

Broadband (*BB*) Access and Its Impact on Sales Tax (*ST*) Collections

Mohan Menon & Semoon Chang
University of South Alabama



ASSA Annual Meeting, Chicago, Illinois
January 5-8, 2012

Agenda

Genesis of the issue

The situation today

Literature review

- General
- BB access helping local economies
- BB access hurting local economies

Recent events

- Main Street Fairness Act
- The Amazon law
- Legal actions

The case of Alabama



Genesis of the Issue

Prior to 1992, states recognized potential ST losses from out-of-state MOTO transactions.

States such as North Dakota tried to impose mandatory ST collections on MOTO transactions.

1992 SC landmark ruling makes collection & remittance of ST on MOTO transactions unconstitutional if businesses have not physical presence in the state. (*Quill v. ND*)

1992 ruling did not address the concept of “use tax.”

Few consumers actually remit use taxes (*Brunori, 2001*).

The Internet Tax Freedom Act (1998) prohibits federal, state, and local taxes on ‘Net access and commerce . . . extended through 2014.

The Situation Today

Retail eCommerce transactions are a growing component of total US retail sales and expected to grow. (*Forrester Research 2011*)

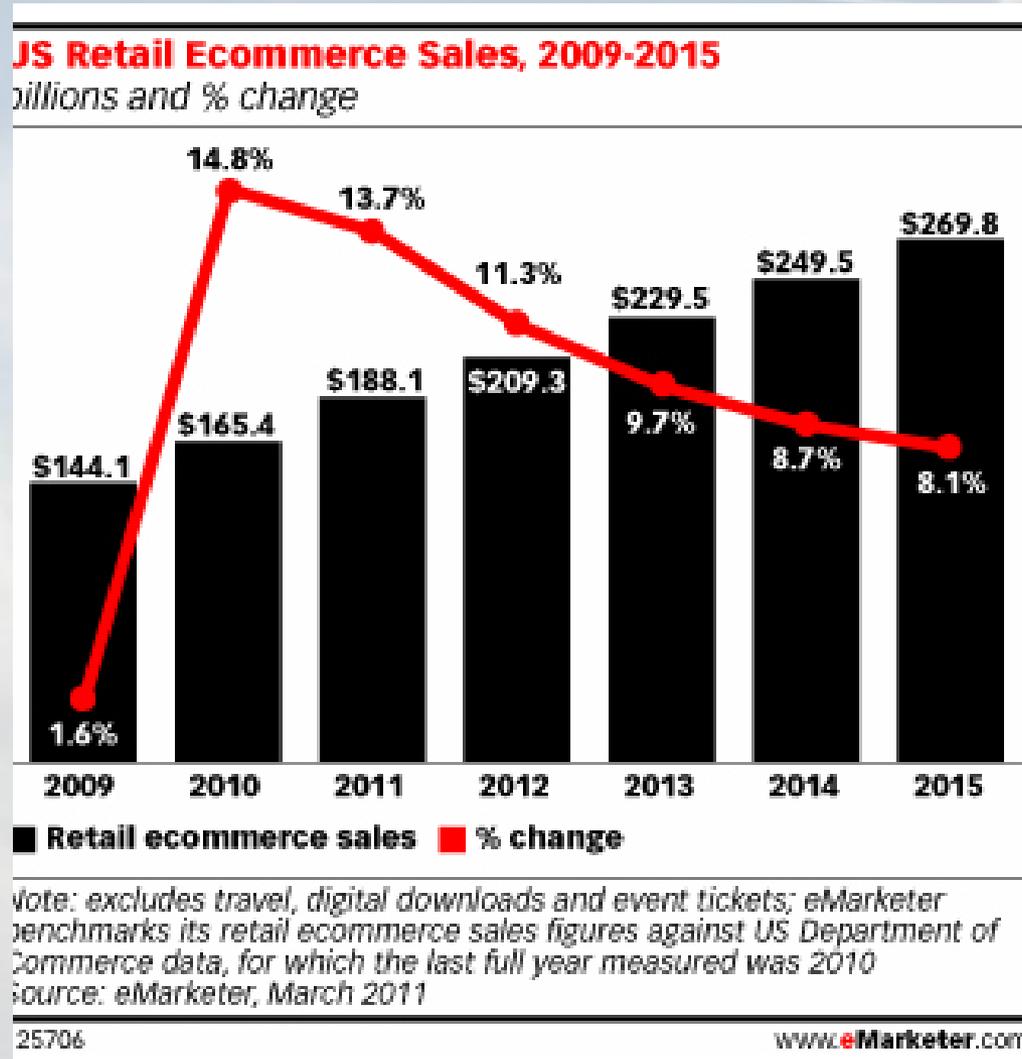
Figure 1 Forecast: US Online Retail Sales, 2009 To 2014

