Competitions between OTT TV platforms and traditional pay television: revenue displacement

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PTC seminar

Displacement effects of the Internet on media

- **Displacement among New vs. traditional media: uses & gratification, time, and revenue**
  - Radio and print media (Lazasfeld, 1940)
  - Television vs. print media (Belson, 1961; Giffard, 1980)
  - Cable TV vs. local TV network and theater attendance (Kaplan, 1978; Sparkes, 1983)
  - Principle of Relative Constancy hypothesis (McComb, 1978)
  - Theory of Niche (Dimmick & Rothenbuher, 1984)
  - Internet displacement effects (Althaus & Tewksbury, 2000; Ferguson & Perse, 2000; Kayany & Yelsma, 2000; Lee & Leung, 2008)
  - Panel data use (Jang & Park, 2016; Lee, Lee, & Kim, 2016)

Research Questions

- **What's the relationship between the revenue of OTT services and the revenue of pay TV services**

- **Revenue of OTT service = Subscription VOD + Transactional VOD**
- **Revenue of Pay TV = Pay TV subscription + Pay TV VOD**

	(1) Pay TV Rev.	(2) Pay TV Sub. Rev.	(3) Pay TV VOD Rev.
OTT Rev.	(1)		
SVOD Rev.		(2-1)	(3-1)
TVOD Rev.		(2-2)	(3-2)

RQs & Econometric Models

(1) OTT Rev. & Pay TV Rev. relationship:

$$PayTV_{it} = \beta_0 OTT_{it} + \beta_1 X_{it} + Regional\ Effect_i + Time\ Effect_t + e_{it}$$

(2-1) SVOD Rev. & Pay TV Subs. Rev. relationship:

$$PayTV\ Subs_{it} = \beta_0 SVOD_{it} + \beta_1 X_{it} + Regional\ Effect_i + Time\ Effect_t + e_{it}$$

(2-2) TVOD Rev. & Pay TV Subs. Rev. relationship:

$$PayTV\ Subs_{it} = \beta_0 TVOD_{it} + \beta_1 X_{it} + Regional\ Effect_i + Time\ Effect_t + e_{it}$$

(3-1) SVOD Rev. & Pay TV VOD Rev. relationship:

$$PayTV\ VOD_{it} = \beta_0 SVOD_{it} + \beta_1 X_{it} + Regional\ Effect_i + Time\ Effect_t + e_{it}$$

