

Comparison of Natural Prices and Market Prices: Case of Japan for 1951-2000

Topic: Prices and inflation

Author: Akiko NAKAJIMA

Natural prices are defined as prices that are relative to total labour requirements to produce the respective commodity or output of that respective sector. According to this definition, natural prices equals to market prices at two conditions, i.e., when profit rates are zero for all sectors or when organic composition of capital is same in all sectors. Both of these conditions are not realistic to emerge.

David Ricardo thought that market prices fluctuate around natural prices and eventually market prices converge towards natural prices. If market prices are higher than natural prices in a sector, then productive factors shift to that sector and supply will increase. Given the same level of demand, as supply exceeds demand, price starts to fall until the level of natural prices. Vice versa. Karl Marx thought that profit rates eventually fall towards zero, and in this case, market prices will become equal to natural prices. This is criticized by Shumpeter as new innovative activity will emerge and stop profit rates to fall. Another criticism is given by Okishio, who showed that capital output ratio (capital coefficient) do not have tendency to increase to infinity.

There are three sets of labour statistics counting total labour engaged in production in various sectors, namely, Employment table published as a supplement table of input output tables, RIETE (Research Institute affiliated to the Ministry of Economics, Trade and Industry) data, and data obtainable from Nihon Toukei Nenkan (Japan Statistics Almanac published by the Statistics Office of Japan affiliated to the Prime Minister's Office). The Employment table counts family labour as well as part-time labour, while the last statistics measure core labour for agricultural sector. The levels of natural prices are very sensitive to the labour data, on the definition of direct labour.

In this presentation, capital cost which is taken as depreciation cost of capital are proportioned to the original sector producing that capital goods. For this treatment, capital formation table attached to the input output tables are used. Results with this careful treatment of capital cost (depreciation cost), basic findings do not much differ from my first paper presented at the Turkey meeting.

Japanese GDP is about 500 trillion yen in year 2000. Gross domestic investment which includes fixed capital formation (both public and private) and changes of stocks is 130.3 trillion yen. Public gross fixed capital formation is 35.8 trillion yen. Private sector gross fixed investment is 94.2 trillion yen. On the other hand, depreciation allowance of all private sectors amounts to 93.4 trillion yen. According to these numbers, we understand that new investment is only 0.8 trillion yen. Depreciation allowances are tax free. Anyway I hope reader of this abstract will understand the size of depreciation allowance in Japanese economy.

Brief findings may be summarized as follow.

- (1) Generally and especially for industries such as metal processing, machinery, manufactured and old (traditional) service sectors, market prices do have tendency to move towards natural prices. Japanese economy is facing zero interest rates these years. This must be the reason behind such tendency.
- (2) When profit rates are increasing, market prices do have tendency to diverge from natural prices. New industries have tendency to diverge from natural prices, this is especially apparent for new service sector such as communication and business services.
- (3) Times of high economic growth are times when average profit rates are high, according to simple macro general equilibrium. Periods of high economic growth (1970s for the case of Japan) are periods that market prices diverge from natural prices. This is verified by taking variance of the difference of market price from natural price.