1-1 US online retail sales will reach \$248.7 billion by 2014



The Situation Today

However, the rate of growth is forecasted to slow down:



The Situation Today

78.3 of the total pop in the US has 'Net access. (*Internet World Stats, 2011*)

US BB penetration by household was 77.5% in Q1 2011. (*websiteoptimization.com/bw/1107/*)

Biggest increase in 'Net access is in the BB space which accounts for 66% of all connections (*Smith, 2010*)

eMarketer estimates 87.5% of US 'Net users aged 14 and older or 178.5m people will browse or research products online in 2011. 83% of this group (148.1m) will purchase online.

Online retailers potentially face 45 state-wide ST jurisdictions and over 8,000 local tax jurisdictions.

eCommerce as a Percentage of Total U.S. Retail Sales

Retail Sales>>	Total(\$B)	eCommerce(\$B)	% of Total
2000	2,989	28	0.9
2001	3,068	34	1.1
2002	3,134	45	1.4
2003	3,268	58	1.8
2004	3,480	74	2.1
2005	3,698	92	2.5
2006	3,882	114	2.9
2007	4,005	137	3.4
2008	3,959	142	3.6
2009	3,638	145	4.3
2010	3,888	166	4.3
2011 (1Q+2Q)	2,071	93	4.5

Source: U.S. Census e-Stats



Latest Online Buying Wave

Online sales during the week after Thanksgiving including Cyber Monday = \$6b.

Cyber Monday sales = \$1.25b, the biggest online shopping day in history.

November+Dec 1-2 online sales were up 15% to \$18.7b.

(Source: ComScore, excluding travel, auctions, and corp. purchases)



State Sales Tax Situation

All states except Alaska, Delaware, Montana, New Hampshire and Oregon, collect sales taxes. Delaware collects a Gross Receipts Tax (GRT) which is a business and gross receipts tax that can total 2.07%. Some have a single rate throughout the state though most permit local city and county additions to the base tax rate. Those states with a single rate include Connecticut, District of Columbia, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Mississippi, Rhode Island, and West Virginia.

States with the highest sales tax are: California (8.25%), Indiana (7%), Mississippi (7%), New Jersey (7%), Rhode Island (7%), Tennessee (7%), Minnesota (6.875%), Nevada (6.85%), Arizona (6.6%), Washington (6.5%), Kansas (6.3%), Texas and Illinois (6.25%).

Most states exempt prescription drugs from sales taxes. Some also exempt food and clothing purchases and a few also exempt non-prescription drugs.

Sources: Taxfoundation.org, Thestc.com (sales tax clearing house)



State Sales Tax Situation

States with the highest sales tax are:

California	8.25%
Indiana	7%
Mississippi	7%
New Jersey	7%
Rhode Island	7%
Tennessee	7%
Minnesota	6.875%
Nevada	6.85%
Arizona	6.6%
Washington	6.5%
Kansas	6.3%
Texas and Illinois	6.25%

Most states exempt prescription drugs from sales taxes. Some also exempt food and clothing purchases and a few also exempt non-prescription drugs.