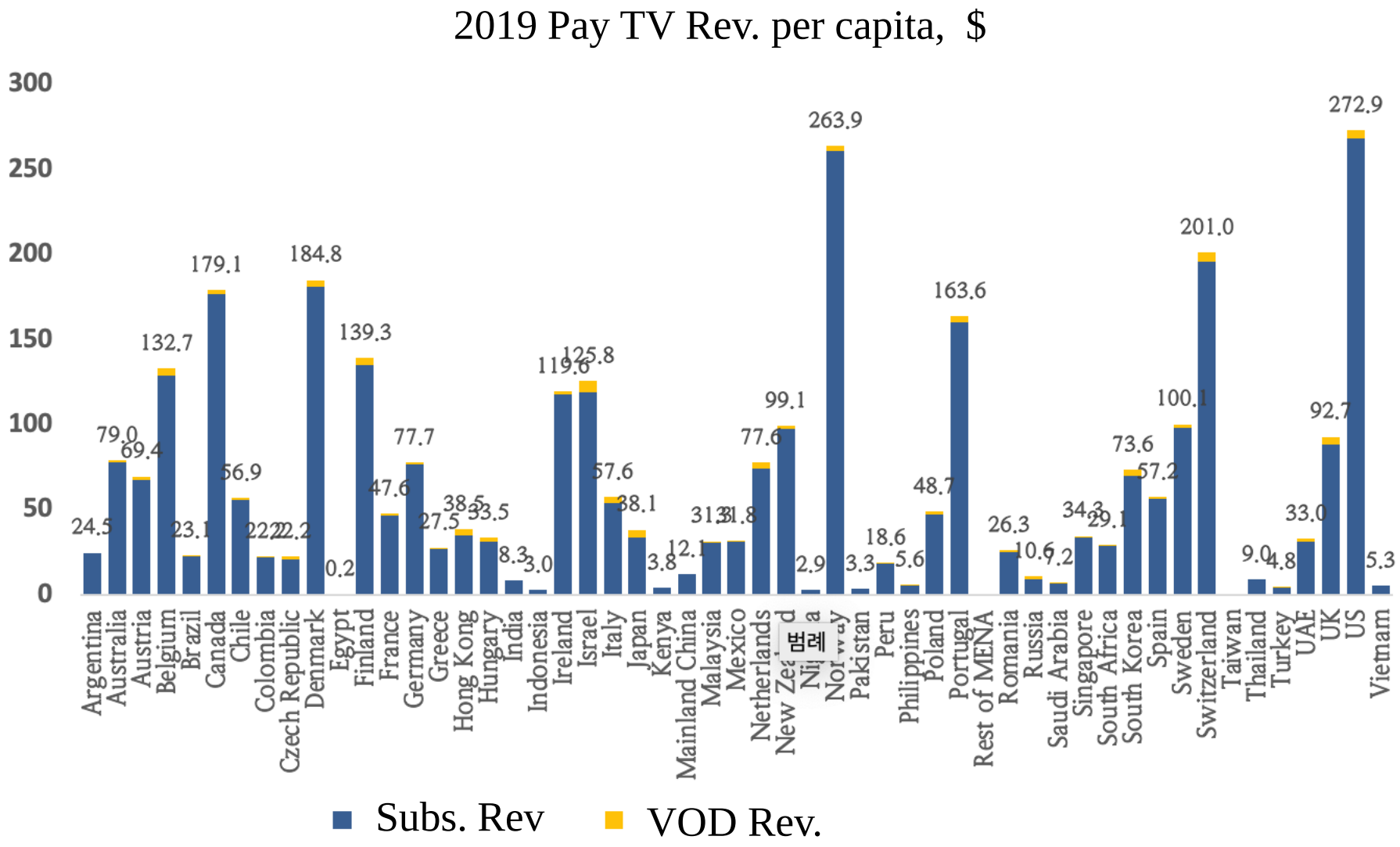
(3-2) TVOD Rev. & Pay TV VOD Rev. relationship:

$$PayTV\ VOD_{it} = \beta_0 TVOD_{it} + \beta_1 X_{it} + Regional\ Effect_i + Time\ Effect_t + e_{it}$$

