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Session on adjusting for quality change

26th Voorburg Group Meeting
Newport, South Wales, UK

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Goal of session

- Provide a better understanding of SNA requirements and the need for quality adjusted price indexes

- Address outstanding questions regarding the treatment of quality change for Air Transport and Advertising and provide guidance with respect to quality adjustment

- Identify issues for further discussion

Importance of QA

- Measuring <u>pure</u> price change requires that the characteristics of the products or services being priced remain constant over the measurement period.

- Implicit and explicit methods are documented in the literature but these methods are difficult to apply in practice (particularly for services)

Importance of QA – SNA view

- The changes over time in the current values of flows of goods and services and of many kinds of assets can be decomposed into changes in the prices of these goods and services or assets and changes in their volumes.

  - $V = P * Q$, where P is the price per unit of quantity and Q is the number of units of quantity

- Each change in the value of a flow (V) must be attributed either to a change in price or to a change in volume or both

- In principal, the price component should include only changes in price. All other changes should be reflected in changes in volumes.

  - Changes in quality over time need to be recorded as changes in volumes and not as changes in prices

- Changes in volume can be broken down into 3 components:

  - Changes due to changes in the quantity of products
  - Changes due to changes in the characteristics of the products
  - Changes due to compositional changes in the aggregate

Handbook on price and volume measures in National Accounts, p.3-4

Background
Oslo 2009

- **Revisited sector papers**
  - Air Transportation, Advertising and Market Research, Rental and Leasing

- **Questions related to quality change**
  - When is quality adjustment appropriate? When does quality change take place?
  - Should the value of the rented asset be quality adjusted?
  - Is audience size a measure of quality for advertising?
  - What quality adjustment techniques are available for air transport?

Background
Vienna (2010)

- Quality adjustment session to address questions raised in Oslo

- 3 papers presented

  - Adjusting for Quality Change: ISIC 51 Air Transport (Puchter, Jenkins)

  - Measuring Quality Change in Producer Price Surveys for Rental and Leasing Services (Gallais, Loranger)

  - Quality Adjustment on ISIC 7310 Advertising (Pegler, von Borstel)

Background
Vienna (2010)

- **Conclusions from Vienna**

  - Quality change for Rental and Leasing Services

    - Defining rental service under the "gross approach" as a bundle that includes the rental service and the good being rented and quality adjusting both elements of the bundle is conceptually consistent with the SNA requirements.

  - Quality change for Advertising services/Air transport

    - More work required to address questions related to volume measures in the SNA, production function vs. consumer utility, product definition (advertising)

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Session plan

- Presentation on quality change in Air Transport
  - "Revisited paper – Adjusting for Quality Change, ISIC 51, Air Transport", Chris Jenkins (UK), Christian Puchter (Austria)
  - Discussant remarks, Michael Morgan, Australia
- Presentation on quality change in Advertising
  - Quality Adjustment – ISIC 7310 – Advertising, Chris Jenkins (UK), Johanna von Borstel (Germany)
  - Discussant remarks, André Loranger (Canada)
- Session wrap up

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Discussant remarks:
Quality adjustment for advertising

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Key recommendations from paper

- Adjust for audience size when media space characteristics play an important role in industry's business models

    - Does audience size affect production of the service?

        - Ex. 3.3.2, don't quality adjust because achieved audience size not part of the production function

        - Ex. 3.3.3, pricing mechanism is based on achieved audience and price per achieved viewer is used to quality adjust the index

- Discounts for lower audience size should be taken into account in measuring actual fees received for the provision of the service

SNA revisited

- "Changes in quality over time need to be recorded as changes in volume and not as changes in price. Compositional changes in a transaction flow, resulting from a shift from or to a higher quality products need also to be recorded as changes in volume".

  Handbook on price and volume measures in National Accounts, p. 4.

- "It is important however to take into account changes in the number of people that see the advert. An advert in a national newspaper (large circulation) is a higher quality product than an advert in a local newspaper (small circulation)."

  Handbook on price and volume measures in National Accounts, p. 109.

- Increases in audience size should be considered as a change in quality of the product

SNA revisited

- "For a consumer, the quality of a product is essentially linked to the utility he or she gets out of it."
- According to economic theory, in a situation of perfect competition the market price of a product will reflect both the purchaser's preferences and producer's production costs.
- The difference in price that exists between the two products at the same time can be interpreted as the value that consumers attach to the quality differences between the two products.

Handbook on price and volume measures in National Accounts, p. 18.

