An analysis of income inequality in Viet Nam at the province level - Convergence of income based on income sources.

Student: Nguyen Thu Hang
Viet Nam - Japan University

outline

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Introduction

- For the last three decades, thanks to the fast economic growth and appropriate policies, Viet Nam has successfully overcome the poverty. However, Vietnam is now facing another serious problem which is the growing gap between the rich and the poor, between the urban and the rural areas. Income inequality is closely related to economic growth and reflects the current state of social development. In addition, increased income disparity is associated with unequal distribution of social mobility. This situation is so severe that according to OXFAM organization (2016): "about one in every million Vietnamese is considered 'super-rich', defined as possessing assets worth more than $30m. In 2014, there were 210 super-rich individuals in Vietnam, with a combined wealth of around $20m – equivalent to 12 percent of the country's GDP". The other extreme aspect, as cited by OXFAM: "the richest man in Vietnam earns more in a day than the poorest Vietnamese earns in 10 years".

- It is obvious that the income gap in Vietnam is expanding. However, due to the dynamic change of economic structure since Vietnam's signing WTO in 2006 and many other FTAs after that year, the citizens' income has been improved and so do their living standards. This means there has been a sign of income equality. So this paper will analyze the convergence of some major income factors at province level to figure out what the policy makers should do to improve income equality.

introduction

- Objectives: this paper focuses on the income disparity at province level to examine the convergence of income based on main income sources.
- Research questions:

1. What is the situation of income disparity (a comparison between 2010 and 2016)?
2. Is there any income convergence in Viet Nam?

Literature review

- Since income inequality is a universal problem, especially in the developing and developed countries, a lot of research as well as academic reports are conducted about this issue.
- Oxfam organization is really interested in this problem and thus, carries out a lot of research about income inequality. An outstanding report is called “even it up” (January 2017) which mentions many dimensions of inequality in Viet Nam in which income disparity is represented.
- But there has been no significant research concerning the convergence of income in Viet Nam. Nguyen The Anh (2009) used data from 1996 to 2006 of 61 provinces but there was no evidence showing the income convergence. Tran Thi Tuan Anh (2016) examined the existence of beta convergence across regions in Viet Nam, but used index GDP per capita which does not reflect the standard of living such as income. Additionally, she used regions as spatial units which neglects local effects.
- This study will focus on the income disparity from the point of view of income sources using beta convergence across provinces.

Research methodology

- There is a study pointing out that there is no income convergence in Viet Nam from 1996 to 2006. And the income inequality has been expanding in Viet Nam recently. However, due to the fact that Viet Nam has experienced the dynamic change of economic structure especially from 2006, we can expect that there is some catch up effect of income sources distribution on the improvement of the Vietnamese's standard of livings. Thus, this paper aims to analyze the income disparity focusing on **examining the different income sources between year 2010 and 2016** (after the world's economic crisis) by

1. Visualizing the rate of income change between 2010 and 2016 at the province level.
2. Analyzing the overall income inequality using the Gini index and Lorenz curve.
3. Revealing the convergence (or divergence) trends of income using the Beta Convergence.

Research methodology

- In this study I will use the Lorenz curve, GINI index and “the Barro and Sala-i-Martin model of regional convergence” to examine the income inequalities and convergence of income between the year 2010 and 2016, and use the software QGIS for drawing maps to see the rate of income change among provinces. All over different four main sources of income.
- The Barro and Sala-i-Martin model of regional convergence (1995) expresses the growth rate per capita GDP of one region in a certain moment of time (expressed as the logarithm of the ratio) as the linear function of per capita GDP at the beginning of the period. If the slope in this linear model is negative, then those regions that are poorer at the beginning will have higher growth rate and conversely. In this paper, I will use the data of per capita monthly income at province level instead of per capita GDP. So the model can be expressed as:

Research methodology

$$\boldsymbol{log\frac{y_{it}}{y_{i0}} = \alpha + \beta y_{i0} + \varepsilon_i}$$

where t = 1,2, …, T (time)

y_{it} : Per capita income in year t and region i.

α : constant level, β: slope parameter, ε_i: random components.

The parameter $\mathrm{b} = -\frac{\ln(1+\beta)}{T}$ represents the speed of convergence.

If there is β convergence (β>0), it is possible to calculate the speed of convergence and the Half-Life H which is the time taken to reduce the disparities by one half.

Research methodology

Data descriptions:

This study uses data from the General Statistic Office of Viet Nam:

- Per capita monthly income at current prices by income sources and by provinces.

Data

Data descriptions

This study uses data from the General Statistic Office of Viet Nam:

- Per capita monthly income at current prices by income sources and by provinces.

Per capita monthly income is calculated by dividing the total income of the household by the number of household members and dividing by 12 months. Household income includes: income from wages, salary; income from agriculture, forestry and fishery (after subtracting production costs and production tax); income from non-agricultural, forestry and fishery production (after subtracting production costs and production tax); - other income shall be included in the income such as donations, gratuities, savings interest, etc. Items not included in the income include savings, debt collection, asset sale, debt financing, advances and transfers. capital received by joint ventures, associates in production and business.

