

Converged Communication Services and Competition in Consumer Markets



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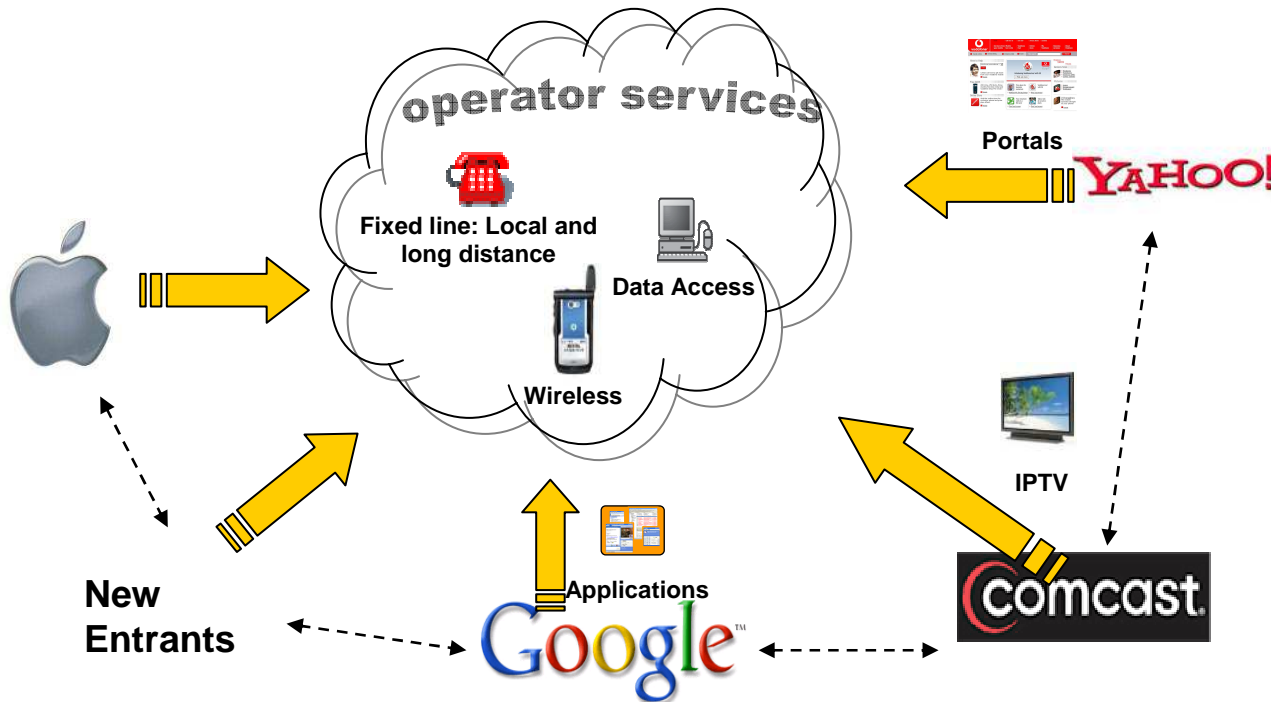
Agenda

- Introduction
- Modeling Market Dynamics
- Market Simulation Case Studies
- Concluding Remarks



Introduction

Motivation: Traditional operator landscape is changing



Questions from telecom operators

Does convergence help in gaining market share?

How would triple or quadruple play improve the market share?

What market segments to focus on?

Does service blending help churn reduction?

How much of a threat the non-traditional operators pose?

Telecom operators market shares are being impacted by increased competition

Convergence and the competitive operator environment

Emergence of converged multimedia services has lead operators to seek clear tactical and strategic advantages in developing differentiated service offerings



Convergence will allow operators to lower the price and gain market share while maintaining margins

Consumer landscape is also changing: Segmentation Fine Tuning

Ethnographic research on target segments to identify...



Enhanced Personas

What do they want in the next 3-5 years?