Sources: Taxfoundation.org, Thestc.com (sales tax clearing house)



Literature Review

Consumers in high tax areas are more likely to buy online.
(Goolsbee, 2000)

Given the small % of eCommerce sales to the total retail, the loss of ST collection is estimated to be small. *(Goolsbee, 2001, Bruce, Fox, & Luna, 2009)*

BB access does enhance economic growth and performance incl. growth in employment, number of businesses overall and IT related businesses. *(US Dept. of Commerce, 2006)*

BB expansion does not have direct, positive impact on state income (GDP) but there is some evidence of employment expansion in certain industries *(Thompson & Garbacz, 2008)*

Literature Review

Online shoppers are more likely to have BB access (*Horrigan, 2008*)

Higher the level of BB adoption, higher the likelihood of purchasing online. (*Kolko, 2010*)

93% of Internet users engaged in eCommerce activities and 66% made online purchases. (*Horrigan, 2008*)

Consumers use Internet shopping as a means of evading ST. (*Ballard & Lee, 2007*)

In some cases, it was found that clear evidence of ST erosion was difficult to obtain. (*Hawkins & Eppright, 2000*)

Research divided amongst two schools of thought:

Broadband (BB) helping local retailers & governments:

Research Online, Buy Offline (ROBO) helps local retailers. 75-87% RO and buy locally; after RO, 39% contacted local businesses by phone and 32% visited in person. (*BIGResearch, 2006; Forrester, 2007; comScore, 2008*)

No significant relationship between BB adoption rates and changes in retail sales tax collections. (*Whitacre & Brooks, 2010*)

Consumers move away from online shopping when a store opens locally and they pay less attention to online discounts in such instances. (*Forman, Ghose, & Goldfarb, 2009*)

USDA's pilot BB program had a positive impact on local retail establishments. (*Kandilov and Renkow, 2010*)



Research divided amongst two schools of thought:

Broadband (BB) hurting local retailers and governments:

48 out 50 states face budget shortfall totaling \$196b in 2010 or about 29% of budgets (*ITIF 2010*)

States will collectively lose \$10.1b in ST revenue in 2011 and \$11.3b in 2012. (*Bloomberg BW, 2011*)

Estimates of selected states budget gap that could be closed if MOTO+eC ST were collected: (*Time, 2011*)

CA	18%	FL	40%
MA	51%	CO	78%
IN	100%		

Research divided amongst two schools of thought:

Broadband (BB) hurting local retailers and governments:

Estimate of loss of local ST from B2C eCommerce was 0.3 percent of total national ST revenue (*Goolsbee 2001*)

States could potentially collect an additional \$10b - \$24b + per year. (*WSJ, 2010 – 1, 2; VA Free Lance Star, 2010; Bruce, Fox, 2011; etc.*)

NC estimates losses between \$150m - \$200m annually. (*WSJ, 2009*)

CA loses about \$1.1b annually from MOTO+eC ST. (*Chattanooga Times Free Press, 2010*)

TX sent a \$269m bill to Amazon.com for uncollected taxes for 4 years: Dec 2005 – Dec 2009. (*Dallas News, 2010*)

AL Rev. Dept. estimates a loss of \$100m in 2010, \$151m in 2011, & \$170b in 2012 due to MOTO+eCommerce transactions (*RSA's The Advisor, 2011a, b;)*



Main Street Fairness Act (2011) requiring states to adopt the Streamlined Sales and Use Tax Agreement (SSUTA). 24 states have adopted the SSUTA.

This agreement requires states to, among other things,

- adhere to uniform product definitions,
- adopt uniform requirements for filing sales tax returns,
- administer both state and local sales tax collection through a single state office, and
- allow retailers to register through a centralized, one-stop multi-state registration system.

The Amazon Law

Some of the signatories to the Streamlined Sales Tax Project (SSTP) adopted the common language of an Amazon law:

A person with no physical presence in the state is presumed to be engaging in business in the state if:

1. That person enters into an agreement with an in-state resident under which the resident, for a commission or other consideration, directly or indirectly refers potential customers, whether by link or an Internet website, to that person;
2. The cumulative gross receipts from sales by that person attributable to referred customers by all residents with such an arrangement are greater than \$10,000 during the preceding 12-month period. The nexus presumption would be rebuttable by proof that the resident made no solicitation in the state that would satisfy U.S. constitutional nexus requirements on behalf of the person presumed to be engaging in business in the state.

