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# Productivity growth and learning potentials of Thai industry

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## Abstract

Enhancing technical potentials in enterprises has become an important issue in various dimensions found in the literature. The learning-by-doing alone will not keep technology dependency firms competitive in the global economy. This article presents a new framework of linkages for technology concentration industries classified under the ISIC category (light and heavy industry) and learning potentials of Thai industry under a platform of technology acquisition. A measure of productivity growth is to see the impetus for technology transfer whereas the learning curve estimation technique is a tool to measure the learning potentials of Thai industry. This is a try to measure the competence progression emerged from technical productivity and the collective learning across boundaries of Thai industry. This aims at exploring a relationship between technical productivity and learning potentials of Thai industry. The article also presents clusters of industries with good learning potentials, and learning effect that implies the marginal return to resources allocated for productivity improvement of which it varies across industries. © 2002 Elsevier Science Inc. All rights reserved.

*Keywords:* Productivity growth; Learning potentials; Thai industry

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## 1. Introduction

A major driving force to national growth in most of developing countries has been recognized as technology input through its means of transfer or acquisition and this has been

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accepted as a dependant for success in developing countries in recent years. Thailand, as the fastest growing economy in the past has relied heavily on inputs from imports and heavy investments in machinery through technology transfer which have caused high current account deficit for years [1]. To enhance the technical productivity with learning improvements in an enterprise, Total Factor Productivity (TFP) and the learning potentials are inevitably applied as a mean to investigate and understand mechanisms of recipient enterprises as a result of technology acquisition. This constitutes a dynamic element of technological capabilities for firms in the long run development.

## 2. Literature review

During the past three decades, Thai industrial sector has been vastly developed, changing from being resource and labor intensive base to being one that makes use of more capital and technology. The industrial sector's contribution to GDP jumped from an average of 15.0 per cent during the First National Economic and Social Development Plan to 30.5 per cent in the Seventh Plan. Based on the framework of the study, we segregate the analytical framework in this section into 2 parts: TFP measurement and the learning curves estimation.

### 2.1. Total factor productivity (*tfp*)

TFP is widely used in different methodology and framework of analysis but mostly based on production theory introduced by Solow [2] and Denison [3]. Several definitions are given by various authors and defined as output per unit of all inputs combined or a difference between output growth and the sum of all inputs growth weighted by output elasticity in respect to each input [4–6]. In some literature, TFP is called the index of technical progress, technical change or the advance of knowledge. TFP is recognized as the major contribution to output growth while TFP growth, a neoclassic production function, is an important factor explaining output growth based on production analysis introduced by the pioneer work of Solow [7]. Theoretically, TFP can be measured by the rate of change in output and various input factors weighted by respective input share [8,9]. Research found on Thai TFP for has been conducted over different periods of time and under different aspects [10–14]. Findings of Brimble [11] on Technology strategy and policy for industrial competitiveness of Thailand show some evidence that Thailand is not taking much advantage of imported foreign technology embodied in capital goods as have the newly industrialized economies (NIEs) of East Asia (Hong Kong, Korea, Singapore, and Taiwan). The relatively low level of technological effort in private sector in Thailand in the past is due primarily to the lack of strong competitive pressure to improve technology and efficiency. A further discussion on sources of changes in the international competitiveness of Thai manufacturing industries is found generating from international price changes, changes in production techniques and changes in TFP [10].

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