

TOTAL FACTOR PRODUCTIVITY IMPLEMENTATION: A REGULATORY PERSPECTIVE

PRESENTATION TO THE UTILITY REGULATORS'
FORUM WORKSHOP ON INCENTIVE REGULATION
AND ITS IMPLEMENTATION

09 MAY 2003

ROB ALBON

ACCC

OVERVIEW OF PRESENTATION

- Measurement of TFP is an increasingly important regulatory tool.
- Regulators often need to know where a utility is with respect to “best practice”.
- They also need to know how TFP is changing over time.
- Both kinds of TFP measurement have been practised in Australia over a long period of time.

WHY DO REGULATORS MEASURE TFP?

To make international comparisons of productivity performance (benchmarking).

To determine how a utility's productivity is increasing over time to assess overall cost reductions for:

- determining “X” in “CPI minus X” regulatory arrangements
- assessing whether price reductions reflect changes in costs.

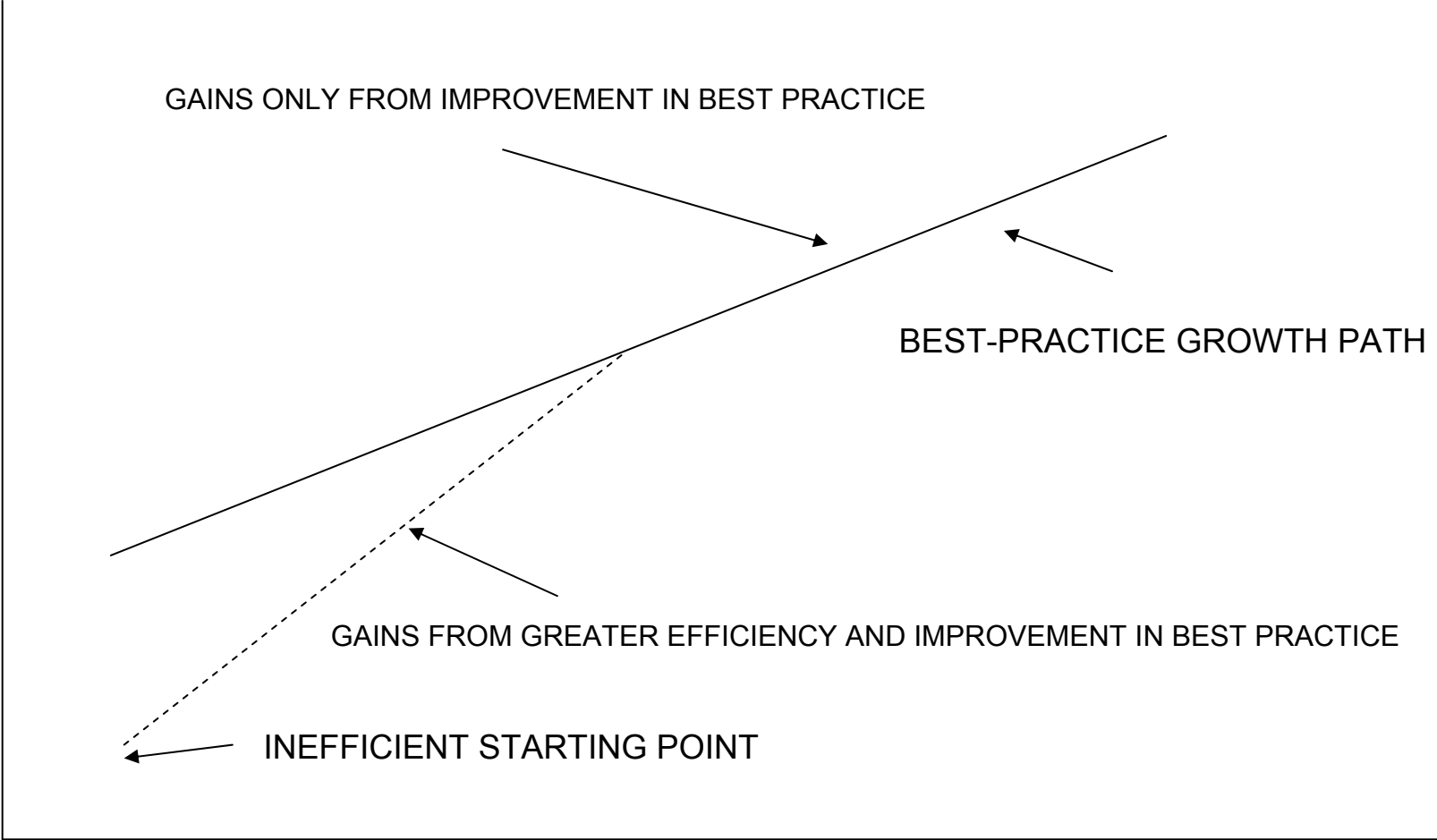
KNOWING WHERE YOU ARE

- It is possible to use techniques like Data Envelopment Analysis (DEA) to establish a best-practice efficiency frontier (B-PEF).
- IPART commissioned considerable work on these techniques in 1999.
- Where a utility is below best-practice it can improve efficiency by better organisation, removing superfluous staff and equipment, contracting out, etc.