(Tax Foundation, 2010)



Latest cases and actions:

IL vs. Performance MKT Assn. (2011 –)

TX vs. Amazon.com (2011) – Amazon appealing order.

CA vs. Amazon.com (2010 –)

CO vs. DMA (2010 - 2011) – State lost.

NC vs. Amazon.com (2010) - State lost.

NY vs. Amazon.com (2008 -)

RI confirmed it raised no money from its efforts. (2010)

Many states backed off from their efforts, incl. MS.

Bills pending in AZ, CA, FL, HI, MA, MN, & PA.

Latest cases and actions:

Affiliates and their role:

Amazon.com & Overstock.com threatened or dropped affiliates.

HI and CA backed down in 2010.

There are 200,000 affiliate marketers in the U.S. tied to about \$14b in total revenues. (*PMA 2010*)

Affiliates drive between 8% - 20% of the sales for eCommerce sites. (*Forrester Research 2010*)

The Case of Alabama



Alabama Estimated and Actual **ST+ Use Tax** Collections on eCommerce Sales (\$m)

Year	ST and Use Taxes Due	ST and Use Taxes Collected	Variance
2007	429.7	321.4	108.3
2008	459.4	343.5	115.8
2009	445.0	332.8	112.2
2010	588.3	440.0	148.3
2011	671.5	502.2	169.3
2012	750.2	561.0	189.2
Total	3,344.1	2,500.9	843.1

(Bruce, Fox, & Luna, 2009)

Alabama Actions

Inserting the voluntary ST/Use Tax payment line in Tax Returns forms. Already, three-quarters of Alabamians remit use taxes to the Dept. of Revenue. (*stopetaxes.com, 2009*)

Yielded only \$320,000 in 2007.

But readying for congressional action regarding on the issue:

- Bill to set up a commission to establish regulation and develop software AL would need if Congress acts on the streamlined ST law.

General AL ST info:

- State-wide ST = 4%
- Adding county and city ST can add up to 11%
- Food not exempt from ST.
- ST in B'ham (10%), Montgomery (10%), Mobile, (9%).

AL ST and use tax info: <http://www.ador.state.al.us/salestax/index.html>



The Model

$$STAX^P - STAX^A = f(BB, \sum X's)$$

$$STAX^P = STAX^P_t \times RGDP_{t+1} \times CPI_{t+1}$$

Where

- ❖ **STAX^P** = projected ST collections from 2000 to 09
- ❖ **STAX^A** = actual ST collections 2000 to 2009
- ❖ **BB** = % of households with BB access in AL 2000 to 2009; percentage (25%), not in decimals (0.25) (*High Speed Services for Internet Access Surveys from FCC*)
- ❖ **RGDP_{t+1}** = annual growth rate of state GDP in 2005 prices net of the retail sector for Alabama 2000 to 2009 (bea.gov/regional/gsp/)
- ❖ **CPI_{t+1}** = annual rate of inflation (U.S. BLS)

Alabama ST Loss Calculation

Year	Sales Tax Collection	Total AL-GDP 2005=100	AL-GDP Retail GDP 2005=100	AL-GDP Net of Retail GDP	Perent Change	Rate of Inflation US CPI	Projected Sales Tax Collection	Projected minus Actual	Broad Band Access Percent
		\$m	\$m	\$m					
1,999	1,493,022,839	130,770	10,869	119,901					
2,000	1,527,429,619	132,639	10,982	121,657	1.0146	1.0332	1,565,134,978	37,705,359	1.8868
2,001	1,521,397,432	133,828	10,707	123,121	1.0120	1.0291	1,629,988,422	108,590,990	6.9593
2,002	1,545,644,558	137,020	11,119	125,901	1.0226	1.0158	1,693,145,057	147,500,499	11.8098
2,003	1,616,526,151	139,964	11,449	128,515	1.0208	1.0206	1,763,844,607	147,318,456	17.8438
2,004	1,714,524,010	147,029	11,458	135,571	1.0549	1.0288	1,914,230,633	199,706,624	20.5012
2,005	1,865,220,275	151,096	12,006	139,090	1.0260	1.0339	2,030,548,855	165,328,580	25.4265
2,006	1,977,214,114	153,868	12,217	141,651	1.0184	1.0323	2,134,646,887	157,432,773	34.3192
2,007	2,027,113,362	155,834	12,481	143,353	1.0120	1.0285	2,221,921,781	194,808,419	44.5017
2,008	2,015,786,477	155,675	11,683	143,992	1.0045	1.0384	2,317,465,941	301,679,464	47.4154
2,009	1,823,865,142	151,044	11,373	139,671	0.9700	0.9964	2,239,904,225	416,039,084	51.0808