In this data set, the income from agriculture, forestry, fishery, non-agriculture, non-forestry, non-fishery and others is from self-employed.

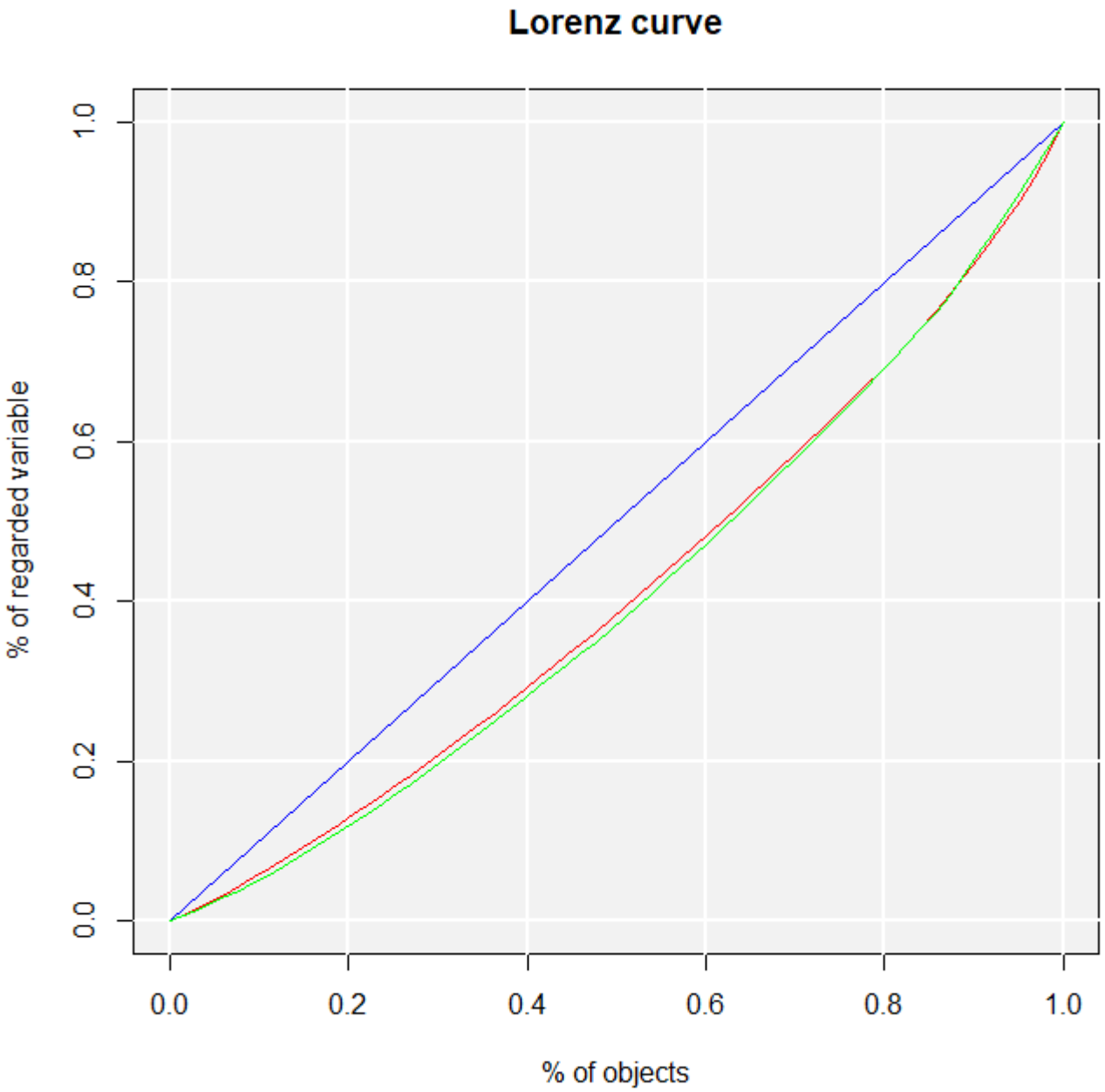
This data is collected and extracted from Viet Nam household Living Standard Sủvey (conducted every two years)

TOTAL INCOME
GINI 2010 = 0.173
GINI 2016 = 0.185

The inequality in the total income distribution in 2016 is larger than that in 2010

