyumbang kepada pertumbuhan ini. Secara purata, indeks – indeks bagi mengukur tahap kecekapan ini adalah sebanyak 0.94 bagi industri bersaiz besar dan 0.92 bagi industri bersaiz sederhana. Ini menunjukkan tahap kecekapan industri – industri ini telah turun sebanyak 6 dan 8 peratus masing – masing. Ketiga, industri – industri pemprosesan makanan di negara ini tidak beroperasi secara cekap pada skala yang betul.

Didapati bahawa terdapat pembaziran dari segi penggunaan buruh, modal tetap, dan sumber tenaga yang kesemuanya menyumbang kepada ketidakcekapan industri ini. Masalah – masalah ini perlu diatasi dengan segera dan salah satu daripada cara – caranya adalah dengan menggunakan faktor – faktor pengeluaran ini secara optimum.

Sementara itu, didapati bahawa pertumbuhan dalam bilangan sektor makanan yang mencapai indeks RCA melebihi 100 tidak banyak berubah sepanjang tempoh kajian ini. Tambahan lagi, industri pemprosesan makanan hanya memiliki kelebihan (indeks RCA mengatasi 100) dalam kurang daripada 20 peratus jenis komoditi makanan yang dieksport pada tahun 2000 hingga 2003. Walaupun memiliki banyak bahan mentah dan tenaga buruh yang ramai, kebanyakan firma dalam industri ini gagal memanfaatkan kelebihan ini untuk meningkatkan jumlah pengeluaran dan eksport. Oleh itu, penggunaan alat – alat atau teknologi moden perlu dipertingkatkan dan pelbagai prasarana penting perlu dimajukan bagi
meningkatkan daya saing mereka di peringkat antarabangsa. Sungguhpun begitu, masih terdapat beberapa kumpulan makanan yang berjaya menguasai pasaran antarabangsa. Kumpulan – kumpulan berkenaan adalah Kaviar dan pengganti kaviar; Udang yang disejukbekukan; Pelbagai jenis mentimun; Jus epal dan jus buah – buahan lain; Biji matahari dan minyak kesumba; Bijirin dalam bentuk biji – bijian; Teh hitam; Biskut manis, waffle, dan biskut wafer; Lelemak sayuran; serta Ragi tak aktif.


Kata kunci: Daya saing, Jumlah Faktor Produktiviti (TFP), Analisis Kandung Data (DEA), Kebaikan Bandingan Tersurat (RCA), Industri Pemprosesan Makanan, Iran
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I certify that an Examination Committee met on -------------- to conduct the final examination of Majid Sanæi Torghabeh on his Doctor Philosophy thesis entitled “Productivity and Competitiveness of Food Manufacturing Industry in Iran” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulation 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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Date: 11 September 2008
DECLARATION

I declare that this thesis is my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at UPM or other institutions.

_________________________
MAJID SANAEI TORGHABEH

Date: 20 August 2008
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