Estimated Model

$$(\text{STAX}^P - \text{STAX}^A) = 53,771,025 + 5,113,382 \text{ BB}$$

$$\text{SE} = 1,110,967 \quad \text{R}^2 = 0.73 \quad \text{t} = 4.6026 \quad \text{D-W} = 1.07$$

t significant at 1%

$$(\text{STAX}^P - \text{STAX}^A) = 53,771,025 + 5,113,382 \times 51 = \$314,553,507$$

99 percent confidence level

$$\text{B} - s_{\text{b}} \times t_{\alpha=0.01} < b < \text{B} + s_{\text{b}} \times t_{\alpha=0.01}$$

$$5,113,382 - (1,110,967) \times (3.355) < b < 5,113,382 + (1,110,967) \times (3.355)$$

$$1,386,087 < b < 8,840,676$$

99 percent confident that one percentage point increase, say from 25% to 26%, in access to BB has caused the annual AL ST revenue to decrease by LL of \$1,386,087 and UL of \$8,840,676 per year, with the point estimate being \$5,113,382.

Estimated Model

$$(\text{STAX}^P - \text{STAX}^A) = 53,771,025 + 5,113,382 \text{ BB}$$

$$\text{SE} = 1,110,967 \quad \text{R}^2 = 0.73 \quad \text{t} = 4.6026 \quad \text{D-W} = 1.07$$

t significant at 1%

$$(\text{STAX}^P - \text{STAX}^A) = 53,771,025 + 5,113,382 \times 51 = \$314,553,507$$

90 percent confidence level

$$B - s_b \times t_{\alpha=0.10} < b < B + s_b \times t_{\alpha=0.10}$$

$$5,113,382 - (1,110,967) \times (1.860) < b < 5,113,382 + (1,110,967) \times (1.860)$$

$$5,113,382 - 2,066,399 < b < 5,113,382 + 2,066,399$$

$$3,046,983 < b < 7,179,781$$

We are 90 percent confident that one percentage point increase, say from 25% to 26%, in access to broad band has caused the annual Alabama sales tax revenue to decrease by the lower limit of \$3,046,983 and the upper limit of \$7,179,781 per year, with the point estimate being \$5,113,382.

Percentage Loss in Revenue Based on Averages

Ave. STAX collection (2000-09) = \$1,763,472,114

Ave. BB access rate (2000-09) = 26.17%

%Loss

$$= \$\text{Loss} \div (\$STAX\text{coll.} + \$\text{Loss})$$

$$= 5,113,382 \times 26.17 \div (1,763,472,114 + 5,113,382 \times 26.17)$$

$$= 0.0705 \text{ or } 7.05 \text{ percent.}$$

Percentage Loss in Revenue Based on 2009 Data

%Loss

$$= \$\text{Loss} \div (\$STAX\text{coll.} + \$\text{Loss})$$

$$\begin{aligned} &5,113,382 \times 51.08 \div (1,823,865,142 + 5,113,382 \times 51.08) \\ &= 261,191,552.56 \div 2,085,056,694.56 \\ &= 0.125 \text{ or } 12.5 \text{ percent.} \end{aligned}$$

%Increase

$$\begin{aligned} &5,113,382 \times 51.08 \div 1,823,865,142 \\ &= 0.143 \text{ or } 14.3 \text{ percent} \end{aligned}$$

Estimation in Natural Log

$$\text{LN}(\text{STAX}^P - \text{STAX}^A) = 17.2115 + 0.5739 \text{ BB} \\ (0.0818)$$

$$R^2 = 0.86$$

$$D-W = 1.16$$

Figure in the parentheses is the standard error of the estimated coefficient. The t-value for the estimated coefficient is 7.0148, indicating statistical significance at 1 percent level of α .

