Exports and Emerging Markets

Atlas

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Introduction

Motivation

- Literature shows a **positive** relationship between economic growth and openness to trade (Edwards, 1997)
- Recently, we've seen export-driven growth produce fantastic results in China, South Korea, Japan, etc.
- We wanted to get confirm this research and get **more specific** than trade volumes

Question - How do Exports affect Economic Growth?

1. Do countries who export more grow more?
2. Do countries who export a diversity of goods grow more than those who only a few?
3. Do countries who export certain types of goods do better than others?
4. Does it matter who a country trades with?

Part 1 - Export Dependency

Intro to data and approach

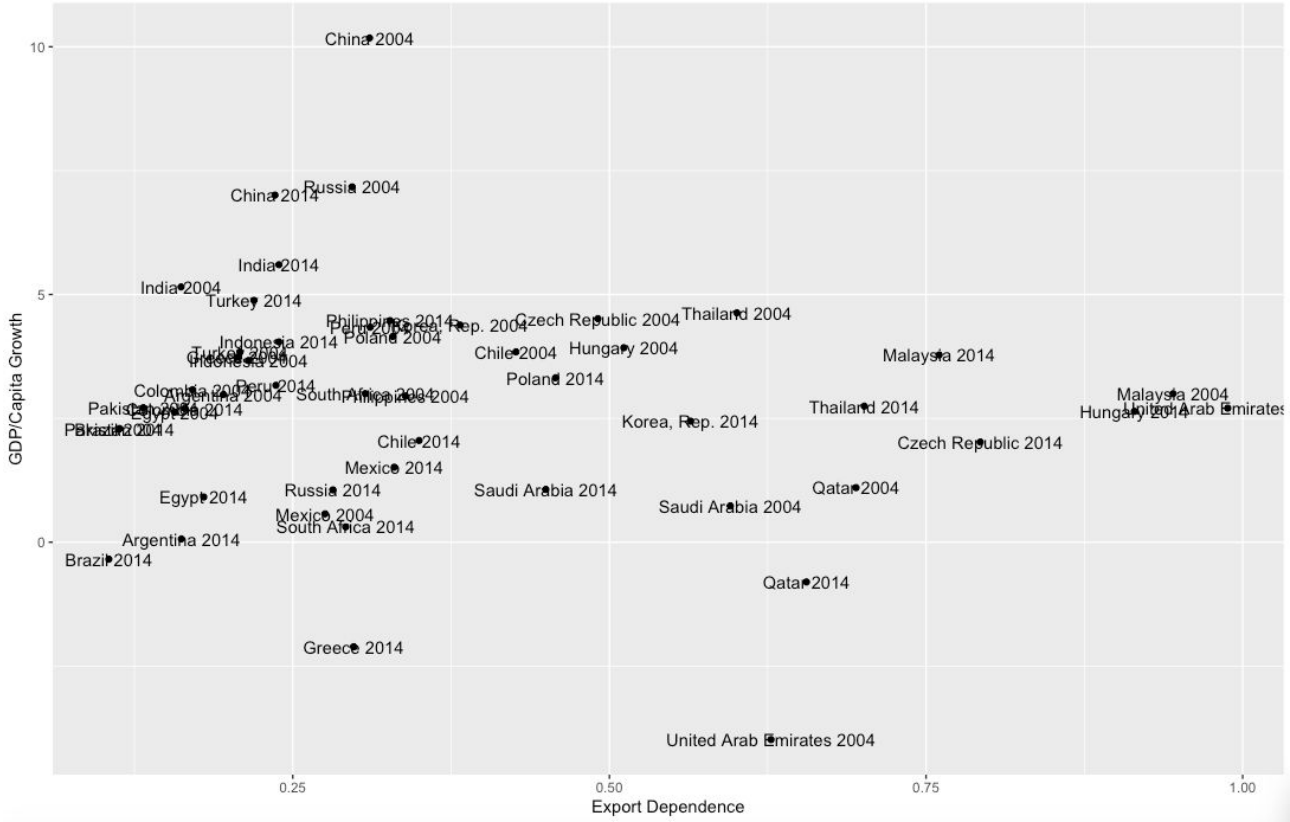
- What effect does the export dependence of an emerging market have on their GDP/Capita growth?
- $$Export\ Dependence = \frac{Exports\ of\ Goods\ \&\ Services}{Total\ GDP}$$

- Time Periods: 2004 & 2014
- All data used from the World Bank
  - 26 emerging markets (removal of Taiwan)
  - Exports of Goods and Services (constant 2010 $US)
  - GDP (constant 2010 $US)
  - GDP/Capita growth (annual %) → Average of 7 years

Results

	`GDP/Capita Growth`
`Export Dependence`	-1.322
	(1.430)
Constant	3.346***
	(0.637)
Observations	50
R2	0.018
Adjusted R2	-0.003
Residual Std. Error	2.328 (df = 48)
F Statistic	0.856 (df = 1; 48)
Note:	*p<0.1; **p<0.05; ***p<0.01

Results contd.