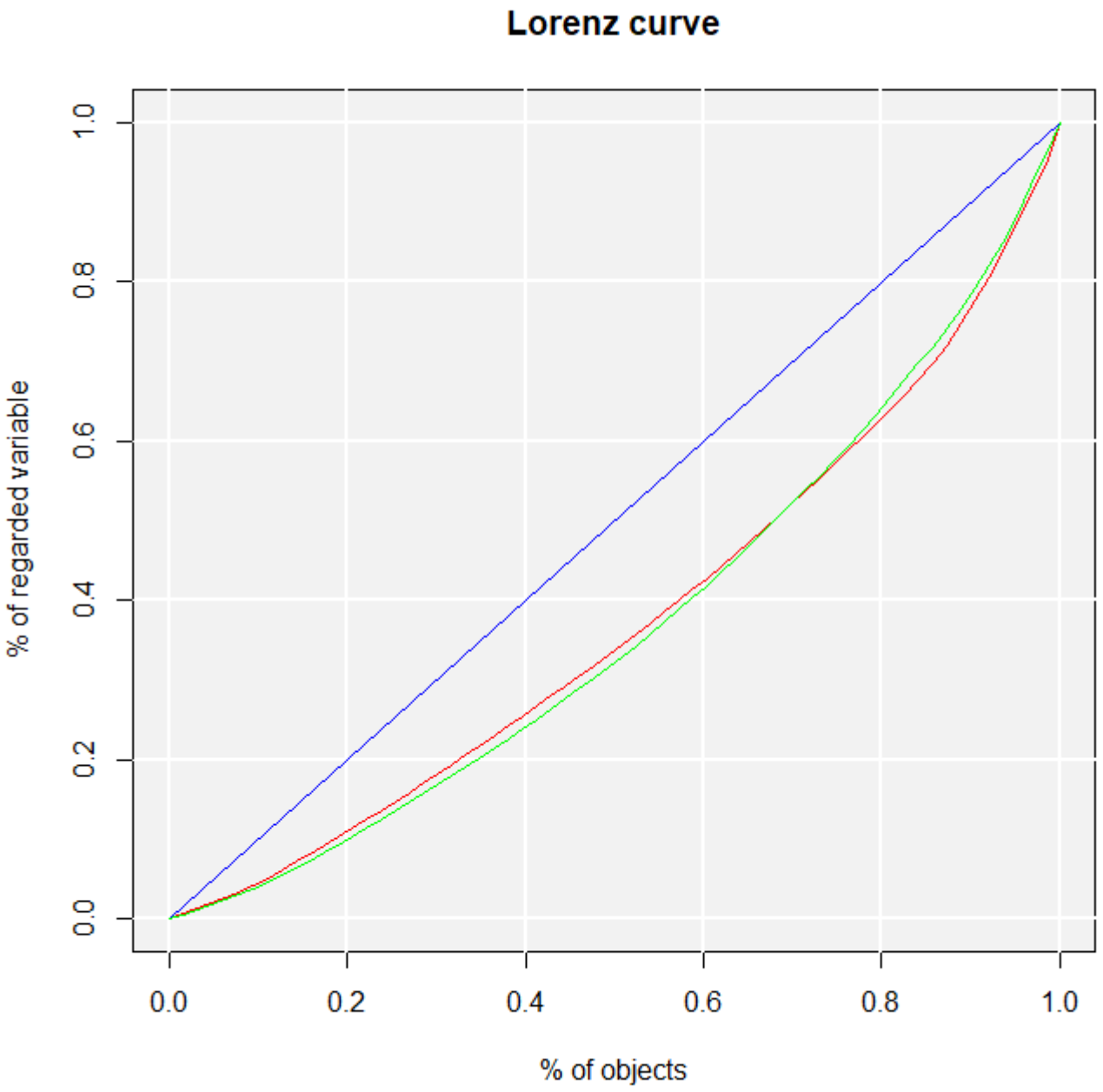
⇒ This result is not as large as expected

