

## Executive Summary

*Logistics Costs to Gross Domestic Product (GDP)* is a key indicator for measuring a country's capability in terms of managing its logistics system to an international standard. Such an indicator has been widely adopted by many countries to reflect the overall effectiveness of its logistics management. The Office of the National Economic and Social Development Board (NESDB) recognized the significance for Thailand of such an indicator in order to assess its performance in terms of logistics management by benchmarking with other countries. As part of a continuous effort since 2003, the NESDB have initiated many study projects to develop a model to quantify Thailand's logistics costs. The results are officially published, for the first time, in this report.

There are several important terms and definitions to be noted, in order to measure the costs associated with all logistical activities as compared to GDP for Thailand.

**Logistics management** is the process of planning, implementing and controlling the efficient and effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements.<sup>1/</sup>

**Logistics Cost** is the total cost borne by entrepreneurs in exploiting the logistics services in order to serve their economic activities. Normally, it comprises three main components as follows:

1. **Transportation Costs:** These include carrier's charges for all modes as well as transport-supporting costs. In other words, these are the total expenses of entrepreneurs in transporting goods from a production base to a point of destination or to the final consumer. The measure of logistics costs as discussed in this report is limited to *freight transport* which excludes passenger transport. Freight transport costs include road transport, airfreight transport, water transport, rail transport, pipeline transport, transport-related services as well as parcel post.
2. **Inventory Holding Costs:** These consist of two sub-components - Inventory Carrying Costs and Warehousing Costs. The inventory carrying costs mean the opportunity cost of money that is foregone by holding stocks of goods as an inventory. For measuring this cost, we use an Average Minimum Lending Rate (MLR) as a proxy for such an opportunity cost. According to interviews with Thai entrepreneurs and experts on Thailand's economic structure this currently reflects the actual cost to Thai businesses in maintaining an inventory. As is widely known, the Thai economy still relies mainly on the commercial banking system as a financial intermediary, especially in providing financial capital for businesses of

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<sup>1/</sup>Defined by the Council of Supply Chain Management Professionals (CSCMP), previously known as the Council of Logistics Management

all sizes in all sectors. This calculation differs from the U.S. method where the average interest rate of AA bonds is used.

With regard to warehousing costs, they include all costs incurred from the service activities within warehouses, the goods storage activities, and the site selection of factories and warehouses.

3. **Logistics Administration Costs:** These include the costs in terms of order processing, procurement, materials handling, demand forecasting, parts and service support, customer services, logistics communication, and reverse logistics.<sup>2/</sup> Generally, the logistics administration cost is difficult to measure because it is not explicitly categorized in the traditional accounting practices currently used in many countries. Therefore, the logistics administration costs for Thailand is set at ten percent of the sum of the inventory holding costs and transportation costs, in line with the methodology that has been employed by the U.S. CASS Method (1900-1999). Although the U.S. reduced the factor for imputation to four percent in 2000 because most entrepreneurs in that country have adopted IT in managing the logistics process more effectively, Thailand still keeps the rate at ten percent due to a low level of IT application on average as compared to the U.S.

**Gross Domestic Products (GDP)** This is the total value of all final goods and services produced domestically during a certain period, regardless of where the resources for production belong. In other words, the local resources that are used for production in other countries will not be included in the country's GDP. The GDP is usually measured both at current prices and at constant prices. The former method uses the average price of goods and services prevailing in the market in a current year, whereas the latter method values goods and services by using constant prices measured on a base year. *The calculation of logistics costs to GDP uses the current price method.*

**Logistics cost as a percentage of GDP** This means that the total logistics final demand consumes that percentage of goods and services relative to GDP in the year under consideration. It is not a measure of how much the sector produces or contributes to GDP.<sup>3/</sup>

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<sup>2/</sup> The Office of the National Economic and Social Development Board, The Inception Report of the Competitiveness Enhancement on Logistics Industry of Thailand: phase II, August 2008

<sup>3/</sup> Federal Highway Administration Department of Transportation (2005)

## **Logistics Costs of Thailand in 2007**

### *Overview*

The logistics costs of Thailand in 2007 were valued at 1.60 trillion Baht, or 18.9 percent of GDP. The figure comprised transport cost of 736.2 billion Baht (8.7 percent of GDP), inventory holding cost of 721.8 billion Baht (8.5 percent of GDP) and logistics administration cost of 145.8 billion Baht (1.7 percent of GDP)

### *Components*

Of the total logistics costs for Thailand, freight transport costs accounted for the largest portion with 45.9 percent, while 45 percent was due to inventory holding costs and the remaining 9.1 percent was the result of administration costs.