Part 2 - Export Concentration

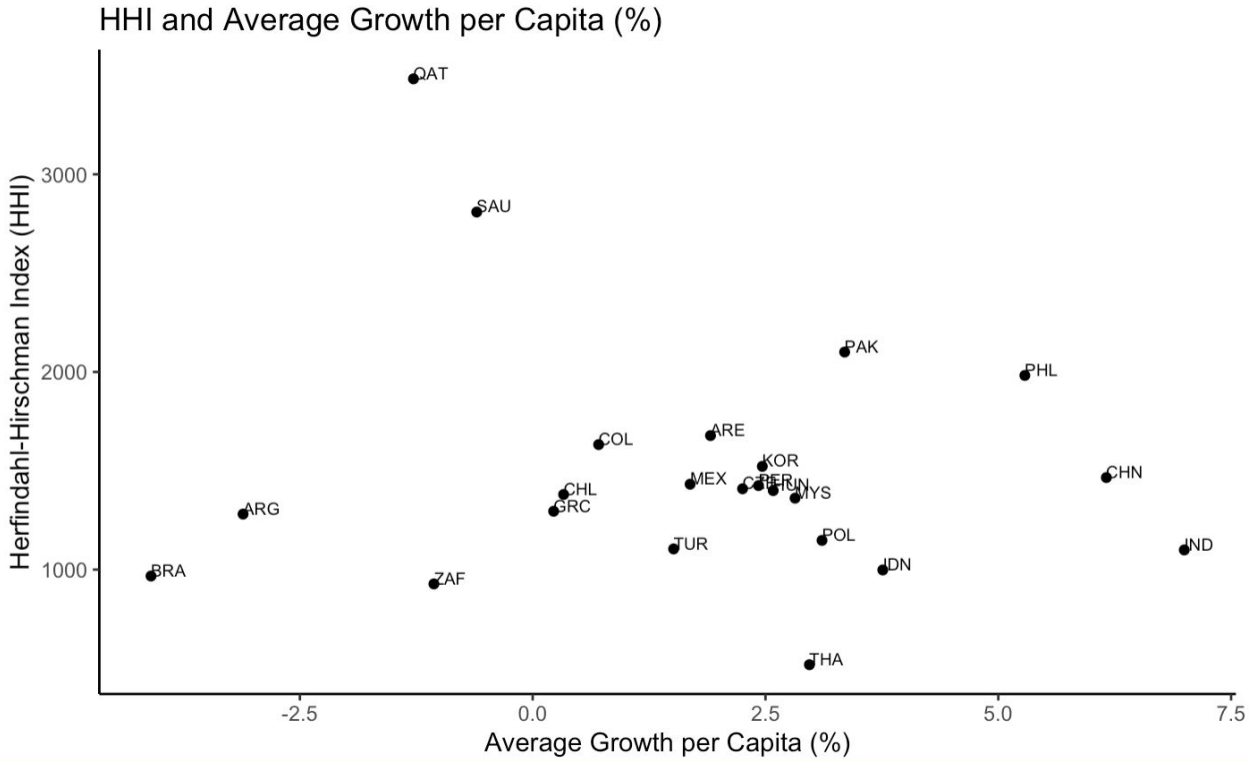
Intro to data and approach

- Is there a relationship between a country's average growth per capita (%) and their Herfindahl-Hirschman Index (HHI)?

- Calculated HHI
- Linear Regression used for analysis
    - Data from World Integrated Trade Solution

- Market with an HHI < 1,500: competitive marketplace -> Lots of firms
- HHI of 1,500 to 2,500: moderately concentrated marketplace
- HHI of > 2,500: highly concentrated marketplace -> Top firms control