⇒ Though not very large the inequalities grew from 2010 to 2016



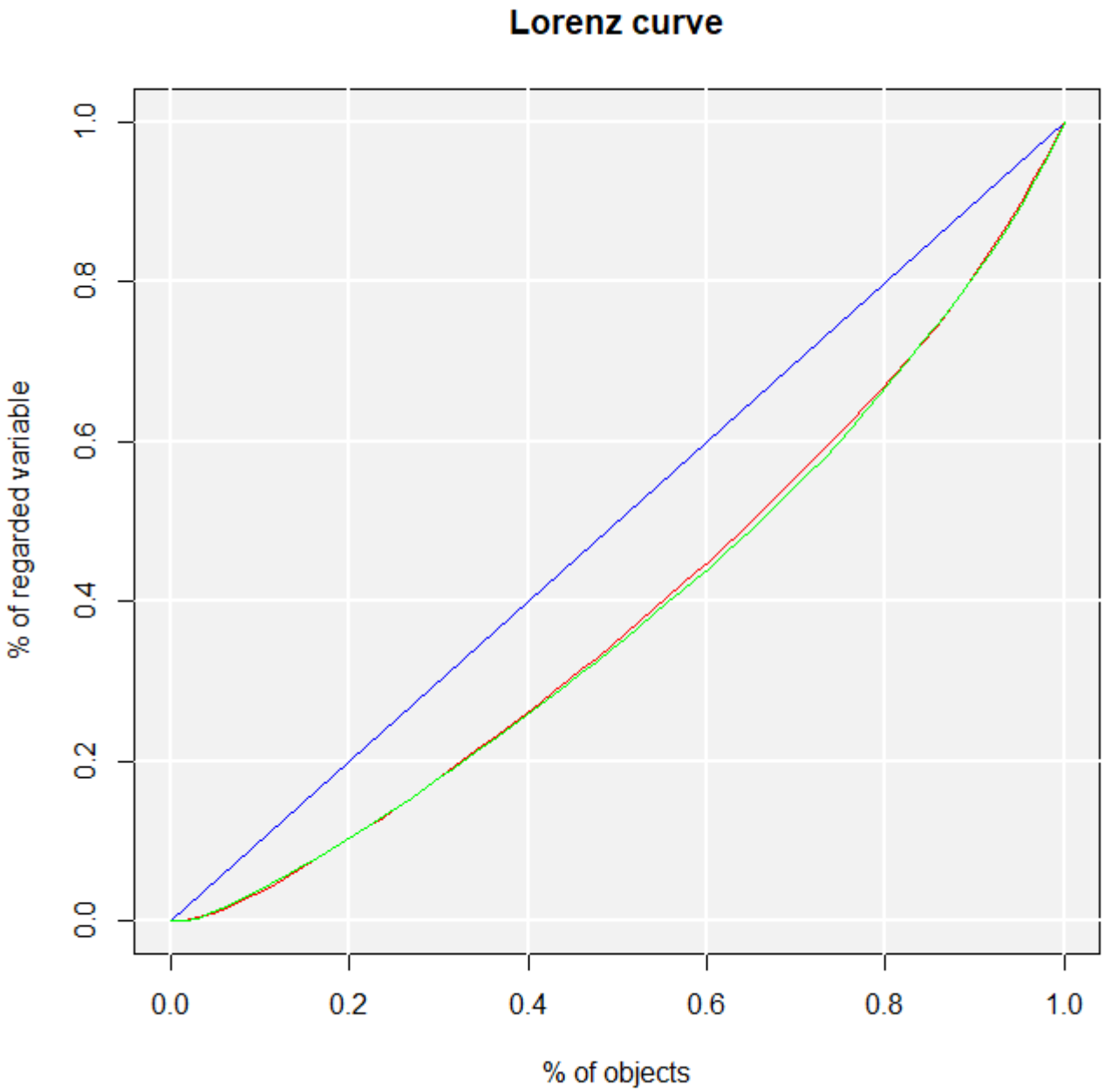
Wages or salary
GINI 2010 = 0.251
GINI 2016 = 0.258

The inequality in the income from wages distribution in 2016 is larger than that in 2010 => Compared to the total income the inequalities are more severe for this source of income which proves the need to analyze income based on the sources separately



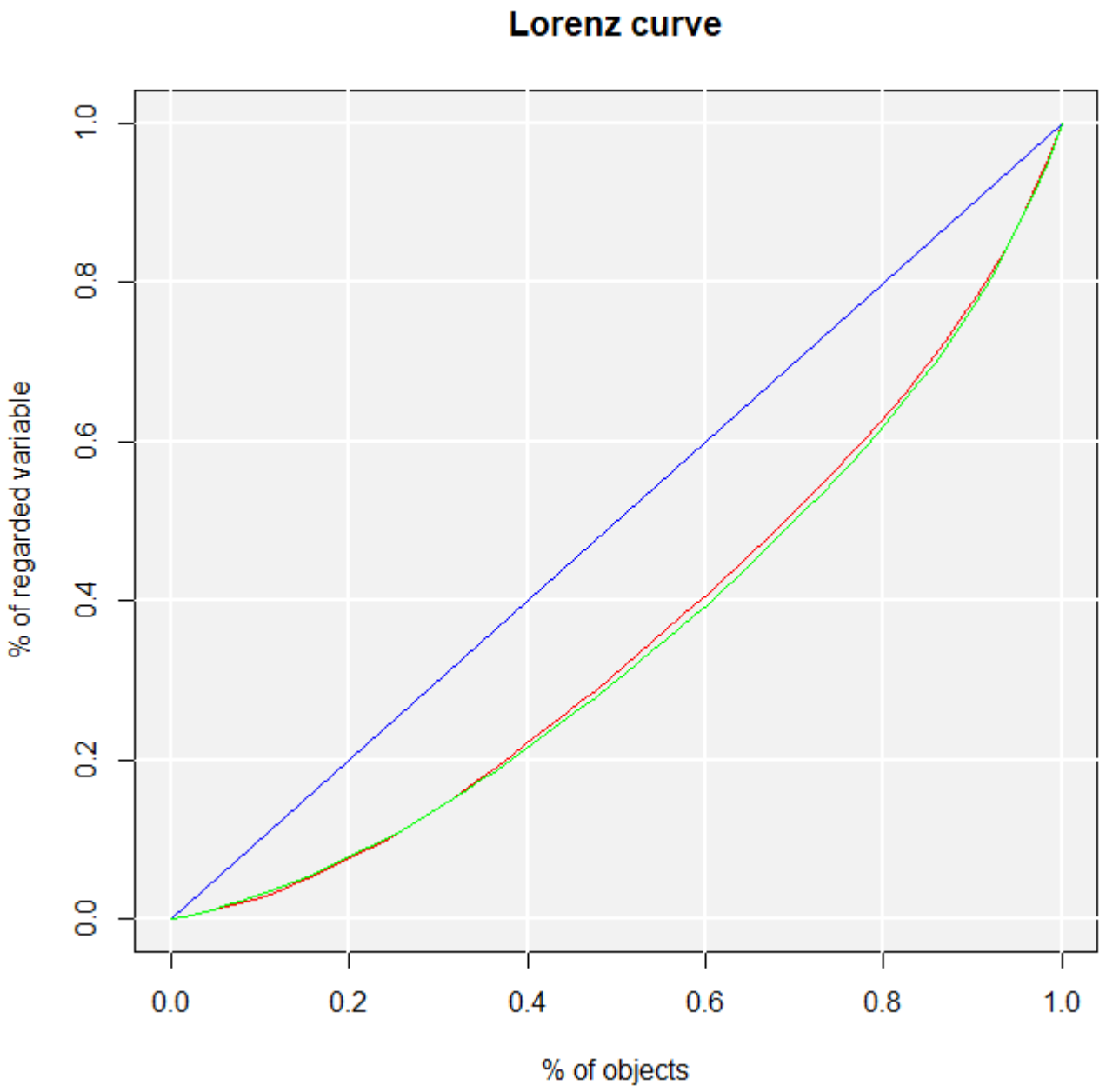
Agriculture…
GINI 2010 = 0.221
GINI 2016 = 0.228

