A SHORT EXPOSÉ ON THE PERPETUAL INVENTORY METHOD (PIM)

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General observations

- PIM is the usual method applied in National Accounts to compile estimates of capital stock and depreciation
- Very similar to “current replacement cost” method, recommended by IAS/IPSAS and applied in business accounting
- Basically, capital stock is measured by summing up past purchases (less disposals) of capital goods, or investments
- Net capital stock, i.e. stock adjusted for depreciation =
  - market prices in the second hand market (if existent)
  - Net Present Value of future benefits derived from the capital good

A very simple case

- Investments in road: 200
- Service life: 50 year
- Scrap value after end service life: 0
- Proportional depreciation over the service life: 2% each year => annual depreciation of 4
- Capital stock after …
  - 1 year: 196
  - 2 years: 192
  - …
  - 50 years: 0
- Total net capital stock: summing up past investments after depreciation

However …

- Prices? => “inflate” past investments using price indices of newly constructed investment goods
- Depreciation function? => annual benefits derived from capital good may decrease over time => use of alternative “age-efficiency” or “age-price” profiles
- Retirement patterns? => not all capital goods are discarded exactly at the end of the assumed service life => use of a certain distribution functions
- Note: Intertwinement of new investments and investments in major repairs and maintenance
- Lots of mathematics, but that’s not a major issue, it’s about the availability of relevant data

Data requirements

- Sufficiently long time series of purchases (less disposals)
- Sufficiently long time series of price indices
- A benchmark estimate for certain year in the past
- Service lives by type of assets
- Assumptions on the depreciation function and the retirement pattern
- In National Accounts, these estimates are actually made, but …
- … probably not (exactly) with the required details to extract capital stocks for transport infrastructure

Usefulness for policy analysis?

- Analysis of development over time of aggregate and more detailed stocks of transport infrastructure, in volume and value terms (especially when supplementing it with physical data)
- Analysis of productivity and efficiency, when comparing (capital services derived from) capital stocks to output indicators
- Accrual cost accounting for infrastructure
- Analysis of future financing needs related to infrastructure
- Etc.

Thank you for your attention!