Lifestyle - Status, Move to a nice trendy area, travel

Career - Further career & earn more money, start own business

Entertainment Purchasing - flat screen

Family Status - Single or family

What do they value in life?

New experiences

Speed

Work-Family Balance

Individualism

Achievement & Success

Changing lifestyle and new technologies contribute to new behavioral patterns in the consumer market

Forecasting competitive dynamics in the new paradigm

Traditional forecast models rely on historical data to derive various economic trends, e.g., service adoption, market share trends, pricing, etc.

Need to model telecom markets from first principles because traditional economic forecast tools may not apply

- For many of the indicators there are no historic time series to build the forecasts upon

Simulation modeling allows the evaluation of market dynamics utilizing a set of first principles

- Operators attempt to maximize profit, given a portfolio of service offering
- Consumers attempt to maximize their utilities for different service offers
- Consumers switch providers based on availability of service, price sensitivities, and loyalties
- The combined effect of the above principles are then utilized to predict the market share and price dynamics

In a simulation-based approach, Market share and price dynamics are derived from the first principles



Modeling Market Dynamics



Model Overview

The model has the following structure

- Service providers: offer various voice, data, video or other value-added services
 - An offer has a price, and a plan
 - The offer price may have a fixed and/or variable component
 - Offer, offer price and the plan are the levers of control
 - The control levers can be adjusted so that the operator maximize profits
- Consumers: categorized under different segments where
 - Consumers have unique utilities for different services
 - Consumers can select a bundle of service composed of different service offers
 - Consumers will attempt to maximize their utilities
- Model updates market share, and offer plans every period and trends are established
 - Operators adjust their service plans based on the previous period to maximize profit
 - Consumers may switch from one bundle to another based on their price sensitivity and willingness to adopt other services

Model Input

The model input includes three sets of data

- Operational expense and capital expenditure to offer services
- Consumer behavior parameters
 - Price sensitivity factor
 - Service utility reaction factor
- Service Pricing

The cost category and the fundamental cost drivers are:

- Network operations and interconnect cost
 - Traffic sensitive cost, driven by minutes for voice and megabit for data
 - Other costs, driven by the number of subscribers
- Sales, marketing, & advertising costs, driven by gross additions of new subscribers
- Customer service cost, driven by number of subscribers
- General and administrative costs, mostly estimated as a percentage of generated revenue
- Network capital cost
 - Traffic sensitive cost, driven by incremental minutes for voice and megabits for data and video
 - Other costs, driven by the number of incremental subscribers

Dynamic Analysis - Service offers, Consumer preferences, and market trends

Modeling Customer Behavior

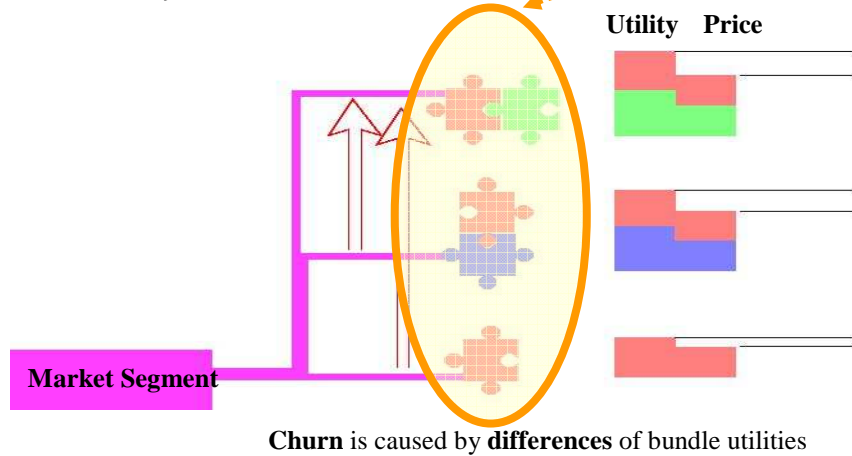
Rate of migrations of customers from bundle to bundle is defined by the relative utility

$$r_{k \rightarrow l} = ke^{g(U_{b_l} - U_{b_k})} / \sum_m e^{g(U_{b_m} - U_{b_k})}$$