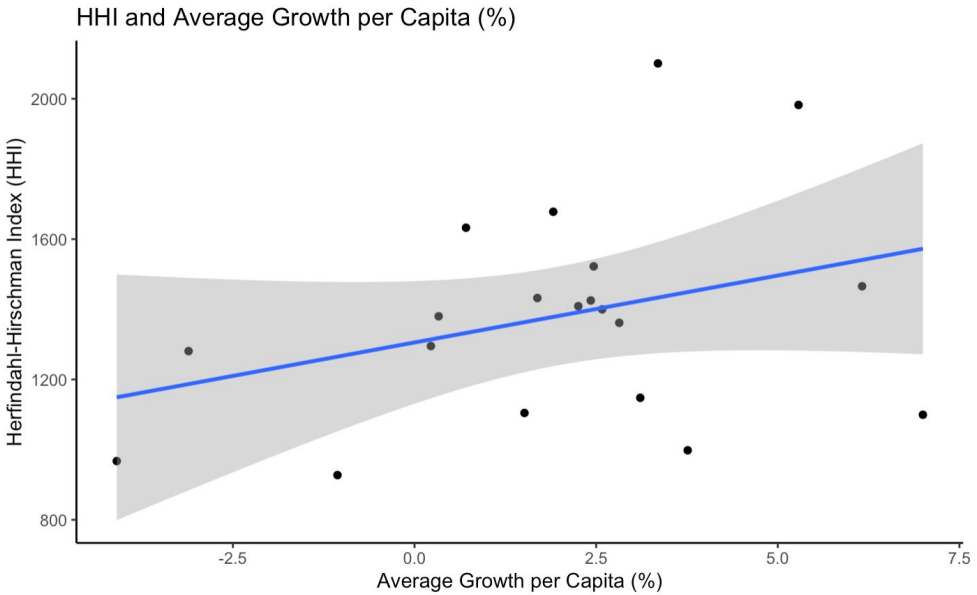
Results


HHI and Average Growth per Capita (%)
Herfindahl-Hirschman Index (HHI)
3000
2000
1000
QAT
SAU
PAK
PHL
COL
ARE
KOR
MEX
CHN
CHL
GRC
MYS
ARG
POL
TUR
IND
IDN
BRA
ZAF
THA
-2.5
0.0
2.5
5.0
7.5
Average Growth per Capita (%)

Results contd.

- Removed outliers, Thailand, Saudi Arabia, and Qatar, for adjusted linear model

	Dependent variable:
	HHI
NY.GDP.PCAP.KD.ZG	38.153
	(25.158)
Constant	1,305.447***
	(83.166)
Observations	20
R2	0.113
Adjusted R2	0.064
Residual Std. Error	299.030 (df = 18)
F Statistic	2.300 (df = 1; 18)
Note:	*p<0.1; **p<0.05; ***p<0.01

