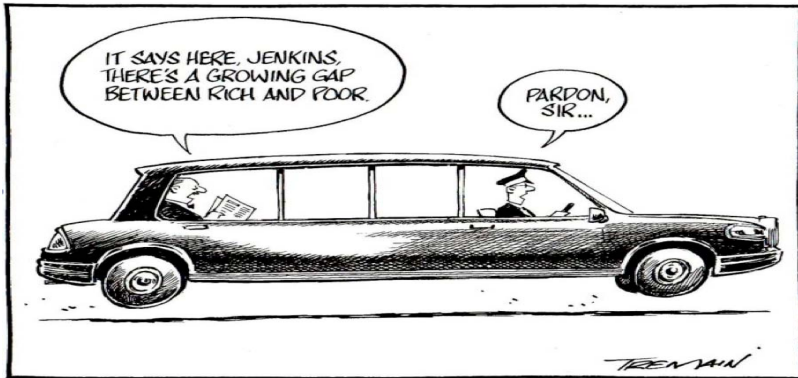


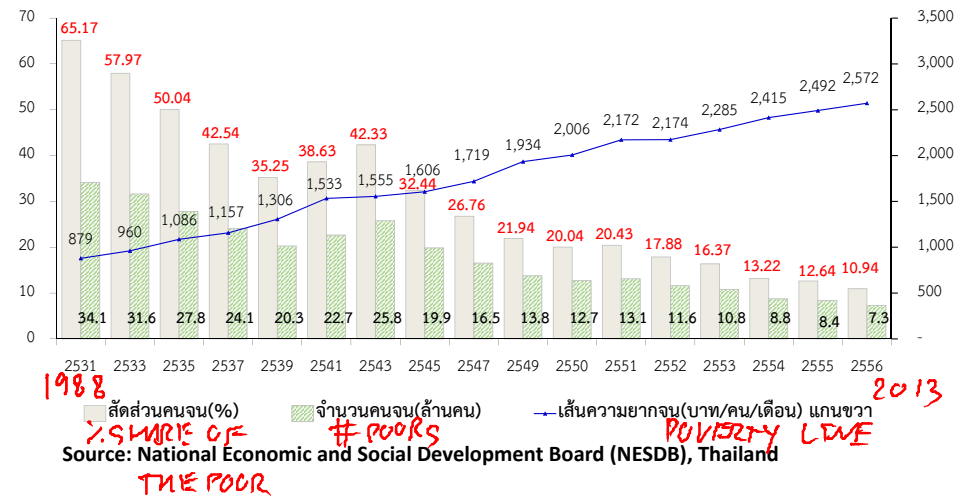
EE441: Economics of Public Expenditure

Issue: Income Inequality and Growth



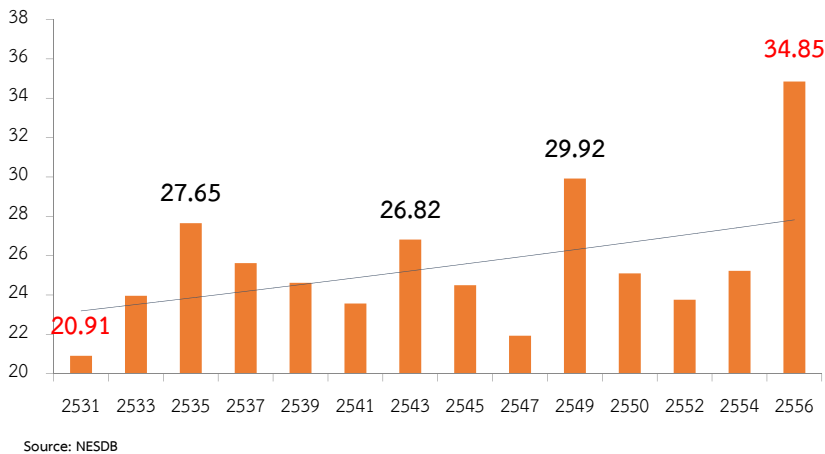
1

Good news: Number of poors has been reduced



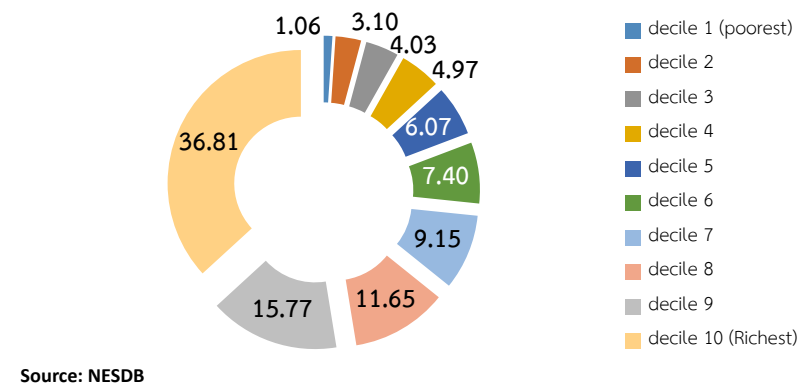
2

Bad news: Income inequality has been worsen continuously for the past two decades