Given choice of bundles b_1 and b_2 customer switches to bundle b_2 at the rate of

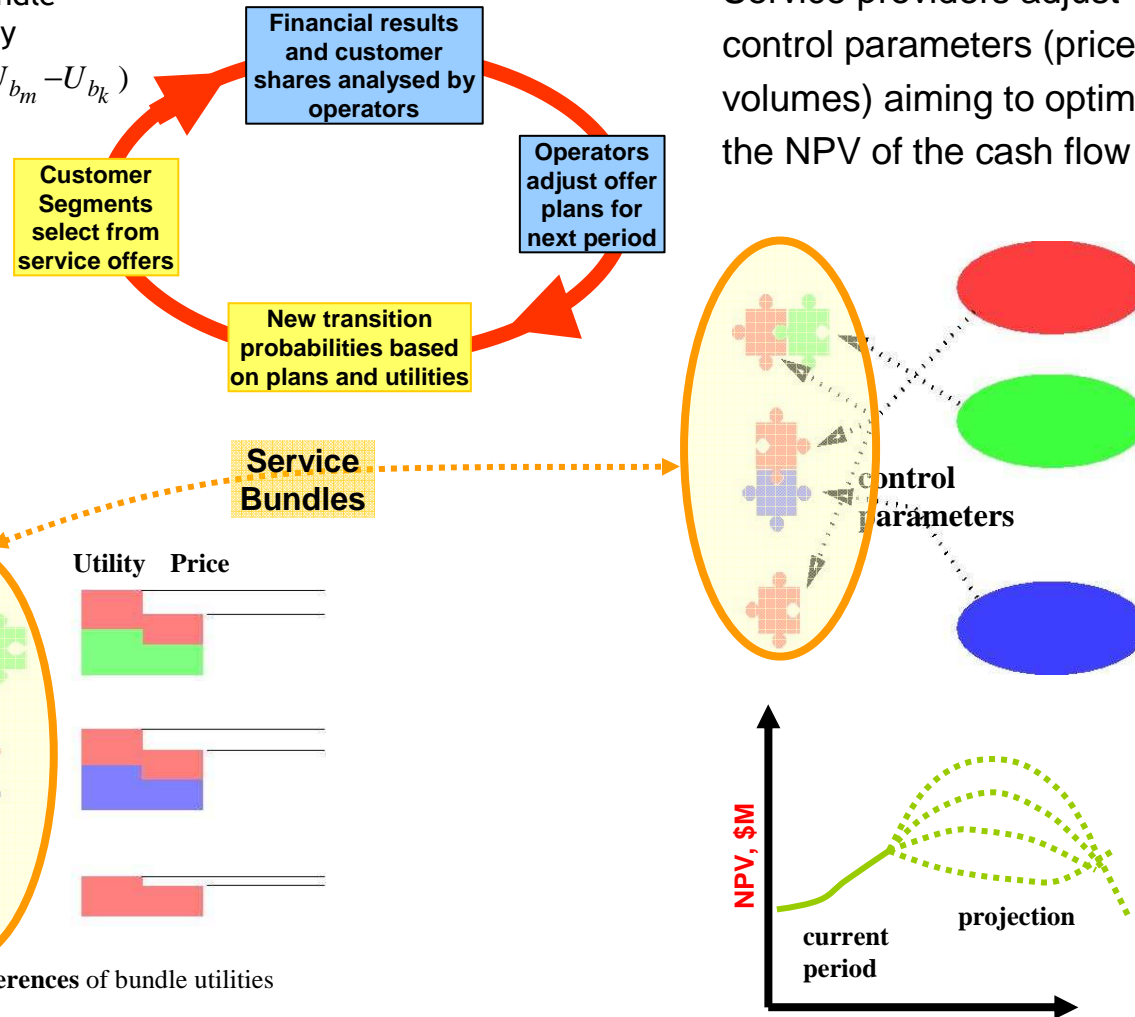
$$r = ke^{g(U_{b_2} - U_{b_1})}$$

Where k is the customer segment's service utility reaction factor, and g is the price sensitivity factor.