The estimated coefficient measures the broad band access elasticity of sales tax revenue, which is relatively inelastic since 0.5739 is less than one. The estimated elasticity coefficient means that for every one percent increase in the access to broad band such as 25 percent access to 25.25 percent access, sales tax collections decrease by 0.5739 percent. Put differently, for every ten percent increase in the access to broad band such as 25 percent access to 27.50 percent access, sales tax collections decrease by 5.739 percent. Note that the sign of the estimated coefficient is positive but measures declining revenue because data of the dependent variable represent the difference between the potential revenue collections and actual revenue collections.

Thank you.

Questions?



Alabama ST Loss Calculation - Continued

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.8520
R Square	0.7259
Adjusted R Square	0.6916
Standard Error	58,167,703
Observations	10

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	1	71,676,693,502,247,600	71,676,693,502,247,600	21
Residual	8	27,067,853,776,421,900	3,383,481,722,052,740	
Total	9	98,744,547,278,669,600		

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	53,771,025	34,408,343	1.5627	0.1567
X Variable 1	511,338,151	111,096,693	4.6026	0.0017

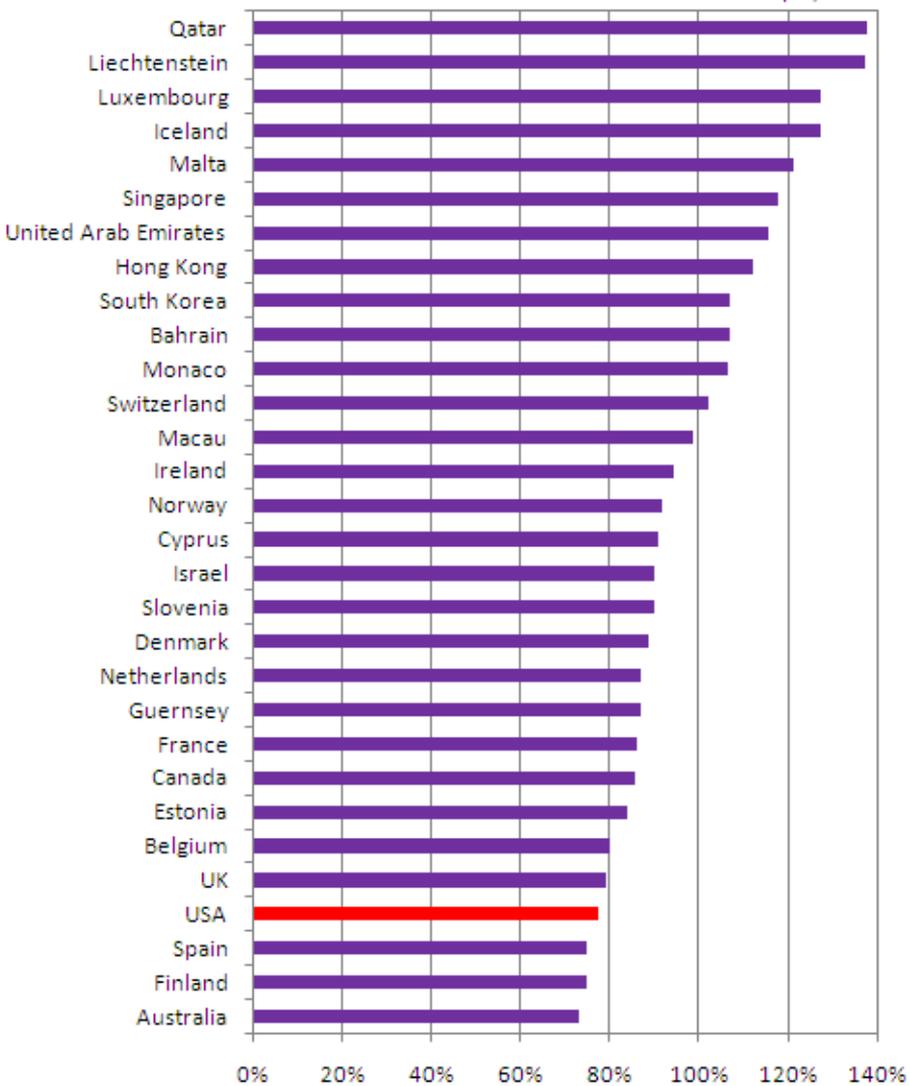
Alabama ST Loss Calculation- continued

<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>		
71,676,693,502,247,600	71,676,693,502,247,600	21	0		
27,067,853,776,421,900	3,383,481,722,052,740				
98,744,547,278,669,600					
<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>
34,408,343	1.5627	0.1567	-25,574,756	133,116,806	-25,574,756
111,096,693	4.6026	0.0017	255,148,717	767,527,584	255,148,717