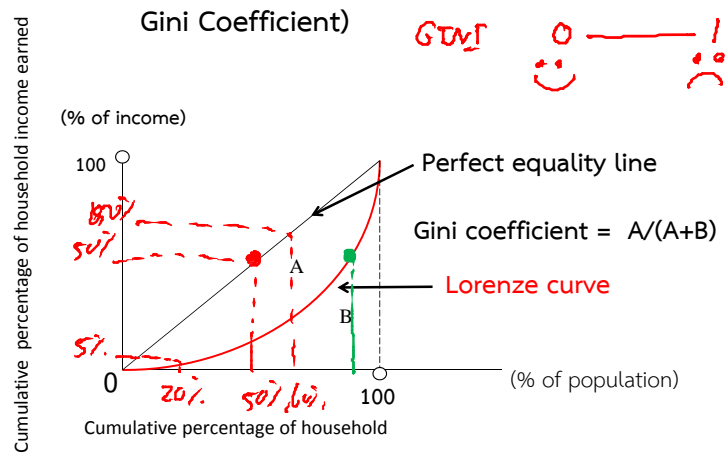


3

Difference in income share between the poorest and the richest group is about 34.9 times



4



Points on the Lorenz curve represent statements like "the bottom 20% of all households have 10% of the total income."

5

Gini Coefficient

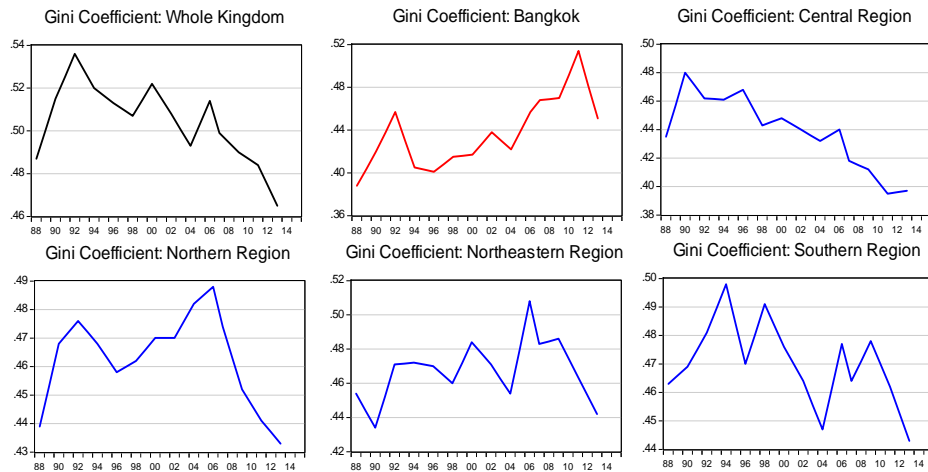
Whole Kingdom, Regions, Urban Area, Rural Area