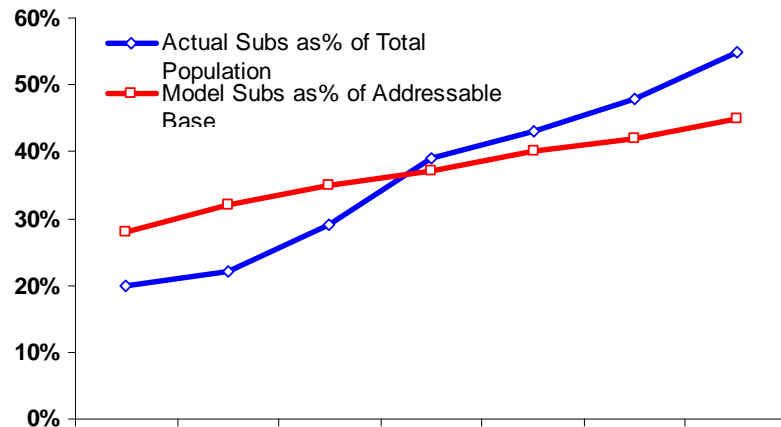
Service Providers Strategies

Service providers adjust control parameters (prices and volumes) aiming to optimize the NPV of the cash flow



Model Validation

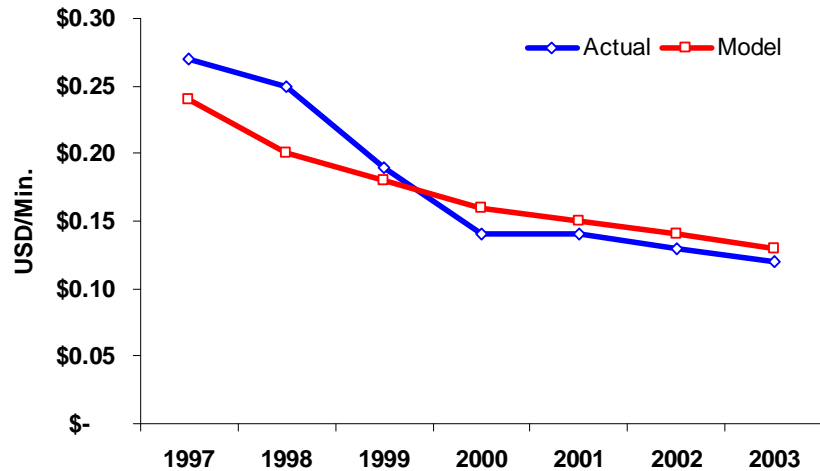
Mobile Service Penetration



Modelling results match historical trends:

- by 2003, mobile penetration reached 50%.
- average price per minute has been on steady decline
- decline is due to increase in minutes offered, not decrease in total subscriber payments