The inequality in the income from agriculture, forestry and fishery distribution in 2016 is slightly larger than that in 2010, but not considerable.



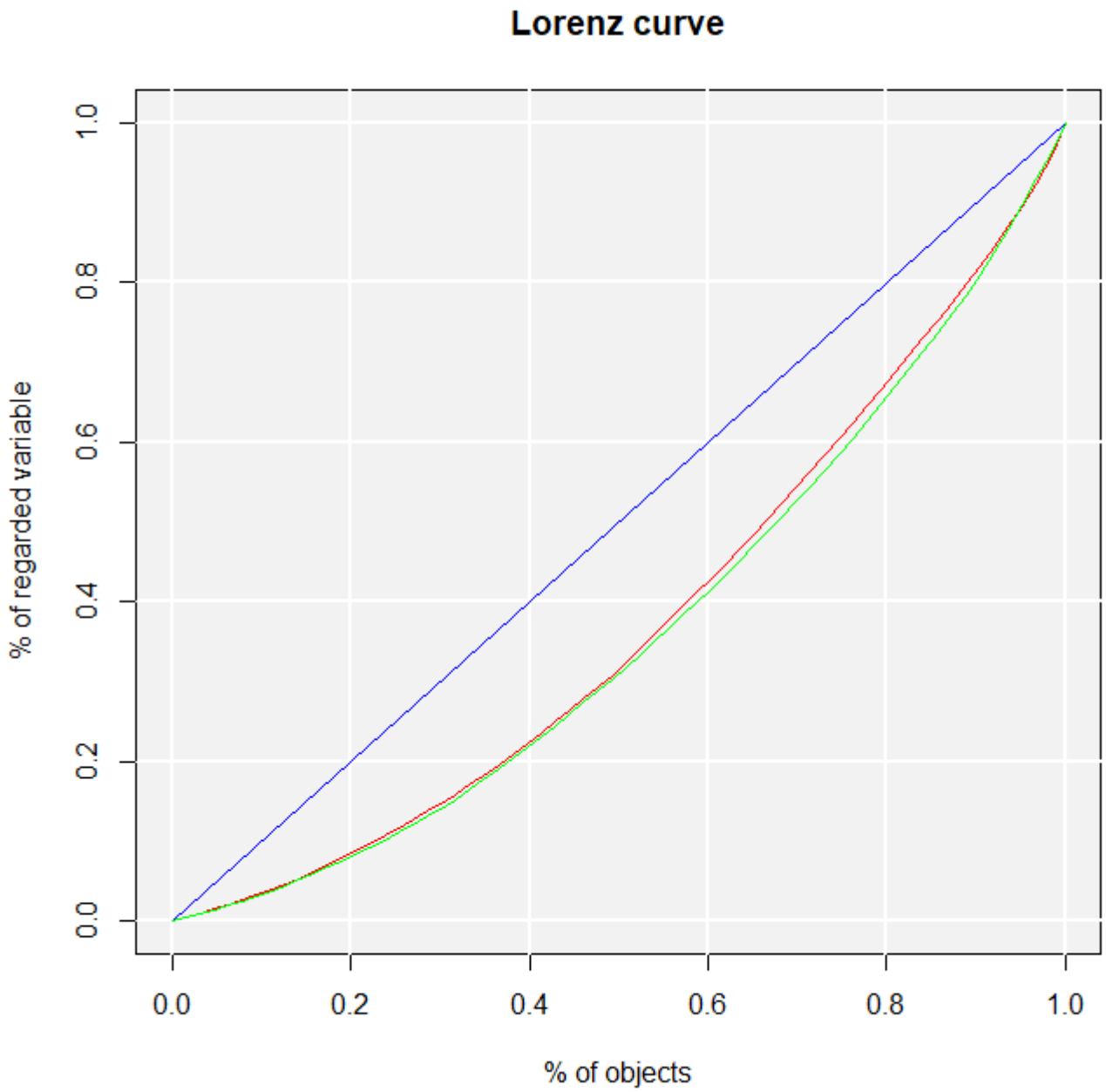
Non-Agriculture…
GINI 2010 = 0.286
GINI 2016 = 0.297

The inequality in the income from non-agriculture, non-forestry and non-fishery distribution in 2016 is slightly larger than that in 2010, but not considerable.



