

# Tech Liberty

A Threefold Policy Recommendation  
on Technology Liberalization  
in ASEAN Countries and  
the Effect on Income Inequality



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# INTRODUCTION



**9 out of 10**

ASEAN countries experience high digital and income inequality  
*(Paschalidou, Georgia, 2011)*



**35%**

Smartphone Penetration in the ASEAN region but is growing rapidly  
*(Kearney, 2015)*



**2025**

ASEAN has the potential to enter the top 5 digital economies in the world  
*(Kearney, 2015)*

# RELATIONSHIP:

## Digital Inequality & Income Inequality

Digital Gap is just as extreme and profound as the Income Gap in many countries around the world

*(Cunningham, 2015)*



# This study seeks to:



1

Determine the relationship between Income Inequality and Digital Inequality in the ASEAN-10



2

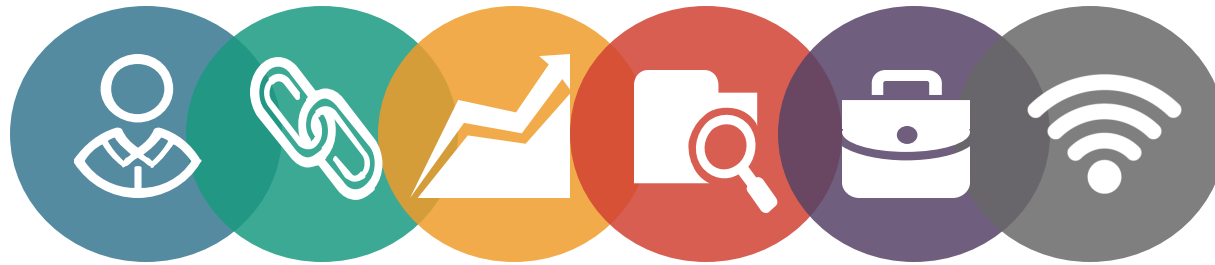
Recommend policies in compliance with the ASEAN Economic Blueprint 2025

*Income Inequality = a + % of Internet Users*



Income Inequality is **negatively associated** with Internet User

Higher % of internet users →  
lower income inequality



*Due to the presence of  
this relationship, we  
recommend these policies*

# POLICY RECOMMENDATIONS

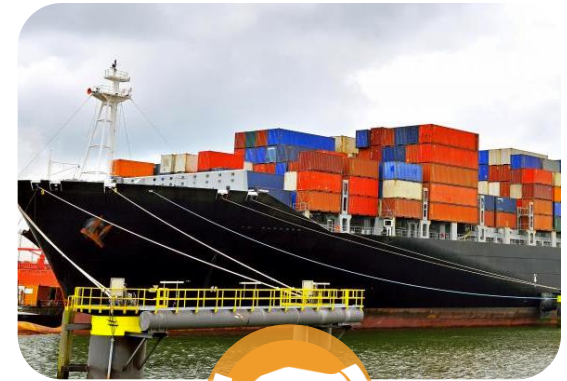
*A Threefold Policy Recommendation on Technology Liberalization in ASEAN Countries and the Effect on Income Inequality*



**Software  
Literacy**



**Accessible  
Public Wi-Fi**



**Trade  
Liberalization**



# POLICY RECOMMENDATION 1



**Advancing Software Literacy  
Through the Implementation  
of Basic Software Education  
as part of the Basic Education  
Curriculum (BEC)**



# Software Literacy

## Policy Recommendation 1



What is **Software Literacy**?



Lack of **ICT Related Courses**



Rollout for **Technology Related Subjects**

# Software Literacy

## Policy Recommendation 1

10



### Main Takeaways



Catch up with **modernization**



Promote a **knowledge based economy**



Inline with the **ASEAN Economic Blueprint 2025**

# POLICY RECOMMENDATION 2



**Making Public Wi-Fi  
Accessible through a  
Public-Private Partnership  
(PPP)**

# Accessible Public Wi-Fi

## Policy Recommendation 2

12



Why **Public-Private Partnerships**?