Ave. Price/Minute for Wireless Voice

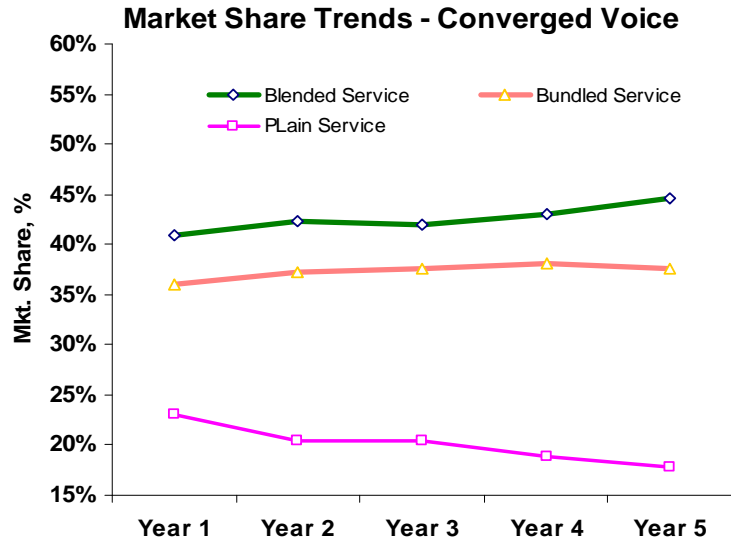




Market Simulation Case Studies

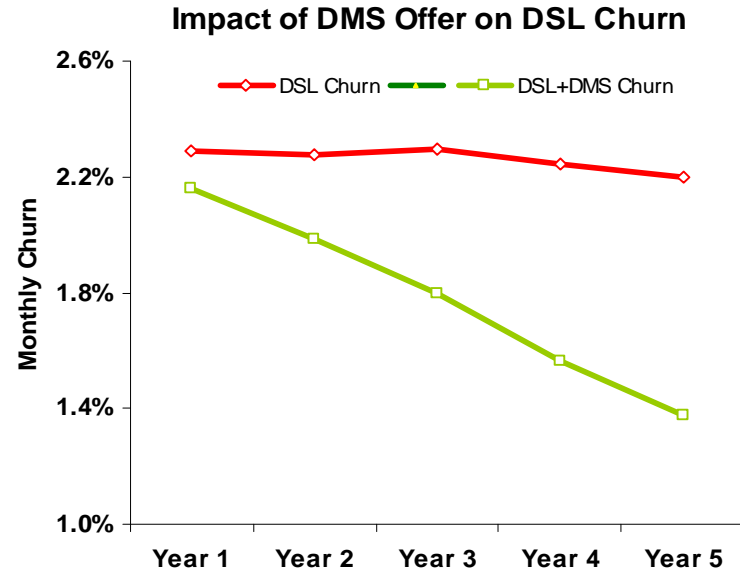


Impact of Dual-Mode Service on Broadband Data Churn



Converged operators increase market share

- Converged platforms enable coordination of Family Number, Personal Number, etc
- Integration of Mobile and Wireline voice features with data services



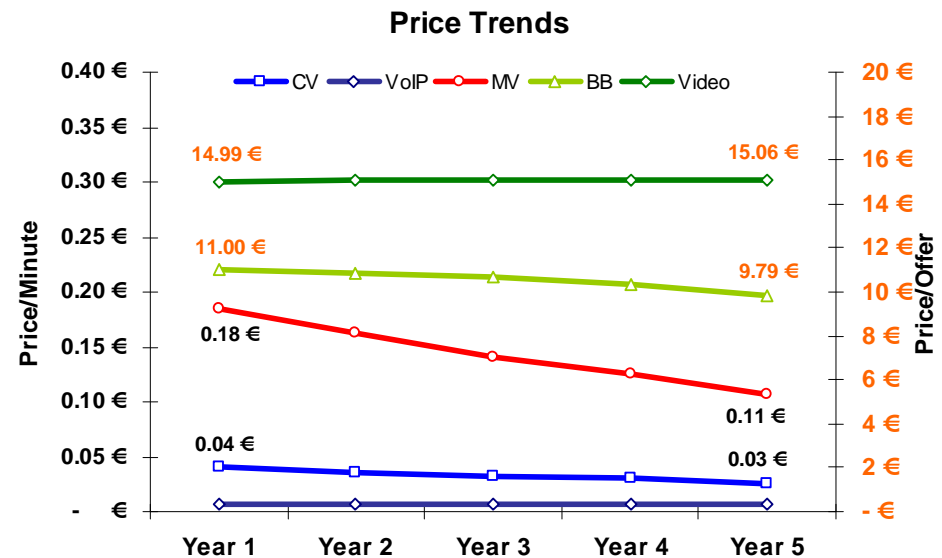
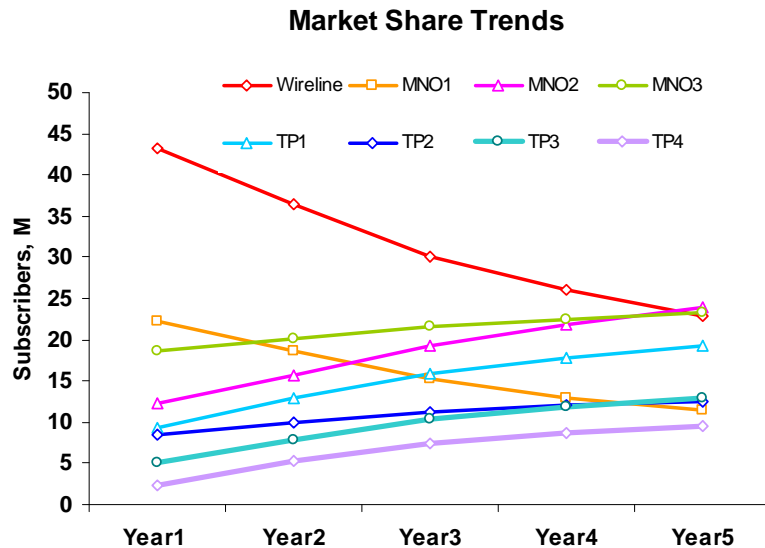
Introduction of Dual-Mode Service can reduce churn on DSL