Others
GINI 2010 = 0.251
GINI 2016 = 0.226

The inequality in the income from others distribution in 2016 is slightly smaller than that in 2010.



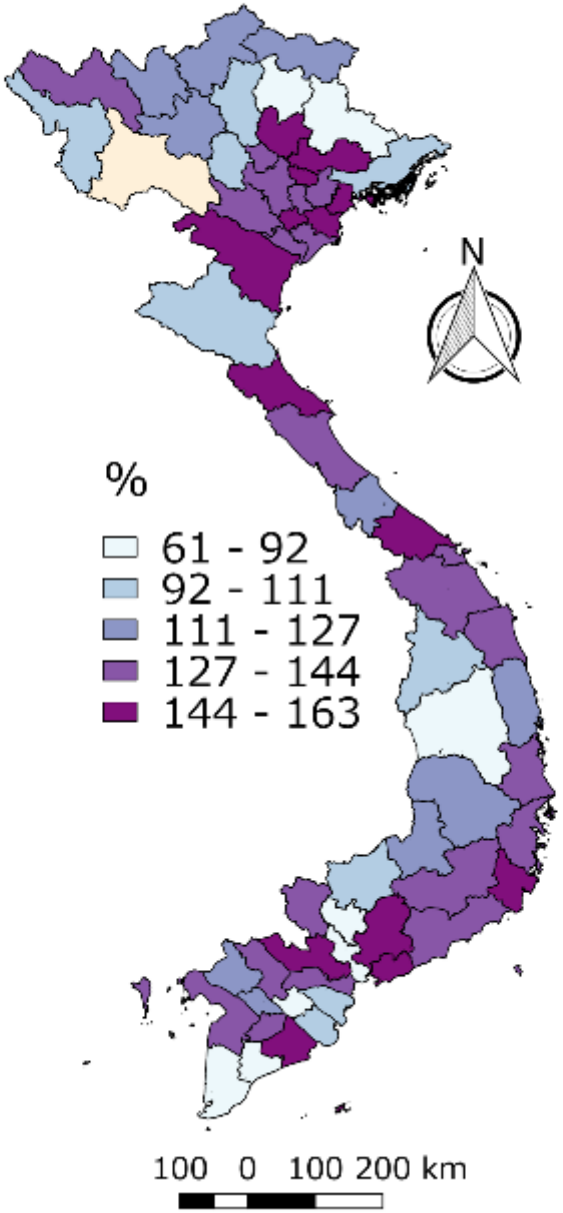
Income convergence

	Absolute Beta Convergence	Speed of convergence	Half-life
Total	0.030	-	-
Wages	0.008	-	-
Agriculture	-0.095	0.099	6.974
Non.Agriculture	-0.134	0.144	4.826
Others	-0.053	0.054	12.852

- The total income and income from wages diverges.
- The income from three remaining sources converge.
- It would take almost 14 years, 10 years, 26 years to achieve the convergence of income from agriculture, non.agriculture and others, respectively.

The changing rate of total income between 2010 and 2016

The provinces with high changing rate of total income are seen to be concentrated along the seashore and the delta. Many factors contribute to this change, mainly from the development of transportation, manufacturing, services, tourism, etc



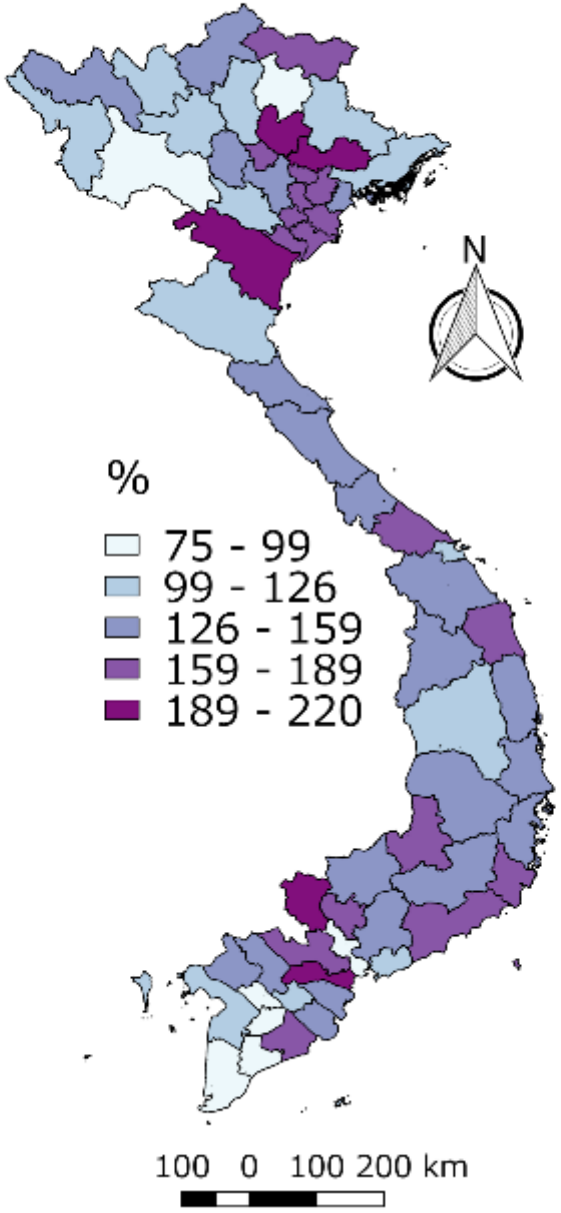
=>Since 2010, there are many investments from FDI. For example, Samsung started opening its branches in Thai Nguyen, Bac Ninh province (in the North) in the year 2012, 2013