	GINI_ALL	GINI_BKK	GINI_CENTRAL	GINI_NORTH	GINI_NORTHEAST	GINI_SOUTH	GINI_RURAL	GINI_URBAN
Mean	0.503786	0.437357	0.437929	0.462929	0.468071	0.470214	0.448500	0.470429
Median	0.507500	0.430000	0.440000	0.468000	0.470500	0.469500	0.446000	0.472500
Maximum	0.536000	0.514000	0.480000	0.488000	0.508000	0.498000	0.478000	0.494000
Minimum	0.465000	0.388000	0.395000	0.433000	0.434000	0.443000	0.426000	0.434000
Std. Dev.	0.018569	0.034074	0.025650	0.016481	0.019109	0.015034	0.013043	0.014732
Skewness	-0.345411	0.607023	-0.209053	-0.449833	0.154078	-0.033172	0.720993	-0.956289
Kurtosis	2.673170	2.839330	2.180592	2.194399	2.890342	2.679287	3.407041	3.978838
Jarque-Bera	0.340698	0.874839	0.493642	0.850728	0.062408	0.062567	1.309588	2.692713
Probability	0.843370	0.645700	0.781281	0.653532	0.969278	0.969201	0.519549	0.260186
Sum	7.053000	6.123000	6.131000	6.481000	6.553000	6.583000	6.279000	6.586000
Sum Sq. Dev.	0.004482	0.015093	0.008553	0.003531	0.004747	0.002938	0.002212	0.002821