- Service integration increases Dual-Mode offer stickiness
- Dual-Mode Service includes DSL service; as Dual-Mode Service adoption increases, overall DSL churn reduces

Analysis shows that operators offering Converged Voice and Data services can

- Build Market Share Advantage, and
- Reduce churn on their existing voice and data services

Traditional Operator vs Triple and Quadruple Play



Traditional voice operators lose market share to new entrants

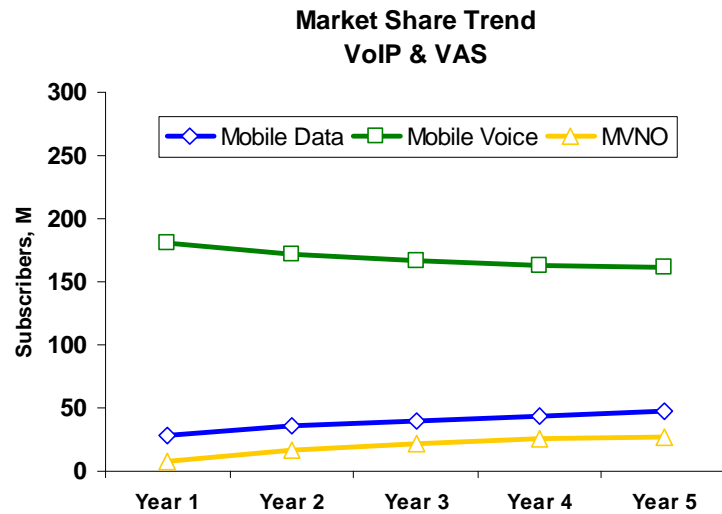
- MNO 2 & 3 enhance market share by combining service with triple play operators
- TP1 improves market share faster due to lower platform cost