SOURCES OF TFP GROWTH

- Once on the B-PEF, the **only** way to increase TFP is to adopt new technologies.
- Whether on the B-PEF or not, TFP can be increased by adopting new technologies, often embodied in equipment.
- These ideas can be summed up in a graph:

TFP



BEST-PRACTICE GROWTH PATH

GAINS FROM GREATER EFFICIENCY AND IMPROVEMENT IN BEST PRACTICE

INEFFICIENT STARTING POINT

TIME

AUSTRALIAN APPLICATIONS

- TFP measurement has a long history in Australia dating back to the late 1970s.
- Australian economists and agencies have been amongst the world leaders in developing techniques and application of TFP measurement.

EARLY WORK ON AIRLINES

- Early work was done on airlines comparing the relative efficiency of Australian and US airlines.
- An influential paper by Mackay was published in 1979 as an appendix in the **Domestic Air Transport Policy Review**.
- Michael Kirby also published important work comparing the Australian domestic carriers with a number of US carriers, revealing a large gap between them.

MEASURING TFP GROWTH IN AUSTRALIAN TELECOMMUNICATIONS (1)

- Since the late 1980s there have been studies of TFP change in telecommunications, especially as a basis for determining “X” in “CPI minus X” retail price control regulation.
- The first of these was by the Industries Assistance Commission (“Estimating Total Factor Productivity Movements in Telecom Australia”, Technical Paper, March 1989.)

MEASURING TFP GROWTH IN AUSTRALIAN TELECOMMUNICATIONS (2)

- Most recently the ACCC conducted studies of TFP growth as part of its *Review of Retail Price Controls* for the Minister in 2001.
- The ACCC initially studied whole-of-Telstra TFP change and then applied corrections to arrive at a figure for the TFP growth applicable only to the fixed-line network (the PSTN).
- This initial study used physical measures of output – minutes of use, numbers of lines, etc.

MEASURING TFP GROWTH IN AUSTRALIAN TELECOMMUNICATIONS (3)

- Following concerns with an approach based on the whole of Telstra, the ACCC then attempted to measure and forecast TFP growth specifically for the PSTN.
- The output measure was based on PSTN revenue deflated by CPI minus X. This can be shown to be equivalent to applying a Fisher quantity index and therefore yields a true measure of real output change .
- Inputs are measured by appropriately adjusted data for different categories of cost from the regulatory accounts.

INTERNATIONAL BENCHMARKING STUDIES

- International benchmarking studies in electricity, gas, telecommunications, ports, etc. were carried out in the early 1990s.
- This work was done by the former Bureau of Industry Economics (BIE).
- The Productivity Commission continued with some benchmarking work.

TFP IN ELECTRICITY (1)

- Early work on TFP in electricity was done by the BIE in the early 1990s as part of its benchmarking studies.
- Work was also done on electricity TFP by state by Swan Consultants and Denis Lawrence in the early to mid-1990s.

TFP IN ELECTRICITY (2)

- A paper by John Zeitsch, Denis Lawrence and John Salerian* reports on some of this work on electricity.
- It also provides a useful summary of TFP techniques.

* “Comparing Like with Like in Productivity Studies: Apples, Oranges and Electricity”, **Economic Record**, 70, 209, June 1994, 162-70.

TFP STUDIES OF THE POSTAL INDUSTRY

- There have been several studies of TFP change in the postal industry.
- In 2002 the ACCC commissioned a study by Denis Lawrence and John Zeitsch (**Australia Post – Past and Forecast Productivity Growth**).
- The aim was to guide its decision making on the PSA inquiry into Australia Post's standard prices.

CONCLUDING OBSERVATIONS (1)

- TFP measurement is an important regulatory tool.
- It has a history of regulatory use in Australia going back at least twenty-five years.
- Australian economists have been at the forefront of developing and applying TFP techniques.

CONCLUDING OBSERVATIONS (2)

Its main uses have been:

- Assessing performance against world's best practice.
- Contributing to the determination of “X” in “CPI minus X” regulatory schemes.
- Helping to identify the extent to which cost reductions are being passed on in prices.