0 → 100
50

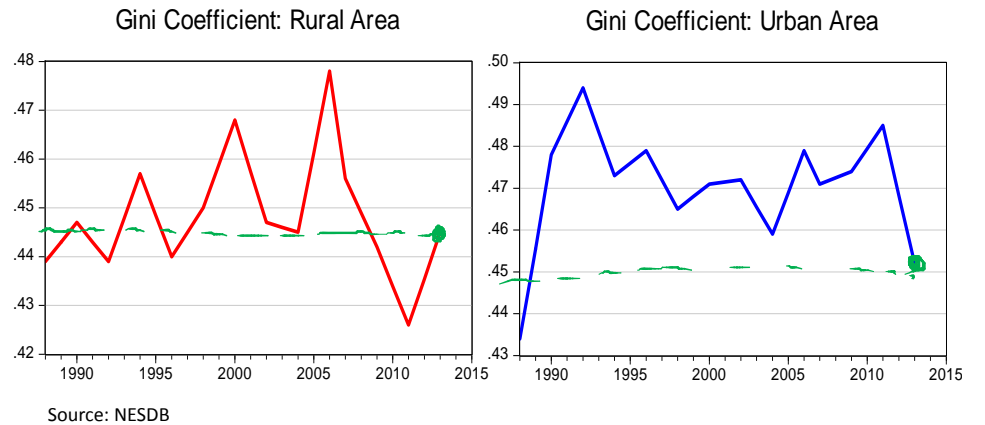
6

Gini efficient *narrowly* fluctuates around 0.04-0.05 for the past two decades



7

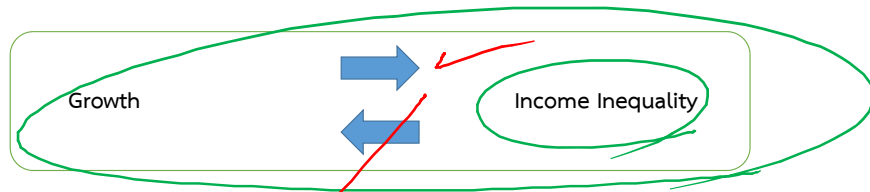
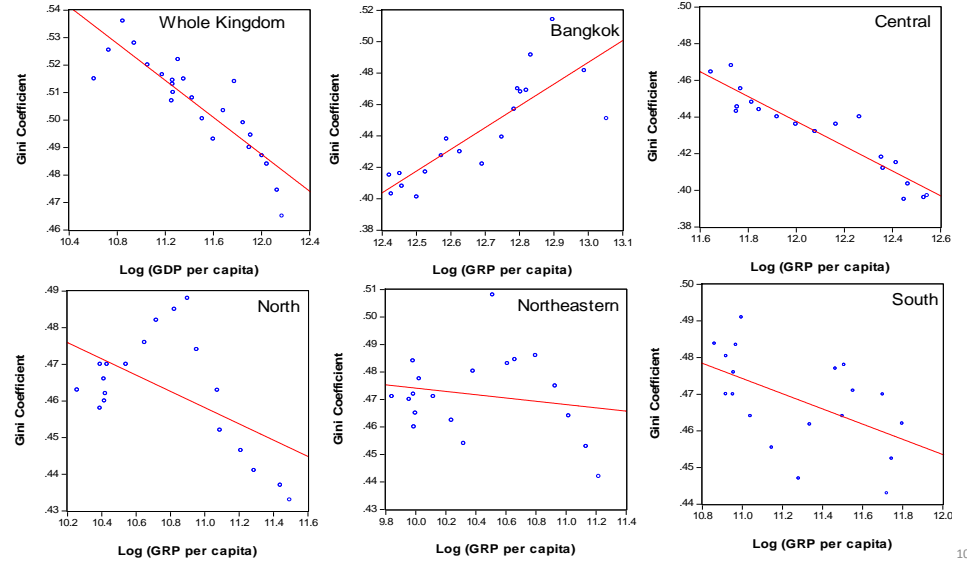
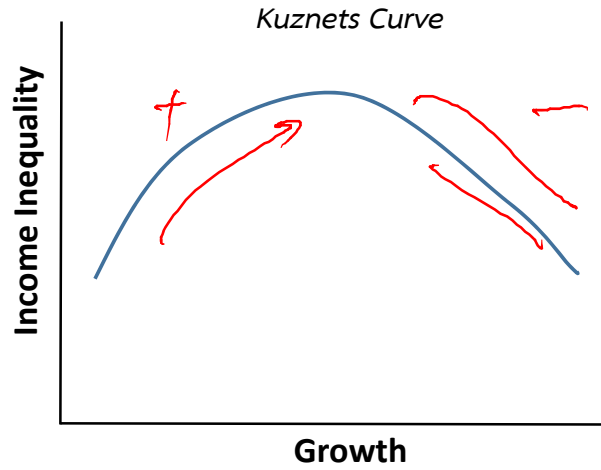
Income Inequality has been persisted in the rural area.



8



Simon Kuznets
(1901-1985)
Nobel Memorial Prize in
Economic Sciences (1971)



Pairwise Granger Causality Tests
Sample: 1988 2013
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
GINI does not Granger Cause LNGRP	85	0.71030	0.4946
<u>LNGRP does not Granger Cause GINI</u>		3.14314	<u>0.0485</u>

→ P value > 0.05

$$GINI_{it} = \beta_0 + \beta_1 GRP_{it} + \beta_2 YOS_{it} + \beta_3 LF_{it} + \varepsilon_{it}$$

where

- $GINI_{it}$ Gini Coefficient for Region i at time t
- GRP_{it} Gross Regional Product for region i at time t (logarithmic form)
- YOS_{it} Years in Schooling for region i at time t ← qualitative aspect
- LF_{it} Amount of Employment Labor force for region i at time t (logarithmic form) ← quantitative aspect
- ε_{it} Disturbance term

Time period	2531-2556 (1981-2013)
Regions	Bangkok, North, Northeastern, Central, and South
Data type	Panel Data Analysis
Source of data	National Statistic Office (NSO), National Economic and Social Development Board (NESDB)