Data

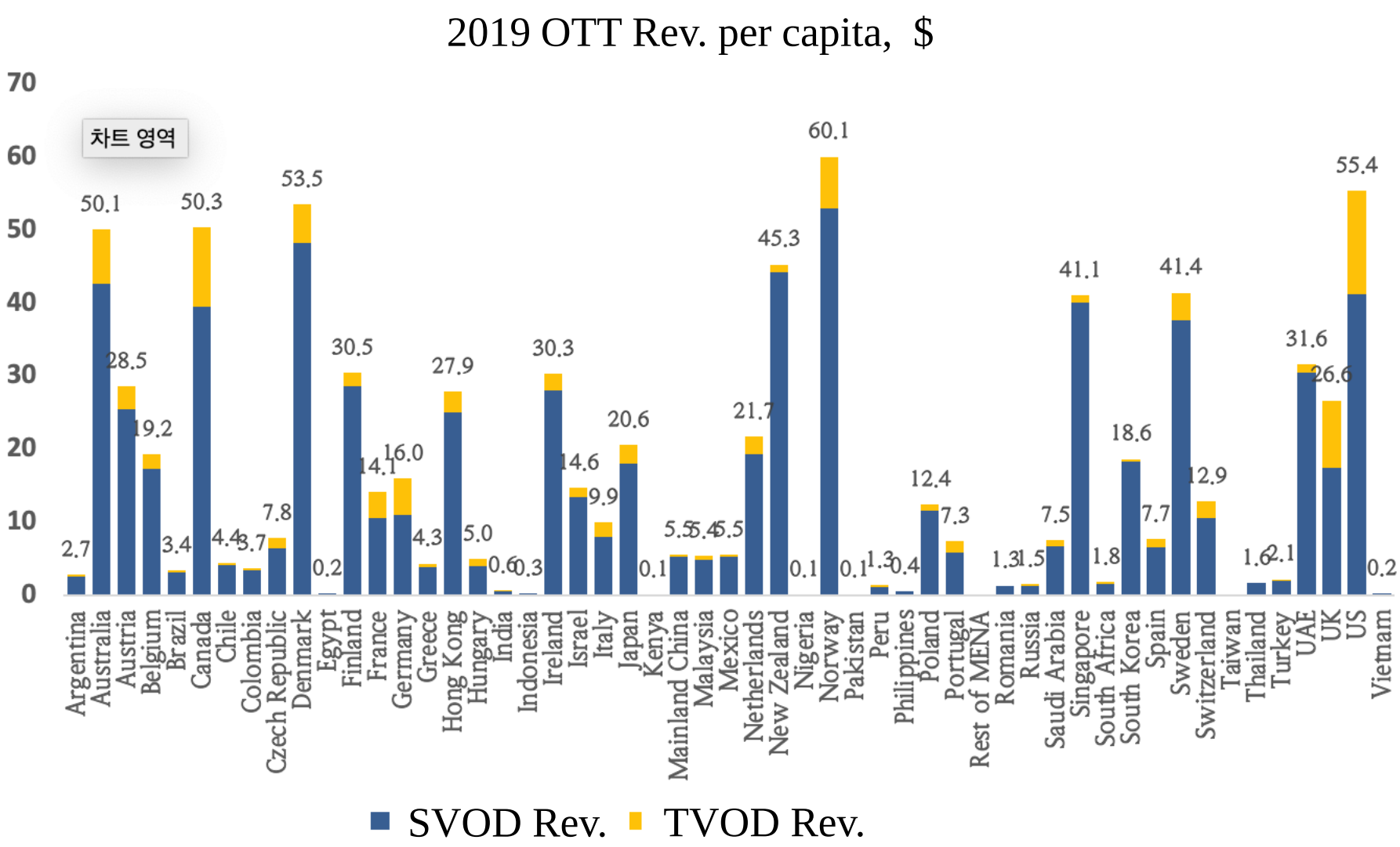
- **OTT and Pay TV industries in 53 countries were included over the 5-year period from 2015 to 2019.**
- **PricewaterhouseCoopers (PwC) database provided country-level media revenues of 53 countries from 2015 to 2019 (PwC, 2020).**
- **Factors included the revenues of Pay TV and OTT, Income, Internet penetration, and piracy rate.**