Broadband Penetration by Household

Q1-2011

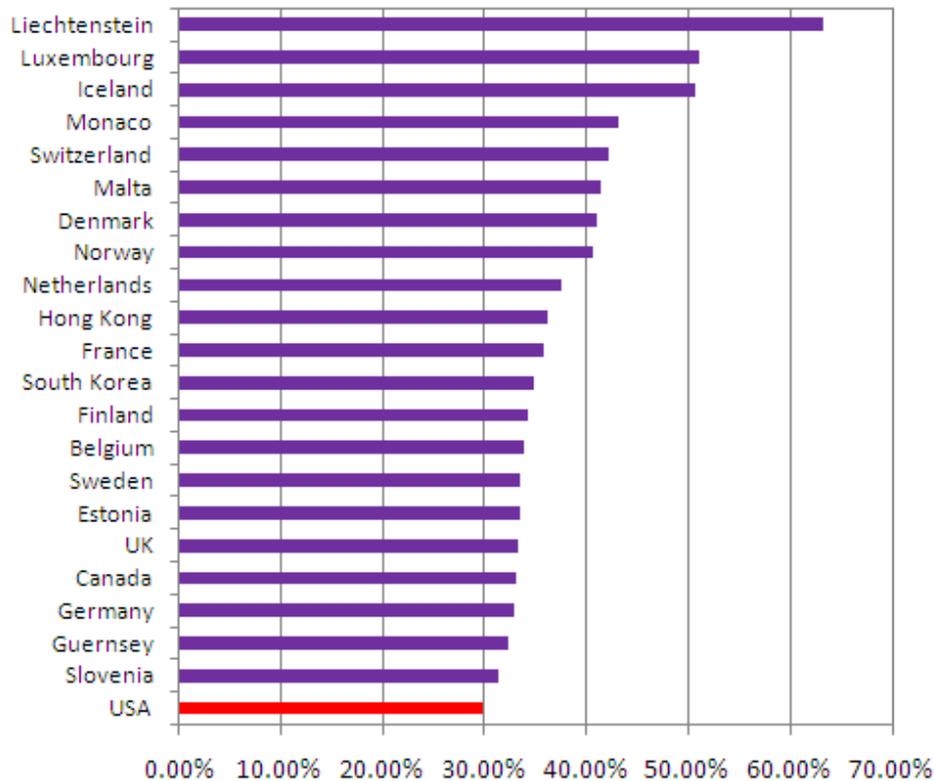
Source: Point Topic,



Broadband Penetration by Population

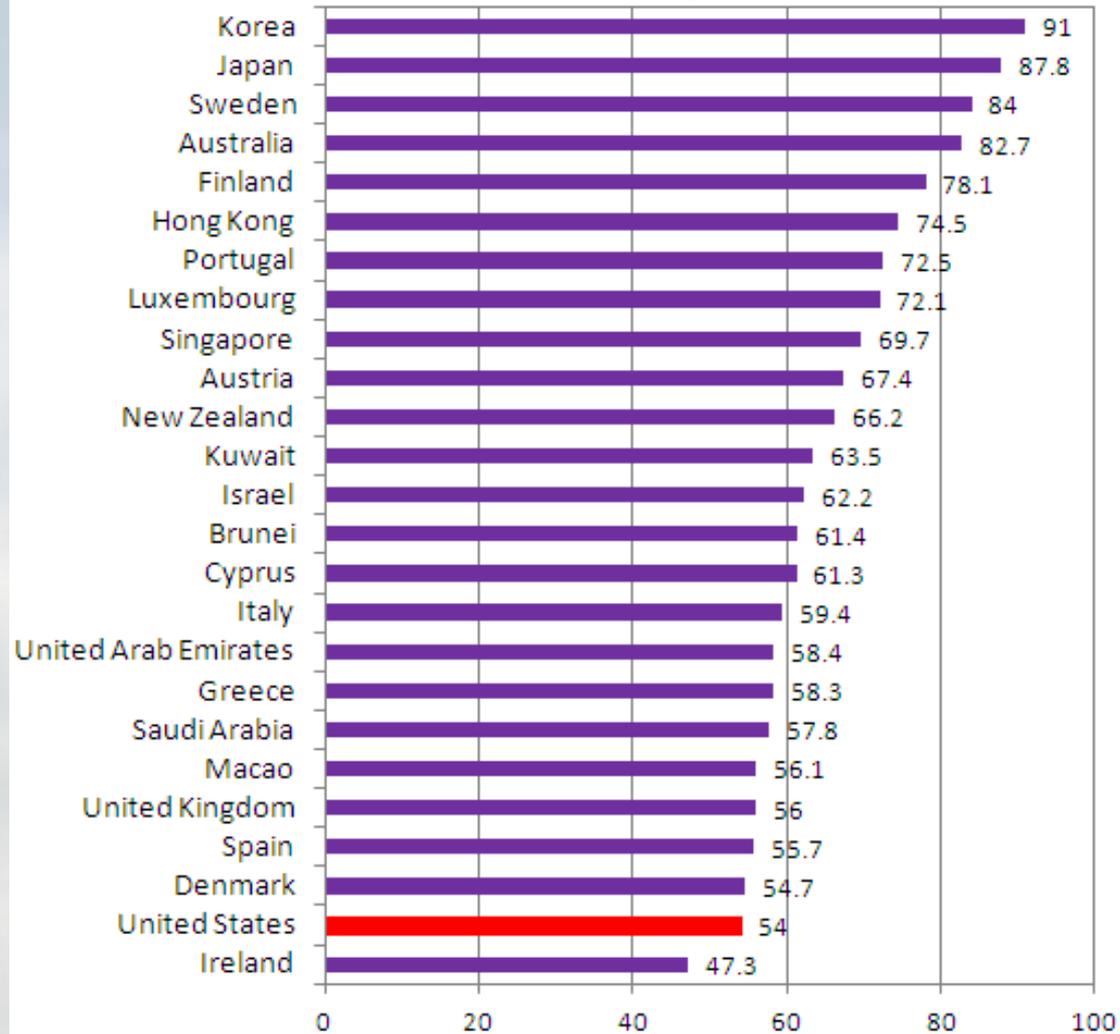
Q1-2011

Source: Point Topic 2011



Top 25 Countries in Mobile Broadband Penetration - 2010

Source: ITU Measuring the Information Society - 2011



BB Access Elasticity of ST Revenue

$$\text{LN}(\text{STAX}^{\text{P}} - \text{STAX}^{\text{A}}) = 17.2115 + 0.5739 \text{ BB} \\ (0.0818)$$

$$R^2 = 0.8602 \quad t = 7.0148$$

For every one percent increase in the access to BB such as 25 percent access to 25.25 percent access, ST collections decrease by 0.5739 percent.

Put differently, for every ten percent increase in the access to BB such as 25 percent access to 27.50 percent access, ST collections decrease by 5.739 percent.