

Colombian industrial structure behavior and its regions between 1974 and 2005.

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This presentation analyzes Colombian industrial structure behavior and its regions between 1974 and 2005 to determine if the liberal reform at the end of the 20th century caused the industrial stagnation and its lack of diversification.

I am going to talk about:

- Introduction
 - Colombian economic
 - Economic and industrial growth
 - Productive transformation
- Liberal reform
- Econometric model using STATA

What was my goal:

- I wanted to know what happened with colombian industrial growth after Liberal Reform (1990 - 2005)
- Why does the industrial growth rate decrease after Liberal Reform?
- What is the Liberal Reform? It is a set of policy to reform the economy and democracy of the developing countries. For example, to open the markets (capital market, product market, financial market)
- In Latin American countries, Liberal Reform is named like Neo-liberal Model or Washington Consensus.

Where is Colombia?

Colombia is a country placed on the north of South America



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Introduction

Colombian Economic Indicators 2014

Indicators	Value
Population	47.661.787
Gross Domestic Product (GDP)(current US\$)	377.739.622.866
GDP per capita (current US\$)	7.720
Average annual growth rate GDP per capita, 1960 - 2014 (constant 2005 US\$)	2.16%
Colombia GDP pc. with percent USA GDP pc	14%
GINI Coeficient.	0,538

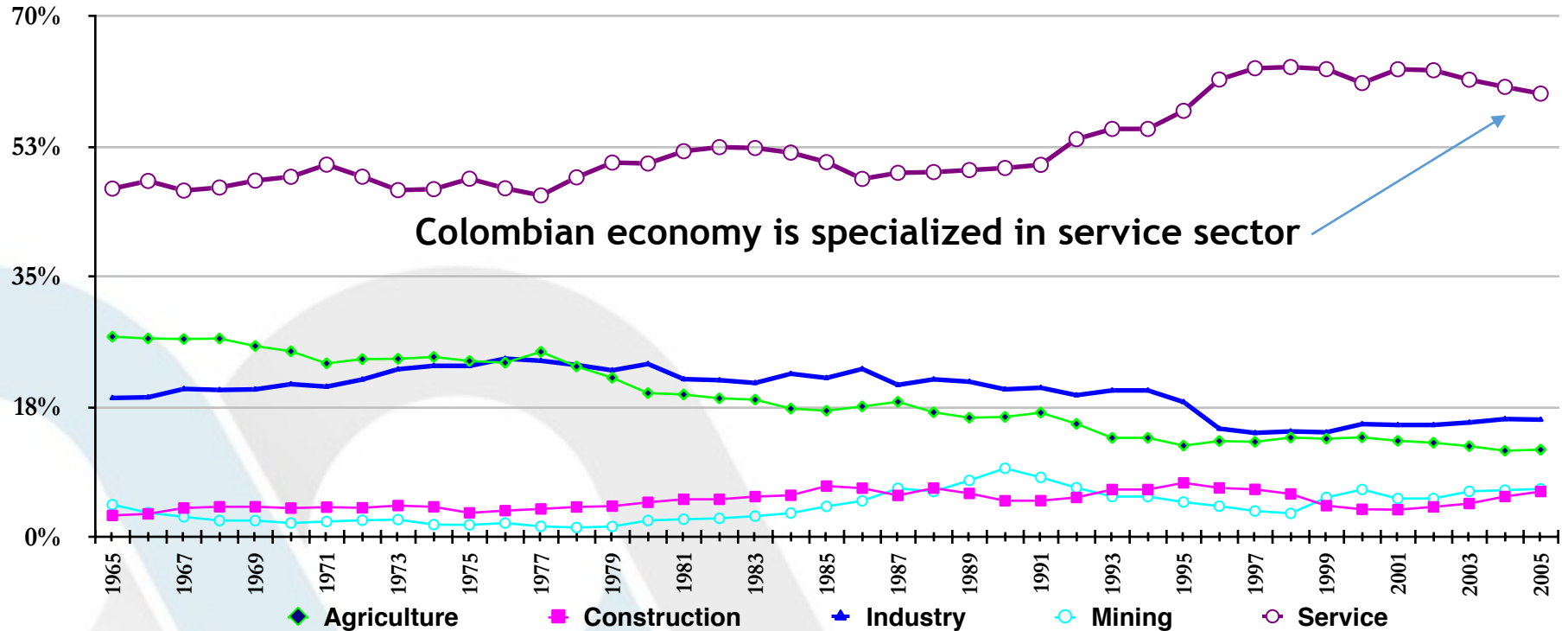
Source: World Bank and DANE

What happened?