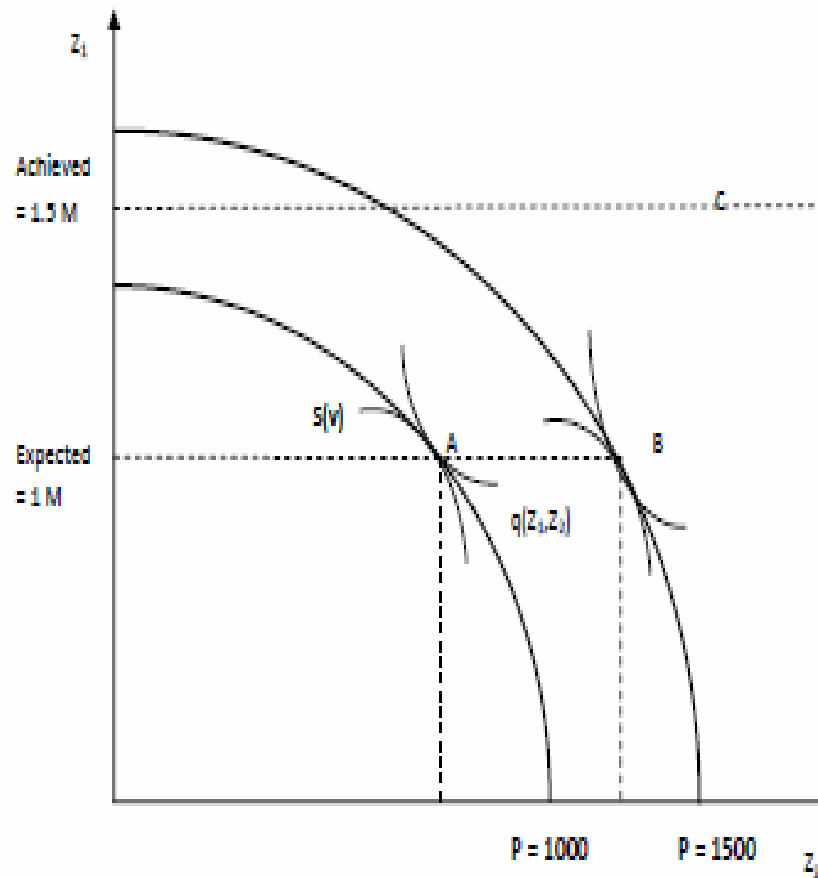- Consumer utility matters

Prod. function vs. utility function
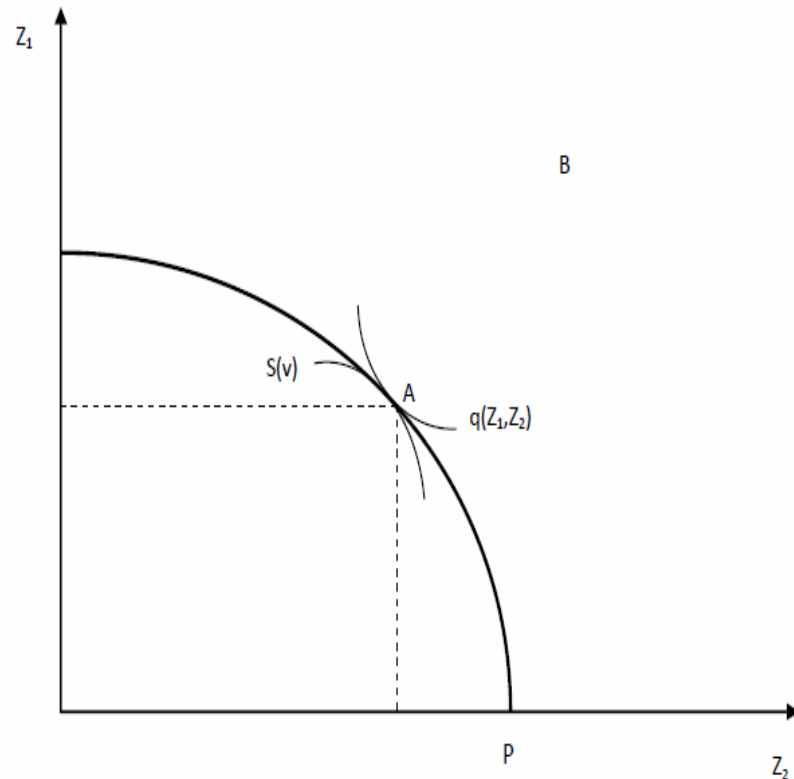
- P is surface that traces out all combinations of 2 characteristics Z_1 and Z_2

- q is indifference curve that maps out all combinations of Z_1 and Z_2 that the consumer is indifferent against purchasing

- S is production function (combination of inputs and technology

- Service delivery occurs at A, the intersection of the optimal production and utility at a given price

