

# Internet Service Providers vs. Over-the-Top Companies: Friends or Foes?\*

[Short talk]

Angelos Antonopoulos  
Telecommunications  
Technological Centre of  
Catalonia (CTTC)  
Barcelona, Spain  
aantonopoulos@cttc.es

Chiara Perillo  
Department of Banking and  
Finance  
University of Zurich  
Zurich, Switzerland  
chiara.perillo@bf.uzh.ch

Christos Verikoukis  
Telecommunications  
Technological Centre of  
Catalonia (CTTC)  
Barcelona, Spain  
cveri@cttc.es

## 1. ABSTRACT

The recent appearance of Over-the-Top (OTT) providers, who offer similar services (e.g., voice and messaging) to those of the existing Internet Service Providers (ISPs), was the main reason for a long-standing conversation with regard to the network neutrality, i.e., the prioritization of different types of data in the network. In particular, ISPs oppose network neutrality, claiming that OTT companies: (i) have conflicting interests and provide competitive services, thus constituting a threat to their own growth, and (ii) distort incentives for investment, as they essentially exploit the network already deployed by ISPs, acting as free riders. The importance of the net neutrality debate has motivated the research community to study the interaction among the different tenants from a theoretical point of view [1,2]. Despite the interesting theoretical conclusions of the existing works, an empirical econometric study on the interaction of the new stakeholders was not possible hitherto, as the main evolution of the OTT companies took place at the end of the last decade and, therefore, real economic data from the actual progress of these firms were not available until recently.

In this article, we provide a detailed econometric study to analyze the relationship between the OTT companies and the ISPs. The empirical analysis has been conducted for seven countries in the period 2008-2013, considering ten major ISPs and three OTT companies that offer communication services (i.e., Skype, Facebook and WhatsApp), while we focus on five different parameters: (i) the revenues of the ISPs, (ii) the revenues of the OTT providers, (iii) the Capital Expenditure (CAPEX) of the ISPs, (iv) the Internet penetration, and (v) the real Gross Domestic Product (GDP) that determines the economic performance of each country. For the analysis of our cross-sectional time series (countries and year) panel data, we propose two econometric models (based on the fixed effects model) with two different dependent variables: (i) Model A with the *ISP revenues* as the dependent variable and (ii) Model B with the *OTT revenues* as the dependent variable.

\*This work has been supported by the research projects Cell-Five (TEC2014-60130-P) and AGAUR (2014-SGR-1551). Extended version: [http://bit.do/NetEcon16\\_Antonopoulos](http://bit.do/NetEcon16_Antonopoulos)

The interpretation of the results of Model A reveals two very intriguing insights. First, we see that the revenues of the ISPs and the OTT companies are positively correlated with a particular coefficient of 9.81, i.e., the increase of one unit (e.g., USD) in the revenue of the OTT providers causes an average increase of approximately ten units in the revenues of ISPs. Second, the CAPEX of the ISPs has also a positive effect in their revenue with a coefficient of 3.21. The positive correlation between the revenues of the OTT companies and the ISPs is also verified in Model B with a coefficient of 0.03, which implies that the growth of ISPs has a positive (although small) impact on the growth of OTT providers. However, the most important conclusion that can be extracted by Model B is the negative impact that the CAPEX has on the OTT profits. More specifically, the revenue of the OTT companies is reduced by 0.13 units for every unit that the ISPs invest on the network infrastructure.

The observations of our empirical analysis are very important, as they provide tangible arguments and answers to the claims of the net neutrality opponents. In particular, our study has shown that the economic prosperity of the OTT firms has a positive influence in the financial performance of the ISPs. Consequently, it can be concluded that these two important stakeholders fruitfully coexist in the telecommunications and Internet market and they should probably work more closely together to achieve a mutually profitable cooperation. In addition, our empirical results have also demonstrated that the network investments have a positive effect on the ISPs revenue and a negative impact on the revenue of the OTT providers, thus refuting the accusations towards OTT companies for free riding. Finally, although not exhaustive, our study stresses the need for additional similar studies that will further clarify the interaction among the different entities in the evolving Internet ecosystem.

## 2. REFERENCES

- [1] R. T. B. Ma and V. Misra. The public option: A nonregulatory alternative to network neutrality. *IEEE/ACM Trans. Netw.*, 21(6):1866–1879, Dec. 2013.
- [2] J. Park and J. Mo. ISP and CP revenue sharing and content piracy. *SIGMETRICS Perform. Eval. Rev.*, 41(4):24–27, Apr. 2014.