Pay TV revenues of 51 countries in 2019, US$ Per capita



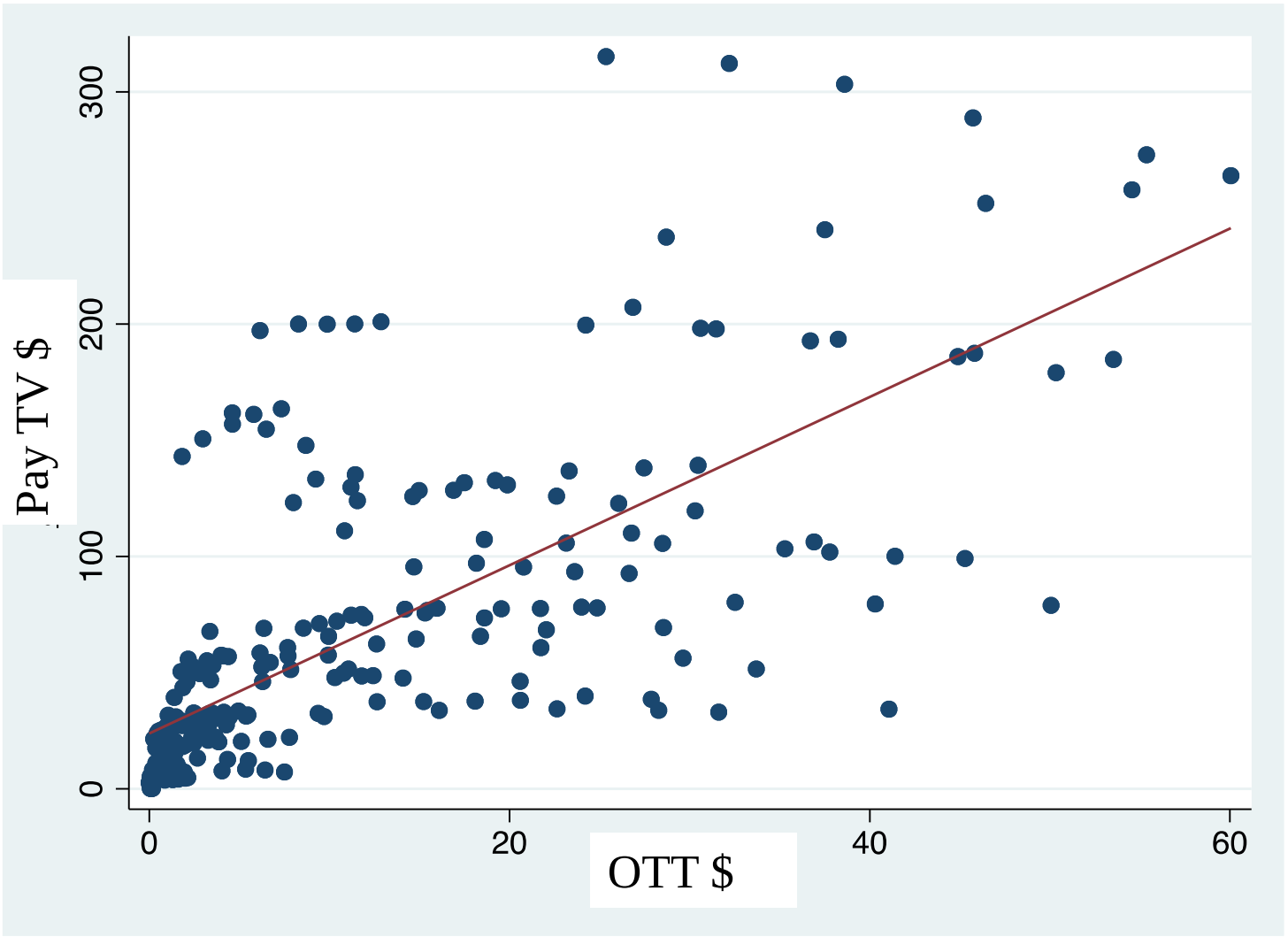
PricewaterhouseCoopers (2020)

Pay TV revenues of 51 countries in 2019, US$ Per capita



PricewaterhouseCoopers (2020)

Correlation between Pay TV and OTT revenues of 51 from 2015 to 2019



PricewaterhouseCoopers (2020)

Data

Variables	Mean	SD	Min	Max	Sources
Pay TV Rev. ($)	64.15	68.66	0.14	315.16	PwC(2020)
Pay TV VOD Rev.($)	1.82	1.70	0.00	7.51	PwC(2020)
Pay TV Subs. Rev. ($)	62.33	67.44	0.14	310.06	PwC(2020)
OTT Rev. ($)	11.13	13.54	0.01	60.05	PwC(2020)
TVOD Rev. ($)	1.73	2.60	0.00	14.20	PwC(2020)
SVOD Rev. ($)	9.40	11.69	0.00	52.99	PwC(2020)
Income ($)	27,872.61	22,227.3	1,284.7	82,818.1	World Bank
Broadband Internet Penetration (%)	64.78	31.29	1.00	119.0	PwC(2020)
Piracy rate(0, 1)	0.15	0.35	0	1	IIPA(2020)