Dependent Variable: GINI
 Method: Panel Least Squares
 Date: 09/13/15 Time: 18:19
 Sample (adjusted): 1995 2013
 Periods included: 19
 Cross-sections included: 5
 Total panel (balanced) observations: 95

$$GINI = f(\text{LOG(GDP)}, \text{SCHOOLING}, \text{LOG(LABOR)})$$

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.352971	0.565311	7.700128	0.0000
LNGRP	-0.082510	0.016080	-5.131440	0.0000
SCHOOLING	-0.025493	0.008631	-2.953806	0.0043
LNLABOR	-0.176433	0.037847	-4.665454	0.0000

Effects Specification			
Cross-section fixed (dummy variables)			
Period fixed (dummy variables)			
R-squared	0.785804	Mean dependent var	0.455426
Adjusted R-squared	0.708197	S.D. dependent var	0.025912
S.E. of regression	0.013998	Akaike info criterion	-5.472264
Sum squared resid	0.013519	Schwarz criterion	-4.773309
Log likelihood	285.9326	Hannan-Quinn criter.	-5.189834
F-statistic	10.12539	Durbin-Watson stat	0.614101
Prob(F-statistic)	0.000000		

LIN - LOG MODEL
 100
 TOO TO GET % CHANGE.

Effect of explanatory variables on Gini coefficient

Change in Gini coefficient

- When GRP per capita increases by 1 percent, Gini coefficient will reduce by -0.0008
- When number of years in Schooling increases by 1 year, Gini coefficient will reduce by -0.0255
- When Employment labor force increases by 1 percent, Gini coefficient will reduce by -0.0018

Net Enrolment Rate

Level of Educaiton	2008	2009	2010	2011	2012	2013
Kindergarten	63.3	65.0	65.1	53.1	65.7	66.9
Primary school	87.6	87.1	86.1	87.2	87.6	88.1
Junior highschool	67.9	68.6	69.9	69.6	67.6	67.0
Senior highschool + Vocational	55.4	57.3	57.6	55.9	55.1	57.7
Undergraduate	23.9	23.9	23.1	21.9	28.5	29.7

Source: NESDB

Net enrollment rate classified by Decile by expenditure, 2008-2013

Population group classified by expenditure level	2008	2009	2010	2011	2012	2013
10% level 1 (Lowest Expenditure)	4.1	1.4	2.6	2.4	4.0	3.5
10% level 2	5.8	5.4	9.1	7.1	6.4	7.4
10% level 3	9.9	6.3	10.2	8.2	8.6	9.2
10% level 4	15.0	12.4	12.5	15.4	14.2	11.7
10% level 5	13.6	15.1	17.7	15.0	15.1	16.9
10% level 6	21.2	21.0	16.6	21.4	21.9	21.6
10% level 7	28.4	26.2	25.4	25.0	30.9	31.3
10% level 8	32.1	29.6	27.9	32.3	44.4	43.5
10% level 9	37.1	43.8	45.1	42.8	53.1	53.1
10% level 10 (Highest Expenditure)	57.9	59.3	51.7	45.0	66.0	67.3
Total	23.9	23.9	23.1	21.9	28.5	29.7

Net Enrolment Rate for Undergraduate Level Classified by Area, 2008-2013

Area	2008	2009	2010	2011	2012	2013
Urban	33.40	34.58	30.29	29.78	39.18	39.50
Rural	15.65	13.68	15.53	13.85	16.77	18.00
Total	23.94	23.90	23.06	21.87	28.46	29.68