- In 1950 our economic was very similar to the economic of Japan or South Korea.
- What happened in last 40 years?

Colombian Economic structure, 1965 - 2005

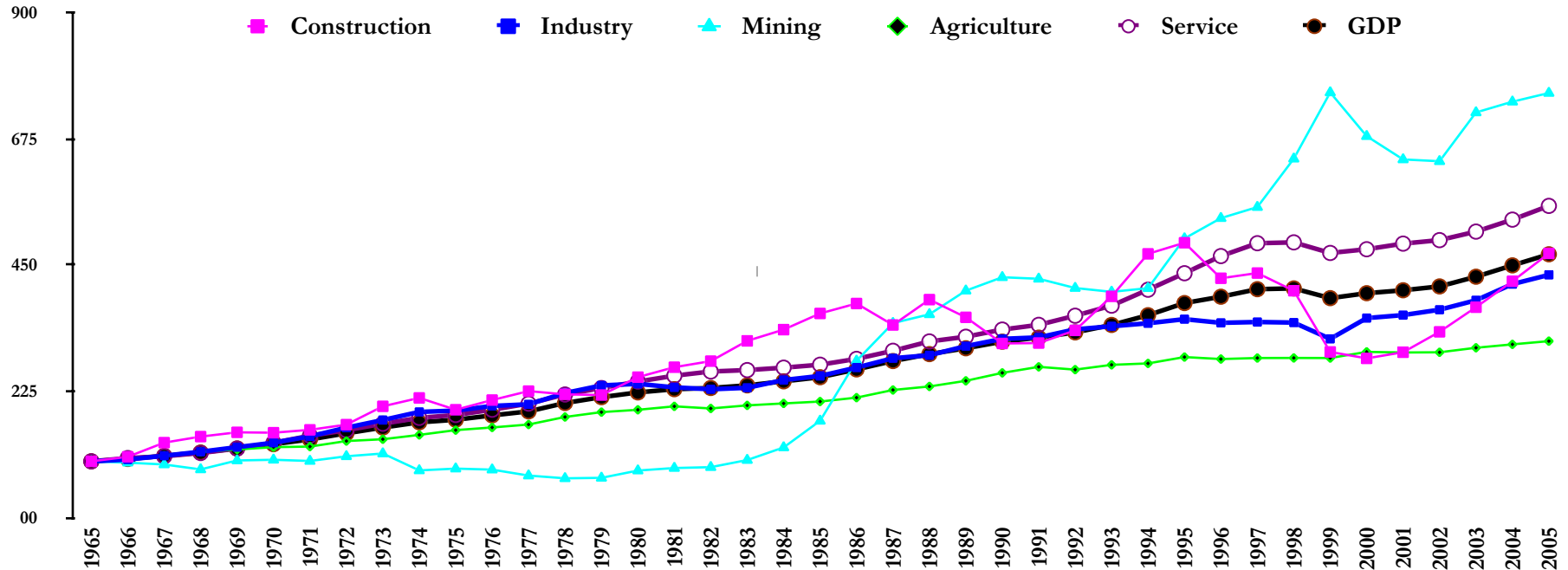
The colombian industry lost weight in the economic in last 40 years. Why?