Prod. function vs. utility function
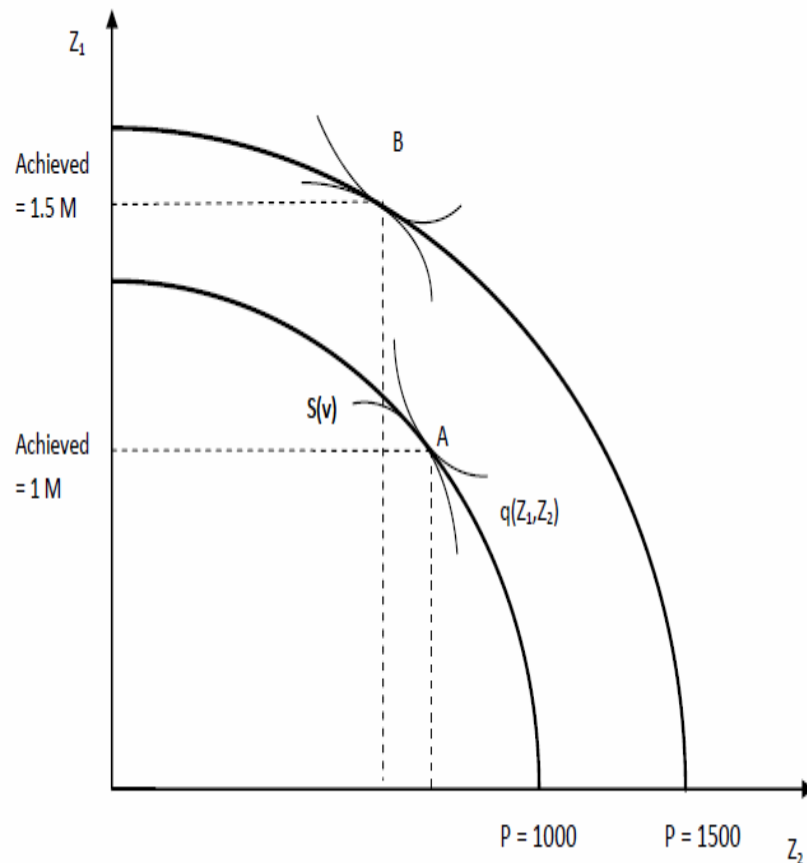## Example 3.3.2 "Expected Audience"

- In Q1,
  - P = 1000
  - Expected audience = 1 M
- In Q2,
  - P = 1500,
  - Expected Audience = 1 M
- P = f(Expected Audience)
- Achieved Audience does not factor into production or consumption decision, although it may lead to greater consumer utility
- Don't adjust for audience size, pure price effect

Prod. function vs. utility function
Example 3.3.3 "Achieved Audience"

- In Q1,
  - P = 1000,
  - Achieved Audience = 1 M,
  - $P_{perAchievedViewer} = 0.001$
- In Q2,
  - P = 1500,
  - Achieved Audience = 1.5 M
  - $P_{perAchievedViewer} = 0.001$
- P = f(Achieved Audience)
- Achieved Audience is a price determining characteristic, therefore must adjust for quality

Back to the SNA
Treatment of "free products"

- Free product are products provided without charge to the user. For example, free newspapers funded by advertising revenues.
- "In measuring prices and volumes of free products it is important to ensure that these improvements in quantity and quality are reflected if the volumes are to be correctly measured."
- "The number of readers could be used as an indication of the quality of the service provided."

  Handbook on price and volume measures in National Accounts, p. 36.

- In example 3.3.2, what if the difference between "Achieved" audience size and "Expected" audience size is considered the "free good".
- SNA suggests that quality adjustments should be considered

To quality adjust or not?

- SNA suggest that in all cases we should adjust for audience size

- Need to consider other factors:
  - Are all audiences equal? No.
    - Advertising for meat products to a larger audience of vegetarians won't necessarily generate sales. Is this a change in quality?
  - What matters to consumer of advertising is expected sales not audience size (although there is probably a correlation)

To quality adjust or not?

- Other practical considerations

  - Are measures of achieved audience size for each advertising contract being priced available for use in the quality adjustment process (timeliness)? What is the response burden for obtaining this information. What is the quality of the audience size data?
  - Need to careful not to "over-adjust" for quality based on weak data as this will also create bias in the indexes.

To quality adjust or not?

- Although SNA suggests adjustment for audience size in all cases, it may not be appropriate in all cases,

- We need to come up with practical solutions that are implementable.

- Linking audience size to the production function of the firm and its pricing mechanisms as suggested in the paper makes sense.

Session wrap up

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