Increase **infrastructure development**  
for ICT initiatives

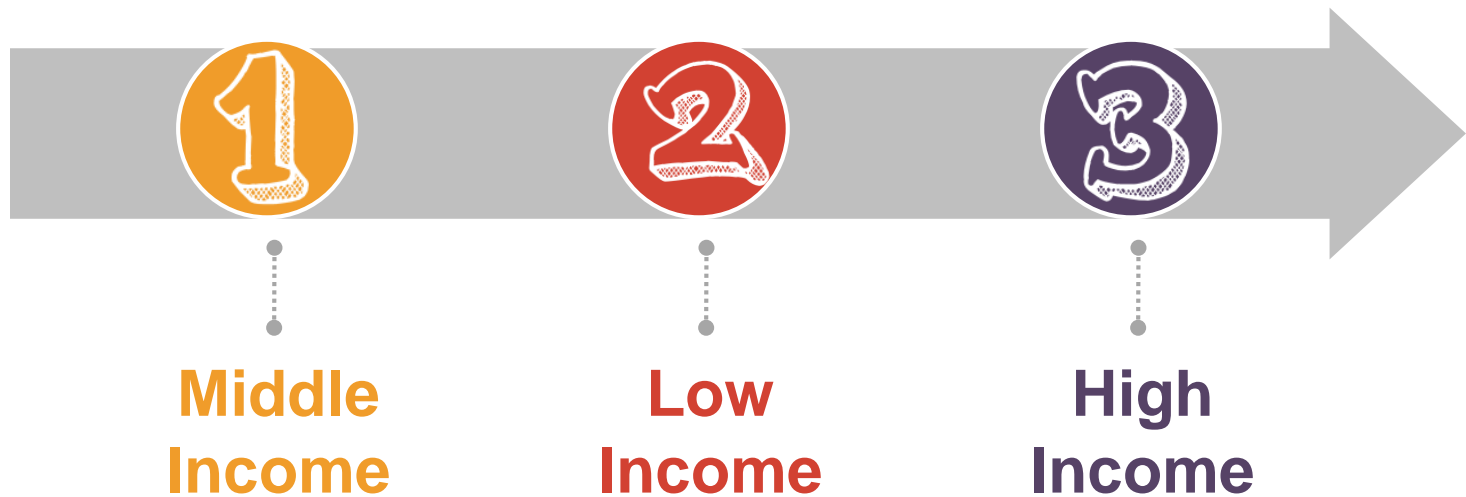
# Accessible Public Wi-Fi

## Policy Recommendation 2

13



Start Small, Dream Big



*Rationale:* Take into account the **lag** that is present between the rich and the poor  
(Greenwood, 2010)

# Accessible Public Wi-Fi

## Policy Recommendation 2

14



### Main Takeaways



Win-win-win situation

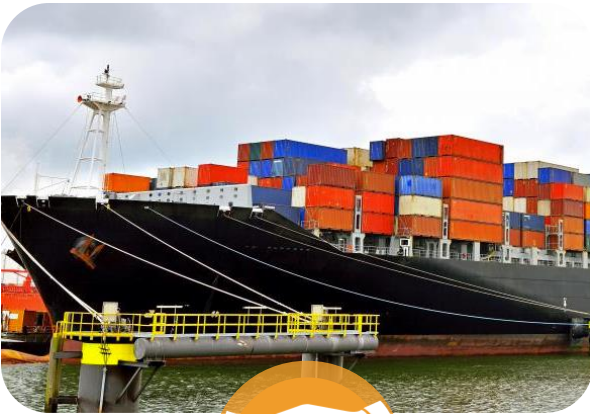


Gradual Rollout: Micro → Macro



Utilize knowledge gained from software literacy programs

# POLICY RECOMMENDATION 3



**Trade Liberalization through the lowering of technology importations customs tax, trade barriers on technological goods and telecommunications tax**



# Trade Liberalization

## Policy Recommendation 3

16



Presence of higher taxes and fees for technological goods



Unaffordability of technological goods

# Trade Liberalization

## Policy Recommendation 3

17



### Main Takeaways



**Lower** trade barriers → **Lower** technological good prices



**Firms** → sell at lower prices while maintaining same profit  
**Consumers** → purchase at lower prices



**Lessen monopoly power** of existing oligopolies and monopolies

# CONCLUSION



# THANK YOU!

*Terima Kasih*



**Table 1**  
**Definition Independent and Dependent Variables**  
**with their A-priori Expectations**

Independent /Dependent Variable	A-priori Expectation	Definition
Income Inequality (Dependent)	+/-	<p>Measured in USD, the income inequality presents a picture in how even or uneven wealth in the form of income is distributed in a particular country (Charlton, 2012).</p> <p>This particular variable is measured by the Gini Index and is an index which ranges from 1 to 100. This variable is the dependent variable in the particular model dependent on the other variables presented below.</p>
Percentage of the Population with Access to the Internet	-	<p>Measured in percent, this percentage measures the relative percentage of the population able to connect and use the internet over a period of time.</p> <p>This has a negative effect on income inequality due to the increase in productivity associated with adequate access to the internet to execute day to day tasks and other workloads (Greenwood, 2010).</p>

# Econometric Model

$$ineq_i = \beta_0 + \beta_1 intuser_i \quad \text{with } ineq_i, intuser_i \in \mathbb{R}^+$$