Source: DANE

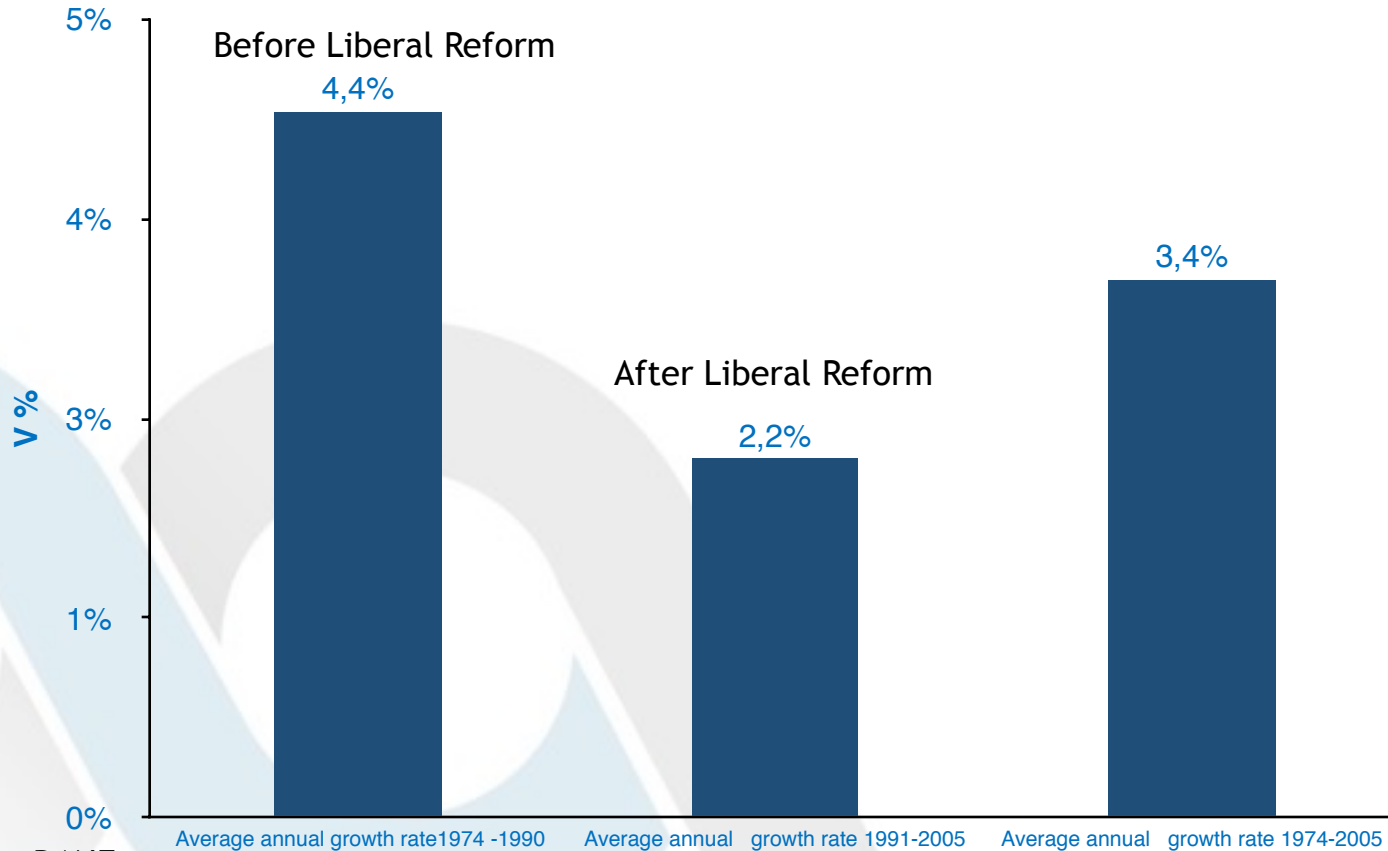
Colombian Economic structure, 1965 - 2005. Growth for sectors.

Why? Because the industrial growth was lower than other sectors



Source: DANE

Colombian industry growth rate, 1975 – 2005.



Source: DANE

Colombian industry growth rate, 1975 – 2005.