Road transport dominated the freight transport system, accounting for nearly half (49.6 percent) of the total transport costs, followed by the cost of transport-supporting activities including the third-party logistics services (22.6 percent) and the cost of using water transport (21.7 percent). The remaining 6.1 percent of the total transport costs included the cost of airfreight transport, transport for parcel post, pipeline transport and rail transport.

With regard to the inventory holding costs, nearly all such cost was due to inventory carrying costs (99.2 percent) with only 0.8 percent being due to warehousing costs.

## **Growth of Total Logistics Costs for Thailand (1999-2007)**

Over the past nine years, logistics costs have grown at an average rate of 7.6 percent per annum (Compound Annual Growth Rate – CAGR), rising from 893.2 billion Baht in 1999 to 1.60 trillion Baht in 2007. In terms of individual cost components, inventory holding costs represented the highest growth at 8.9 percent per annum on average, increasing from 364.1 billion Baht in 1999 to 721.8 billion Baht in 2007. During the same period, administration costs had an average annual growth of 7.6 percent, equivalent to the overall rate, whereas transport costs rose by an average rate of 6.4 percent, less than the overall growth rate.

## **Overall Trend of Logistics Costs to GDP for Thailand (1999-2007)**

The logistics costs to GDP for Thailand during the period 1999-2007 has ranged from 17 to 20 percent and illustrated graphically by a "v" shape. The fact that fuel prices have remained constant in terms of growth rates while interest rates have moved downward during the period 2001-2004 has resulted in a constant growth of logistics costs albeit less than the rate of overall economic growth over the same period. Hence, the logistics cost relative to GDP has fallen continuously. However, during the period 2005-2007, the logistics cost to GDP had risen again, although it has remained lower than during the period 1999-2000. This is due to such factors as rapidly surging oil prices, rising interest rates and a conservative monetary policy during this period.

**Logistics Costs to GDP (1999-2007)**

Cost Component	Unit: Percentage to GDP								
	1999	2000	2001	2002	2003	2004	2005	2006	2007p
Transport Cost	9.7	10.1	9.9	8.8	8.4	8.0	8.5	8.8	8.7
Inventory Holding Cost	7.9	8.1	7.9	7.7	7.7	7.7	8.1	8.6	8.5
Logistics Administration Cost	1.8	1.8	1.8	1.6	1.6	1.6	1.7	1.7	1.7
<b>Total Logistics Cost</b>	<b>19.4</b>	<b>20.0</b>	<b>19.6</b>	<b>18.1</b>	<b>17.7</b>	<b>17.3</b>	<b>18.3</b>	<b>19.1</b>	<b>18.9</b>

It should be noted that an interpretation of changes in the logistics cost to GDP should be undertaken with caution. For example, a reduction in the logistics cost to GDP could be caused by 1) there is a rapid growth in other economic sectors apart from the manufacturing sector that possibly use fewer logistics services in their activities; hence, GDP shows a higher growth than the increase in logistics costs and/or 2) logistics service providers are able to push the logistics cost burden onto the final consumers at a greater rate than it has actually risen. As a result, GDP at current prices will be much increased as a result. Both circumstances could eventually cause a decrease in logistics costs to GDP. Therefore, in order to use this indicator to explain the situation of national logistics costs accurately requires relevant hard and soft information at either macro, sectoral or firm level in order to arrive at any conclusion.

**Recommendation**

Given the comparable size of inventory holding costs and transport costs, the relatively high growth rate of inventory holding costs emphasized *the need for inventory cost reduction as part of the key strategy to enhance the effectiveness of overall logistics system for Thailand*. Such a recommendation corresponds with a general guideline for business management by which the costs can be reduced easily and immediately if inventory is well-managed by the application of the effective logistics management principle for both firm and supply chain levels. Additionally, such a strategy would consume far fewer financial resources than would an attempt to reduce transport costs by investing in various transport infrastructures. However, in order to enable private companies to manage inventory and warehousing effectively, the government is required to develop efficient and reliable transport and logistics system as a pre-requisite.

It is imperative that all public agents and private firms start to keep their logistics-related data in a systematic framework. This data pool will be beneficial for both entrepreneurs and the country in guiding a direction of the logistics development in the future. By this, the NESDB will be a key body to publish *Thailand's Logistics Report* every year.