=>Long An province has very good policy to develop its strengths (it is divided into three main regions which aim at developing agriculture and tourism, industry, productions product reservation).

=> Hai Phong province has a harbor

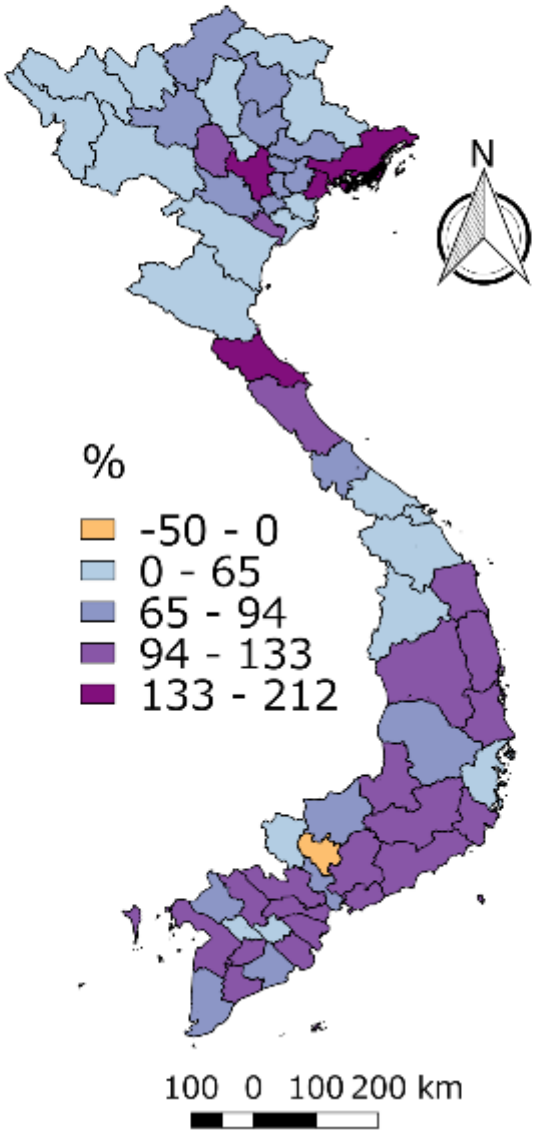
The changing rate of income from wages between 2010 and 2016

Provinces with darker color represent the larger changing rate of income from wages. These provinces have the same common things such as being attractive to FDI and having good policies for development.



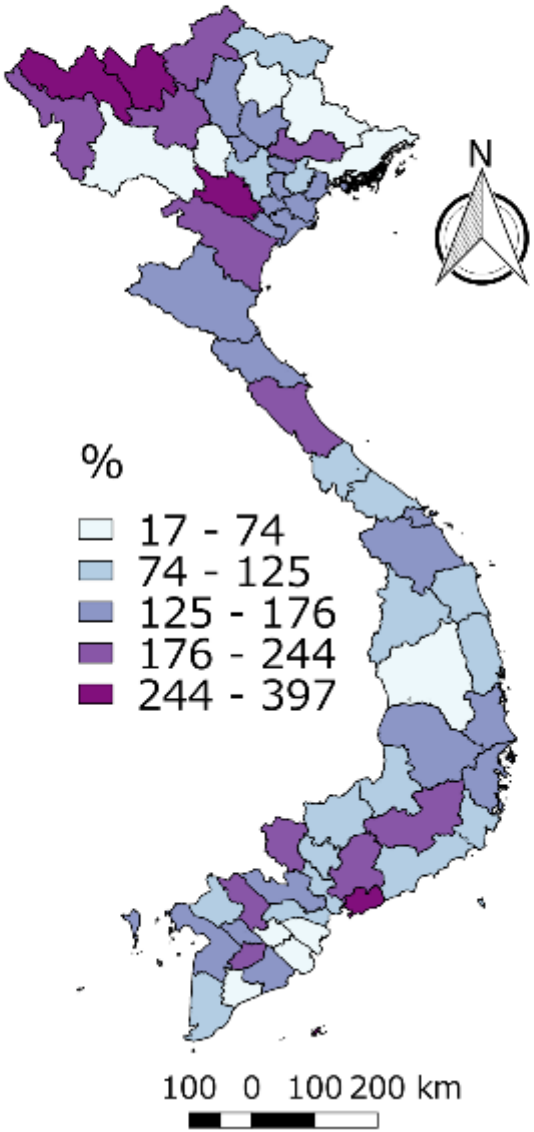
The changing rate of income from agriculture, fishery and forestry between 2010 and 2016