Departament	1975-1980	1981-1985	1986-1990	1975-1989	1991-1995	1996-2000	2001-2005	1990-2005
Antioquia	5,60%	2,54%	5,58%	5,08%	-0,20%	0,23%	4,69%	1,32%
Atlántico	4,25%	2,19%	6,30%	4,59%	-2,98%	-0,32%	4,91%	0,47%
Bogotá	2,69%	4,56%	6,17%	4,90%	-0,11%	-2,24%	6,00%	1,05%
Bolívar	10,21%	3,59%	6,02%	6,84%	4,25%	8,30%	9,28%	7,03%
Cundinamarca	5,06%	5,10%	7,73%	6,19%	3,82%	2,68%	6,18%	4,14%
Valle del Cauca	3,56%	3,85%	6,86%	5,00%	0,26%	-1,60%	2,22%	0,36%
Promedio 6 dptos	4,09%	3,47%	6,16%	4,94%	0,10%	-0,24%	5,10%	1,52%

Source: DANE

State of the art

- There are many studies about industrial growth in Colombia, but none use econometric model to explain the decrease of growth rate in the industry after the Liberal Reform.
- I estimated a panel data econometric model to explain this situation.

$$\ln Va_{ti} = \alpha + \ln \beta M_{ti} + \ln \beta X_{ti} + \partial_0 Liberal + \partial_0 AM_{ti} + a_1 + u$$

The model

- I used the growth rate of industrial value added like dependent variable, and the growth rate of industry exports and imports like independent variables.
- I used a dummy of structural change to model the liberal reform effects

$$\ln Va_{ti} = \alpha + \ln \beta M_{ti} + \ln \beta X_{ti} + \partial_0 Liberal + \partial_0 AM_{ti} + a_1 + u$$

The model

$$\ln Va_{ti} = \alpha + \ln \beta M_{ti} + \ln \beta X_{ti} + \partial_0 Liberal + \partial_0 AM_{ti} + a_1 + u$$

- Va= Value added
- M= Imports
- X= Exports
- Liberal= Dummy of structural change to model the Liberal Reform Effects (Economic policy)= Apertura.
- AM: Is a combination between Liberal and Imports variables
- i = Industrial sectors

The model using Stata

Group variable: **ciiurev2**

Number of groups = 26

R-sq: within = 0.3157
between = 0.3987
overall = 0.2937

Obs per group: min = 31
avg = 31.0
max = 31

corr(u_i, Xb) = 0.3220

F (5, 775) = 71.52
Prob > F = 0.0000

v_agregado	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
exp_fob_dol	.0401549	.0164902	2.44	0.015	.0077841	.0725256
import_cif~l	.0709439	.0175765	4.04	0.000	.0364406	.1054471
apertura	-1.772652	.3413612	-5.19	0.000	-2.442754	-1.102549
ap_exp_fob	.143164	.0203813	7.02	0.000	.1031548	.1831732
ap_imp_cif	-.0366925	.0166474	-2.20	0.028	-.0693719	-.0040132
_cons	18.2184	.3601066	50.59	0.000	17.5115	18.9253
sigma_u	.89664234					
sigma_e	.33217938					
rho	.87931548	(fraction of variance due to u_i)				

F test that all u_i=0:

F(25, 775) = 184.79

Prob > F = 0.0000

The model using Stata

Random-effects GLS regression
Group variable: **ciiurev2**

R-sq: within = **0.3156**
between = **0.3966**
overall = **0.3001**

Random effects u_i ~ **Gaussian**
corr(u_i, X) = **0** (assumed)

Number of obs = **806**
Number of groups = **26**

Obs per group: min = **31**
avg = **31.0**
max = **31**

Wald chi2(5) = **363.39**
Prob > chi2 = **0.0000**

v_agregado	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
exp_fob_dol	.0425141	.0164658	2.58	0.010	.0102416	.0747865
import_cif~l	.0763502	.0173771	4.39	0.000	.0422917	.1104087
apertura	-1.819885	.3419311	-5.32	0.000	-2.490058	-1.149712
ap_exp_fob	.1445436	.0204366	7.07	0.000	.1044885	.1845986
ap_imp_cif	-.0362303	.0166752	-2.17	0.030	-.0689131	-.0035475
_cons	18.08508	.3909497	46.26	0.000	17.31883	18.85132
sigma_u	.81119464					
sigma_e	.33217938					
rho	.85639507	(fraction of variance due to u_i)				

Conclusion

- The Liberal Reform in Colombia affects the industrial growth due to the increase of the imports, and to the appreciation of the Colombian currency (exchange rate).

• Thank you