Results

D.V. = Pay TV Rev.	Pooled-OLS	Fixed effect	System GMM
OTT Rev.	2.30**	-0.31**	-0.18
	(5.65)	(-4.59)	(-1.51)
Income (LN)	22.08**	3.49	5.85*
	(6.61)	(0.78)	(2.48)
Internet penetration	-0.05	0.13	-0.22^
	(-0.52)	(1.63)	(-1.71)
Piracy rate	-7.08^	-0.44	-0.73
	(-1.83)	(-0.19)	(-0.94)
OTT Rev. $_{t-1}$			0.926**
			(24.36)
Constant	-172.69**	24.82	-35.61
	(-5.79)	(0.58)	(-1.56)
Observations	250	250	200
VIF	1.55		
Hausman test		χ^2 (5)=50.52**	
First order correlation			-1.1384
Second order correlation			0.2772
Sargan test			χ^2 (17)=15.74

Variables in italics are instrumented through the GMM procedure following Arellano and Bover (1995).
t statistics are in parentheses
^ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Results

D.V. =PayTV Subs. Rev.	Pooled-OLS	Fixed effect	System GMM
SVOD Rev.	0.39	-0.18^	-0.20**
	(0.93)	(-1.76)	(-2.41)
TVOD Rev.	14.98**	-2.71*	0.85
	(9.24)	(-2.00)	(0.66)
Income (LN)	19.14**	2.70	3.96^
	(6.08)	(0.61)	(1.72)
Internet penetration	-0.13	0.14^	-0.27**
	(-1.61)	(1.81)	(-2.63)
Piracy rate	-7.86*	-0.13	0.06
	(-2.13)	(-0.05)	(0.11)
OTT Rev. $_{t-1}$			0.94**
			(15.74)
Constant	-143.23**	32.45	-16.30
	(-5.02)	(0.77)	(-0.93)
Observations	250	250	200
VIF	1.73		
Hausman test		χ^2 (5)=46.60**	
First order correlation			-0.7485
Second order correlation			0.1754
Sargan test			χ^2 (17)=16.02

Results

D.V. =PayTV VOD Rev.	Pooled-OLS	Fixed effect	System GMM
SVOD Rev.	-0.02^	0.001	-0.01**
	(-1.68)	(0.40)	(-2.79)
TVOD Rev.	0.08^	-0.05	0.01
	(1.85)	(-1.17)	(0.95)
Income (LN)	0.99**	0.32*	0.14*
	(11.28)	(2.55)	(2.34)
Internet penetration	0.01**	0.005*	-0.004^
	(3.72)	(2.09)	(-1.85)
Piracy rate	-0.37**	0.01	-0.01
	(-3.32)	(0.15)	(-0.26)
OTT Rev. $_{t-1}$			0.94**
			(25.26)
Constant	-8.27**	-1.61	-0.93^
	(-10.62)	(-1.34)	(-1.84)
Observations	250	250	200
VIF	1.73		
Hausman test		χ^2 (5)=17.68**	
First order correlation			-0.2811
Second order correlation			-0.3885
Sargan test			χ^2 (17)=12.10

Results Summary

- **The various dynamic panel data approaches show statistically significant reliable evidence of revenue displacement among services.**
- **The coefficients of SVOD revenue in GMM models are positive and statistically significant, confirming that the increase in SVOD revenue leads to decrease in Pay TV Sub. and VOD revenues.**
- **In general, income has a positive effect, and Internet penetration has a negative effect on pay TV revenue.**
- **The previous trend of the pay TV market has a strong positive effect.**

Results Summary

- **In the most appropriate empirical specification, we find that $1 increase in revenue from OTT's SVOD service reduces $0.2 in revenue from the pay TV subscription, and it also reduces $0.01 in revenue from the pay TV VOD service.**

$1 increase	(1) Pay TV Rev.	(2) Pay TV Sub. Rev.	(3) Pay TV VOD Rev.
OTT Rev.	?		
SVOD Rev.		$ -0.2	$-0.01
TVOD Rev.			

- **Could not find the effect of TVOD on two Pay TV revenues**

Results Summary

- **In general, income has a positive effect, and Internet penetration has a negative effect on pay TV revenue.**

- **The previous trend of the pay TV market has a strong positive effect.**

Discussion

- **Our results provide evidence that there is the revenue displacement between OTT and pay TV revenues.**
- **These results can be referenced by scholars and media policy makers who seek to gain insight regarding the media competition.**
- **The present study serves as a starting point for future research.**

Thank you