

# **ITU Workshop on “Apportionment of Revenues and International Internet Connectivity”**

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## **Review of the Application of the Concept of Network Externalities in the Telecommunications / ICT Industry**

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# Agenda

- Introduction
- Overview of the NE Concept
- Positive effects
- Negative Effects
- Convergence of Telecom services and NE
- Economic impact of NE
- Private and Public solutions to Externalities
- Mechanism to Harmonize NE world wide
- Development of Annex 1 to Recommendation D156 on NE
- Conclusions and Recommendations

# Introduction

- The subject of ordinary and Network externalities began around 1950s.
- Gained popularity in economic and legal literature since 1980,s.
- The Concept is Generally recognized in theory.
- It has negative and positive effects
- Capturing it in practical terms is still elusive.

# Overview of the Externalities Concept

- u When a market outcome affects parties other than the buyers and sellers, side-effects are created
- u These effects are called Externalities.
- u Externalities can either be positive or negative.
- u Externalities cause markets outcomes to be inefficient
  - u Incorrect prices and production

# Nature of Externalities

- Arise because there is no market price attached to the activity
- Can be produced by people or firms
- Can be Good (positive) or Bad (negative)
- Public goods are special case
  - Positive externality's full effects are felt by everyone in the economy

# Good and Bad Externalities

- u When the impact on the bystander is adverse, the externality is called a negative externality.
- u When the impact on the bystander is beneficial, the externality is called a positive externality.

# Negative Externalities

When an externality imposes **costs** on third party bystanders, a negative externality exists.

The complete (or social) costs of production are greater than the private cost to producers and consumers.

Pollution is the classical example of Negative externality.

# Network Externalities

- In Economics and Business, a network externality (also called network effect) is the effect that one user of a good or service has on the value of the product to other people.
- Network Externality means that there are benefits if many people join and use a network. The term was coined by Jeff Rohlfs (1974) once at the Bells Labs.
- The classic example is the telephone. The more people own telephones, the more **valuable the telephone is to each owner.**



# Positive and Negative Network Externalities

- The term “network effect” is applied most commonly to positive network externalities as the case of the telephone and online social networks such as Twitter and Facebook.
- Overtime, positive network effects can create a bandwagon effect as the network becomes more valuable as more people join.
- Negative network externalities can also occur, where more users make a product less valuable eg. Network congestion.

# Network Externalities

## ■ The Bandwagon Effect

- This is the desire to be in style, to have a good because almost everyone else has it, or to indulge in a fad.
- This is the major objective of marketing and advertising campaigns (e.g. toys, clothing).

# Network Externalities

## ■ The Snob Effect

- ▶ If the network externality is negative, a **snob effect** exists.
- The **snob effect** refers to the desire to own exclusive or unique goods.
- The quantity demanded of a “snob” good is higher the *fewer* the people who own it.

# Network Externalities in the Telecommunication/ICT Industry

- Telecommunications/ICT industry exhibit externalities. Some examples:-
- Public Switched Telephone Network: - Direct
- ATM networks: indirect
- Networks of users of computers that use same operating system: direct
- Networks of users of Compatible videocassette recorders: direct.

# Sources of Network Externalities

- There are two basic ways in which such Network externalities can occur.
- Direct network externalities exist when an increase in the size of the a network increases the number of others with whom one can “communicate” directly.
- Indirect network externalities exist when an increase in the size of the network expands the range of complementary products available to the members of the network.

# Economic Impact of Externalities

The word “ externalities” in economics refer to costs or benefits that fall outside an activity under consideration.

If all costs and benefits can be charged to the activity that creates them, the market will produce an optimal allocation of resources.

The externalities are considered as one of the types of market failures.

# Economic Impact of NE

- Market “Fail” to Correctly allocate resources
- All relevant costs of production are not accounted for.
- All relevant benefits of consumption are not accounted for.
- When this occurs, prices will either be too high or too low. Moreover, there will be either too much or too little of a particular good produced.

# Market Failure Manifestations

Poor quality product

Inflated prices

Under provision (over provision)

Consumer safety concerns

Poor service (not enough support staff to service demand)



# Private Solutions to Externalities

**Government action is not always needed to solve the problem of externalities.**

# Private Solutions to Externalities

- Why private solutions do not always work
  - ➔ High transaction costs
    - Costs that parties incur in the process of agreeing to and following through on a bargain
  - ➔ Bargaining simply breaks down
  - ➔ Large number of interested parties

# Public Solution to Externalities

- u **When private parties cannot adequately deal with externalities, then the government steps in.**
- u **The government can either regulate behavior or internalize the externality by using Pigovian taxes.**

# Mechanism to Harmonize NE world wide

It is notable that some attempts has been made to include a Network externality Surcharge (NES)  
A factor considered/included when determining Cost based termination charges

Some examples: UK 2003, Australia 2004

Tanzania 2004 and 2007

At Global level: ITU-T SG 3(2003) established a rapporteur group

Questionnaire on NE circulated in 2006

Workshop on NE 2007

Recommendation D.156 on NE WTSA 2008 Joburg.

# ITU-T Recommendation D.156 on NE

It is my considered opinion that this recommendation summarizes well the issues around the concept of network Externalities. This recommendation provides for recommendations related to the Payment of Network externality premiums by developed countries to developing Countries. There is a number of countries who have expressed a reservation and stated categorically that they will not apply this recommendation.

# **Development of Annex 1 to Recommendation D156 on NE.**

During the study period 2009 – 2012 the ITU-T Study Group Three made a number of efforts to clarify issues and develop an Annex as a practical implementation of the recommendation D.156.

## **1. Amendment 1**

**New Annex A – Practical implementation of Recommendation ITU-T D.156**

**2. Rec. ITU-T D.156 (2008)/Amd.1 (05/2010)**

**3. Rec. ITU-T D.156(2008) Amd. 1 (05/2010)**

# Conclusions and Recommendations

Off recent there are a number of countries which have introduced specific tax/surcharge on the incoming international telecommunication traffic; Could this be considered as a form of network externality surcharge ?

Telecommunications/ICT networks exhibit Network externalities. Each new user derives private benefit but also confers external benefits (NE) on existing users. Can NE be captured ?

NE may cause Market failure. Further studies to practically implement ReC.D.156 is recommended.