Some provinces in the North (Hanoi, Hai Phong), North Central (Ha Tinh, Quang Binh), South Central Coast(Binh Dinh, Phu Yen, Khanh Hoa, Daklak), South East, Mekong delta river experience the high changing of income in term of agriculture, fishery and forestry. The common thing of these provinces is that some of them are concentrated along the two largest plains of the country (Red river and Mekong Delta river), some of them apply advanced



The yellow area called Binh Duong province experiences an income decrease for this income source. Binh Duong is one of the eight provinces in the Southern Key Economic Zone. It has been experiences the shift from agricu… to industry recently. This lead to an decrease in labor force in this sector. Furthermore, the agriculture, forestry and fishery here are not sustainable because of the disaster, low productivity, dispersed production, etc.

The changing rate of income from non- agriculture, non- fishery and non- forestry between 2010 and 2016

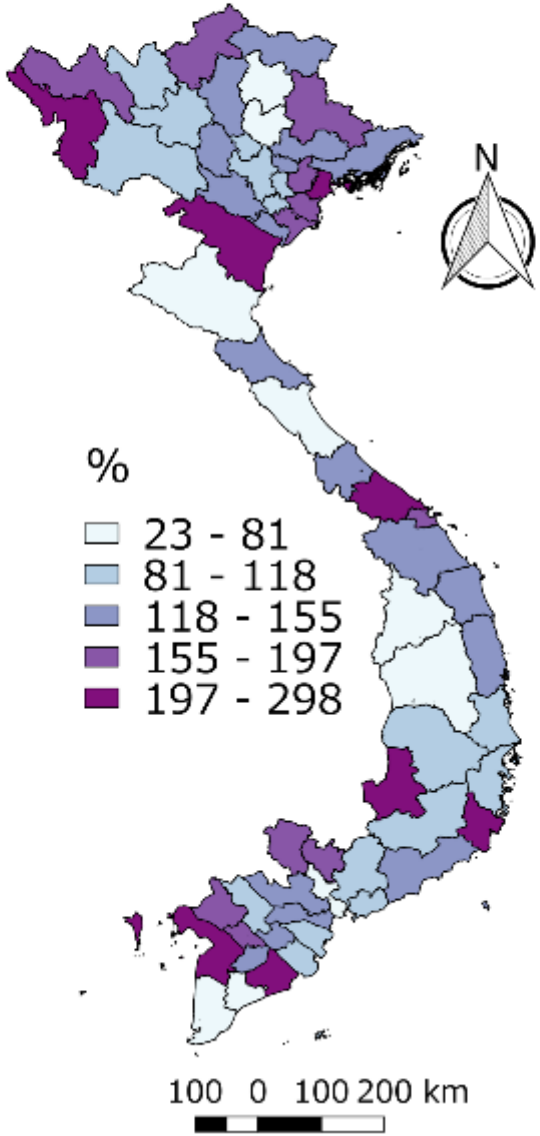


Provinces from North-west and South-east of Viet Nam experience a high changing rate of income from non – agriculture, non-fishery, non-forestry.

The common thing among these provinces is that they are concentrated quite near the two largest plains, and thus, they can focus on the activities which do not directly create products from agriculture, fishery and forestry.

Rate of **Other** income change between 2010 and 2016

Other income is classified as income from gifts, savings, etc. The rate of changing income from others is larger in poor provinces.



conclusion

- From 2010 to 2016, there is certain income inequality but it is not as large as expected. The increasing rate of income disparity is not as fast as expected. So in further research, data at more local level should be used to analyze the income disparity.
- Although there is no convergence in the total income and income from wages, there is the existence of the beta convergence in the self-employed sector. This can be explained because the income from wages is based on sets of law and the framework of each regions which are really different from each other. While in the self-employed sector, everything is adjusted according to the market, so does the income.

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Appendix (code sample)

```
##calculate rate of income change over provinces

#calculate difference between initial year (2010) and t_year (2016)
data$diff<-data$income2016-data$income2010 #diff is column for difference
#calculate rate of income change
data$rate<-(data$diff/data$income2010)*100 #rate is column for rate of change

##calculate beta convergence

data$yt<-log(data$income.2010)
data$yt<-log(data$income.2016)

data$yt_by_yt<-data$yt-data$yt

model<-lm(yt_by_yt~yt, data=data) # the resulting coefficient is the beta convergence
summary(model)
```