Voice convergence results in mobile price reduction

- Traditional operators are forced to lower price to reduce market share erosion

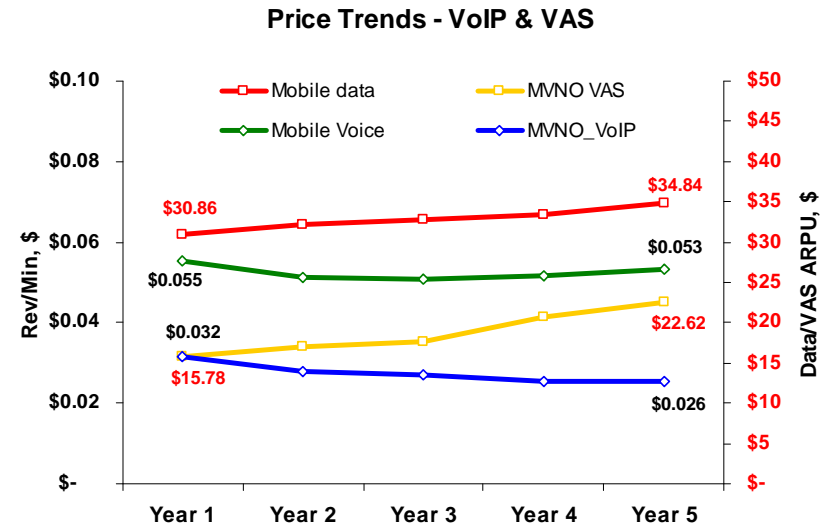
Enhancing service portfolio while reducing cost by new entrants can have a significant impact on the market share of incumbents

Unbundling mobile voice and data services



Mobile network operators can lose mobile voice market share

- Mobile operators may gain more data only subscribers
- MVNO will gain market share from the MNOs



The mobile voice price will decline

- MVNO will reduce their price as long as revenue can be increased on value-added services
- The mobile operator will be forced to increase the price of data service

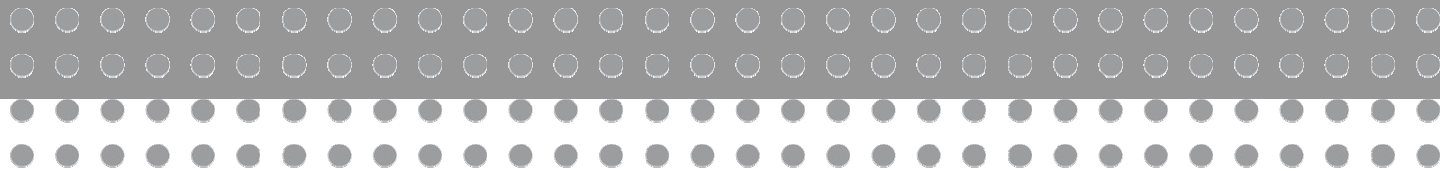
Unbundling voice and data services and allowing MVNOs to offer VoIP over the MNO's data service may not have a disruptive effect

Concluding Remarks

1. Simulation analysis using first principles is a useful method to predict market share and price dynamics when historical trend data are not available
 - Useful for evaluating operator strategies in a competitive setting and for specific market scenarios
2. Operator strategies must be evaluated in accordance with market segment preferences
 - Market trends are dictated by the size and preference of market segments
3. Convergence enables operators to provide a larger variety of services at a lower cost per service
 - Operators with better operating margin can maximize profits and enhance market share
4. Service blending in certain scenarios can lead to churn reduction on existing services
5. Service unbundling may be a disadvantage for traditional operators if other intangible sources of revenue are introduced by new entrants

Convergence has introduced new dimensions in the telecommunication market. By lowering cost and enhancing service portfolio, traditional operators can remain competitive

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Model Parameters

The analysis considers multiple sectors, where a bundle consists of multiple elements (e.g., *Wireless Voice, VoIP, DSL*).

Sets:

- *Customer Segments, $\omega \in C$*
- *Set of service providers, $\sigma \in S$*

Utilities

- *$U(\omega, \sigma)$, utility (expressed in monetary equivalent) for the customer segment ω from being subscribed to a plan of provider σ .*

Prices & Cost

- *$C(\sigma)$, price charged by operator σ for service C .*
- *A set of cost parameters to provide service C to segment i*

Market Shares

- *$r(\omega, \sigma)$, number of members of segment ω who subscribe to σ .*

Consumer Constants

- *K , , Customer readiness to adapt*
- *$\gamma(\omega)$, Flexibility (ability to change subscription)*