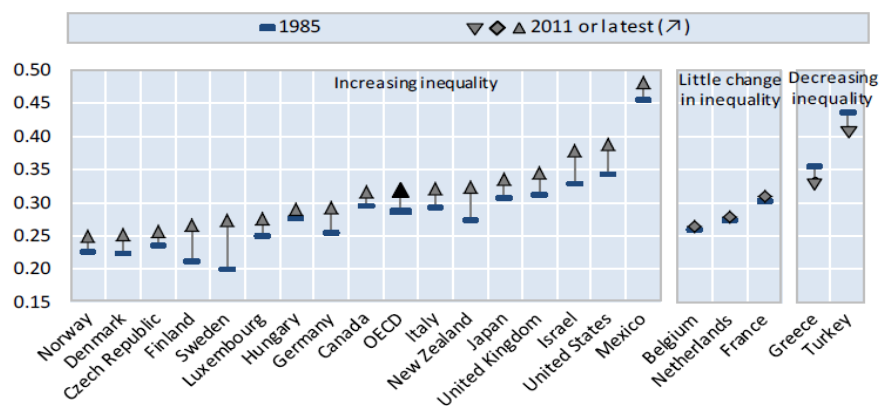
Source: NESDB

Net Enrolment Rate in Each Educational Level Classified by Regions, 2013

Region	Kindergarten	Primary	Junior Highschool	Senior Highschool	Undergraduate
Bangkok	71.01	90.67	72.60	64.34	48.59
Central	64.71	88.71	67.76	58.13	28.43
North	63.28	87.58	63.21	60.53	30.07
Northeastern	70.58	86.49	67.86	55.60	25.89
South	64.22	89.64	65.01	52.97	16.81
Total	66.89	88.08	67.01	57.74	29.68

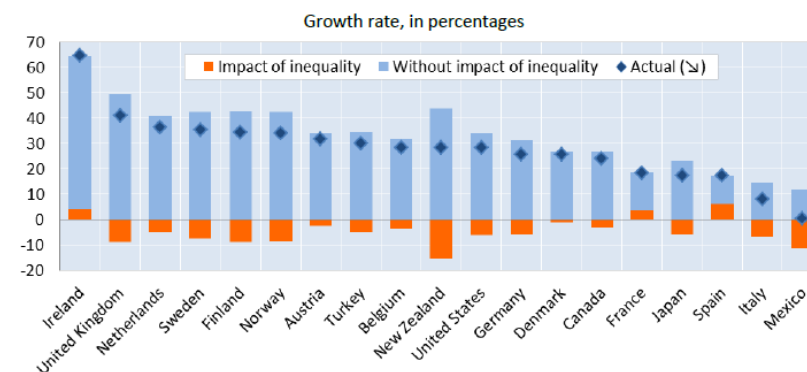
Source: NESDB

1. Income inequality increased in most OECD countries
Gini coefficients of income inequality, mid-1980s and 2011/12



Note: Incomes refer to household disposable income, adjusted for household size.
Source: OECD Income Distribution Database (<http://oe.cd/idd>).

2. Estimated consequences of changes in inequality (1985-2005)
on subsequent cumulative growth (1990-2010)



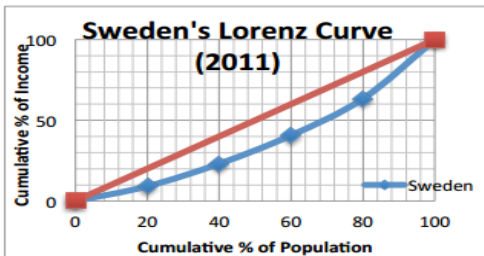
Note: The chart reports the estimated consequences of changes in inequality on the growth rate of GDP per capita (relative to the population aged 25-64) over the period 1990-2010. "Actual" is the actual growth rate of GDP per capita, "Impact of inequality" is obtained based on the observed changes in inequality across OECD countries (in 1985-2005) and the impact of inequality on growth estimated in the analysis; "Without impact of inequality" is the difference "Actual - Impact of inequality". It should be interpreted as the growth rate that would have been observed had inequality not changed. Actual growth in Germany is computed starting in 1991; the changes in inequality are limited to the period 1985-2000 in the case of Austria, Belgium, Spain and Ireland.