Variable Name	Description and Data Source
Income Inequality (Dependent Variable)	Measures the difference of groups, populations and countries between the highest income and lowest income  Source of Data: World Bank
Percentage of Internet Users (Independent Variable)	Measures the percentage of the population which are daily internet users  Source of Data: Global Finance

# Pooled OLS

Figure 1 Regression Results using Robust Standard Errors (Pooled OLS)

Linear regression

Number of obs = 216  
F( 1, 214) = 11.51  
Prob > F = 0.0008  
R-squared = 0.1151  
Root MSE = 7.9352

ineq	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnintuser	-4.631782	1.365376	-3.39	0.001	-7.32309	-1.940474
_cons	53.63397	5.563833	9.64	0.000	42.66704	64.6009



# Random Effects: GLS

Figure 2 Random Effects GLS Regression

Random-effects GLS regression  
 Group variable: **countrynum**

Number of obs = **216**  
 Number of groups = **54**

R-sq: within = **0.0281**  
 between = **0.1202**  
 overall = **0.1151**

Obs per group: min = **4**  
 avg = **4.0**  
 max = **4**

corr(u\_i, X) = **0** (assumed)

Wald chi2(1) = **7.38**  
 Prob > chi2 = **0.0066**

ineq	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
lnintuser	<b>-1.198462</b>	<b>.4411025</b>	<b>-2.72</b>	<b>0.007</b>	<b>-2.063007</b>	<b>-.3339166</b>
_cons	<b>40.30125</b>	<b>2.03309</b>	<b>19.82</b>	<b>0.000</b>	<b>36.31646</b>	<b>44.28603</b>
sigma_u	<b>7.9725172</b>					
sigma_e	<b>.94876102</b>					
rho	<b>.98603582</b>	(fraction of variance due to u_i)				

## References:

- ASEAN (2015). *ASEAN Economic Community Blueprint 2025*. Retrieved from: <http://www.asean.org/storage/images/2015/November/aec-page/AEC-Blueprint-2025-FINAL.pdf>
- ASEAN Briefing (2014). *Internet Speeds Across ASEAN*. Retrieved from: <http://www.aseanbriefing.com/news/2014/04/24/internet-speeds-across-asean.html>
- Cunningham, A. (2015). *Understanding technology and society*. Gartner Research: United States of America
- DOST (2016). *DOST Free Wi-Fi Project Gets a P3B Upgrade*. Retrieved from: <http://icto.dost.gov.ph/dost-free-wi-fi-project-gets-a-p3b-upgrade/>
- ERIA (2015). *National Public-Private Partnership Frameworks in ASEAN Member Countries*. Retrieved from: [http://www.eria.org/PPP%20in%20ASEAN\\_Full%20Report\\_2015.pdf](http://www.eria.org/PPP%20in%20ASEAN_Full%20Report_2015.pdf)
- FI-PPP (2016). *Future Internet PPP*. Retrieved from: <https://www.fi-ppp.eu/> Greenwood, J. (2010). *Productivity, technology and income inequality*. American Enterprise Institute for Public Policy Research.
- Kearny (2015). *The ASEAN Digital Revolution*. Retrieved from: <https://www.atkearney.com/documents/10192/7567195/ASEAN+Digital+Revolution.pdf/86c51659-c7fb-4bc5-b6e1-22be3d801ad2>
- Lansing, K. and Markiewicz, A. (2016). *Top Incomes, Rising Inequality, and Welfare*. Retrieved from: <http://www.frbsf.org/economic-research/files/wp12-23bk.pdf>
- Lerman, R. (2016). *Public-Private Partnerships Are the Best Way to Expand Internet Access, Says Seattle Mayor*. Retrieved from: <http://www.govtech.com/dc/articles/Public-Private-Partnerships-Expand-Internet-Access-Seattle-Mayor.html>16
- Nomad, V. (2016) *Internet Speed in the ASEAN Countries*, unpublished.
- PPPIRC (2015). *What are Public Private Partnerships?* Retrieved from: <http://ppp.worldbank.org/public-private-partnership/overview/what-are-public-private-partnerships>
- Soltan, I. (2016). Digital divide: *The technology gap between the rich and the poor*. *Massachusetts Institute of Technology Review*. United States.
- Tao, A. (2015). *Asian higher education institutions increase software and services spend*. Retrieved from: <http://www.computerweekly.com/news/4500257430/Asean-higher-education-institutes-increase-software-and-services-spend>
- World Bank (2016). GINI index (World Bank estimate). Retrieved from: <http://data.worldbank.org/indicator/SI.POV.GINI>
- Wright, G. (2015). Internet Users By Country & Gender. Retrieved from: <https://www.gfmag.com/global-data/non-economic-data/internet-users?page=2>