

# Capital Stock Estimates in Korea

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## 1. Introduction

In economic analyses, capital is the core variable along with labor. Moreover, reliable stock data are needed to calculate capital consumption for the national accounts, and also to prepare the national balance sheets. However, very limited studies on the capital stock have been done in Korea. The first private attempt to estimate capital stock was done by Ki-Choon Han (1970). Since then, several researchers have estimated capital stocks. And yet there is a need for official estimates because those private estimates use different methods according to their own interests and data availability. For this reason, the KNSO has set up a plan to estimate the capital stocks and release official time-series data. This paper will review various methods to estimate capital stocks suggested by OECD and other organizations, and discuss the process of applying those methods to our circumstance and compare the estimates.

## 2. Methodology

Capital stock estimates can be derived either by “direct method” using survey results relating to the stock or by “indirect method” using annual investment data.

### 2.1. Direct method

#### - Statistical Surveys

This method is to make an inventory of all the objects considered to be capital assets through physical inspection by enumerators.

#### - Other direct methods

Published company accounts, balance of fixed assets, administrative records can also be used in certain circumstances.

### 2.2. Indirect method

There are two main alternative methods to establish the level of the capital stock for a benchmark year. These are based either on direct observation, via surveys, balance sheets, insurance and the like, for a benchmark year, or on a depreciation-discounted accumulation of historical investments up to a benchmark year (J.M. Albala-Bertrand, 2001). The latter method is the **perpetual inventory method** while the former method is called the **benchmark-year method**, especially when the survey results on capital stocks are used for a benchmark year. The **polynomial benchmark-year method** is to use two benchmark year stocks and investment data to estimate the capital stock data for the years in between.

### 3. Method used in Korea

Until recently, Korea has conducted decennial national wealth surveys, ending in 1997. However, because of the importance of the national wealth data to an economic analysis, it is necessary to prepare annual data based on the principles of economic theory.

#### - National wealth survey

Korea has conducted four national wealth surveys in 1968, 1977, 1987 and 1997, covering four institutional sectors, *i.e.*, government, corporate business, non-corporate business, and households, and three types of assets, *i.e.*, tangible fixed assets, inventories, and net foreign claims. Since the second survey in 1977, it has been conducted every ten years until 1997.

#### - Capital stock estimates

After the last “National Wealth Survey” in 1997, Korea plans not to repeat the survey and is trying to apply indirect method to estimate the capital stock.

We have examined three methods mentioned above. The **perpetual inventory method**, although most OECD countries use this method to estimate their capital stocks, is not applicable in Korea because of the lack of long time-series investment data. The **polynomial benchmark-year method** is also not desirable because of the negative retirement/depreciation rates. The **benchmark-year method** also has problems with the estimates of the years when the survey was done are not accordant with the survey results.

### REFERENCE

OECD, *Manual on capital stock statistics*, OECD, Paris, 2000.

OECD, *Methods used by OECD countries to measure stocks of fixed capital*, OECD, Paris, 1993.

EUTOSTAT, *Capital stock data for the European union methodology*, EUROSTAT, Luxembourg, 1998.

J.M.Albala-Bertrand, *A Benchmark Estimate for the Capital Stock / An Optimal Consistency Method*, University of London, London, 2001.

BEA, *Fixed Reproducible Tangible Wealth in the United States*, BEA, Washington DC., 1999.

Hak K. Pyo, *Estimate of fixed reproducible tangible assets in the republic of Korea 1953-1996*, Korea Development Institute, Seoul, 1998.

Jun Young Kim, *Estimation of total fixed capital stock private fixed capital stock and government fixed capital stock in Korea*, Korean Economic Research Institute, Seoul, 1996.

Hun-Koo Ha & Cho Hee-Deok, *Estimation of gross capital stock in transport sector of Korea*, the Korea Transport Institute, Seoul, 2000.

### RESUME

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