Key Finding from OECD Report (December 2014)

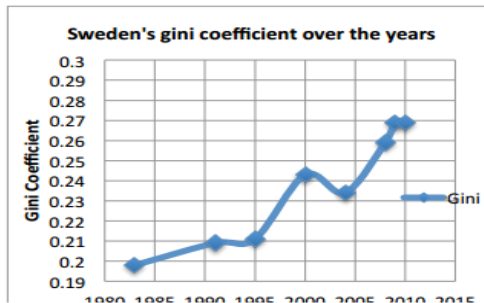
- The gap between rich and poor is now at its **highest level in 30 years** in most OECD countries.
- This long-term trend increase in **income inequality has curbed economic growth significantly.**
- This negative effect of inequality on growth is determined not just by the poorest income decile but actually by the **bottom 40% of income earners.**
- This is because inter alia **people from disadvantaged social backgrounds underinvest in their education.**



- **Tackling inequality through tax and transfer policies does not harm growth,** provided these policies are well designed and implemented.
- In particular, redistribution efforts should **focus on families with children and youth,** as this is where key decisions on human capital investment are made and should **promote skills development and learning** across people's lives.



The first graph is a Lorenz curve representing Sweden. What it illustrates is Sweden's percentage of disposable income owned by each decile from the lowest decile (poorest 20%) to the highest decile (richest 20%) and then compared to a line which represents perfect equality (each decile owns 20% of the income). What we can see from Sweden's Lorenz curve is that there is obviously not perfect income equality, and as expected the richest 20% own the majority of the disposable income – 36.6% to be precise. While some degree of income inequality is to be expected, what is worrisome is the rising income inequality in Sweden over the past 30 years.



The second graph shows Sweden's gini coefficient over the past 27 years. The gini coefficient is a number that represents the income inequality in a region, the closer to 0 the lower the income inequality and the closer to 1 the higher the income inequality is. From the beginning of the graph (1983) we can see that the gini coefficient has been increasing steadily starting from 1983, however, the increase is very minor and is a normal part of a developing economy. On the other hand, starting from 1995 we see the income inequality increase drastically over the next 5 years where it peaked at .243. Coincidentally, this drastic rise also occurs the same year where there was a huge spike in immigration to Sweden, as seen in the third graph.

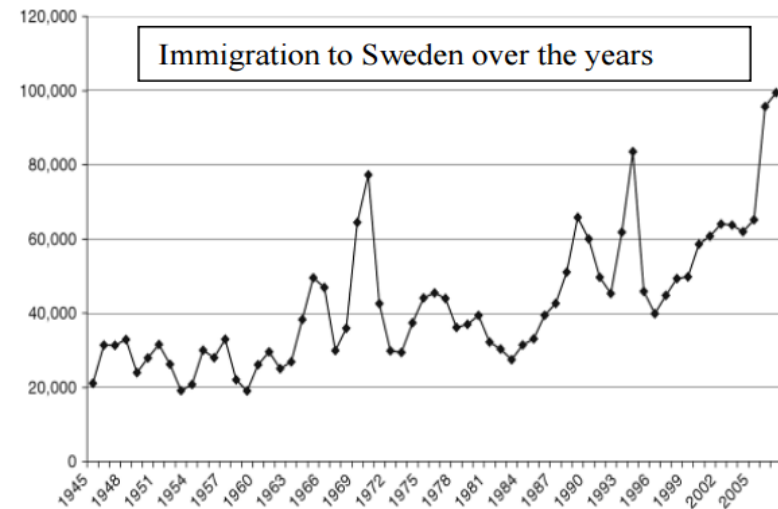


Figure 19-I. Immigration to Sweden 1946–2007. (Absolute Numbers)
Source: Sweden Statistics, Population Statistics. Available: [http://www.scb.se/\(2008-10-13\)](http://www.scb.se/(2008-10-13)).