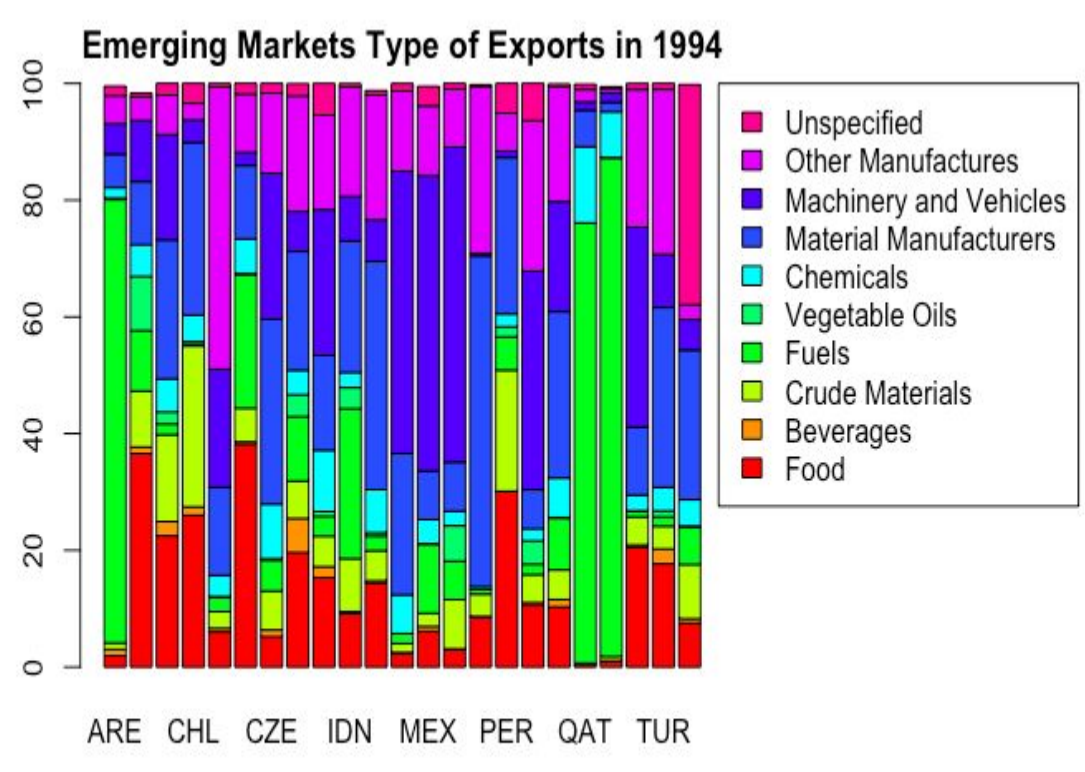


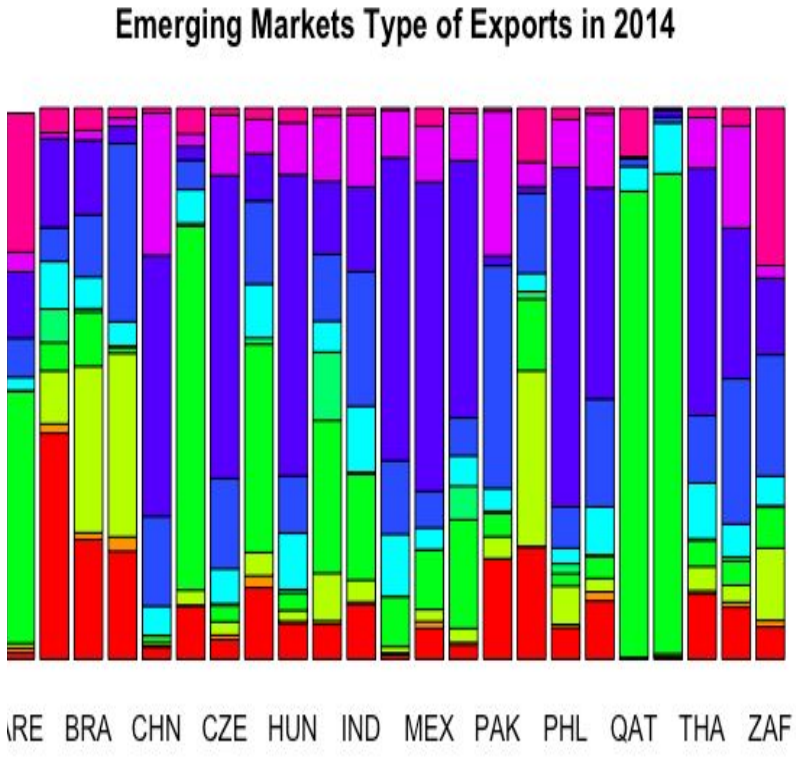
Part 3 - Export Type

Type of exports

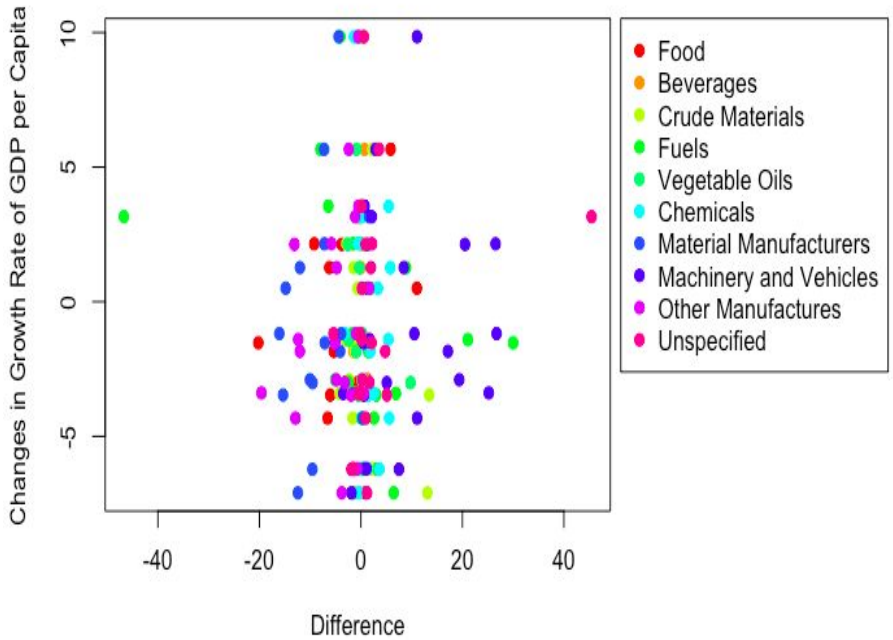
- Research question: What do the type of exports look like for emerging markets right now and how has it changed from the last decade?
- Data: Used WDI to get the average growth rate in gdp per capita for the 2 years(2004 and 2014), I used harvard's atlas data to get the type of exports and each countries composition of those 10 types
    - Food, Beverages, Crude Materials, Fuels, Vegetable Oils, Material Manufacturers, Chemicals, Machinery and Vehicles, Other Manufactures, Unspecified, and *Services*

Type of Exports





Linear Regression of Differences



Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-0.44329	3.07884	-0.144	0.888
`0`	0.14112	0.68349	0.206	0.840
`1`	-0.42584	1.46715	-0.290	0.777
`2`	-0.01418	0.78448	-0.018	0.986
`3`	0.10769	0.71021	0.152	0.882
`4`	-0.12475	0.99030	-0.126	0.902
`5`	0.39238	1.03093	0.381	0.711
`6`	0.25749	0.73572	0.350	0.733
`7`	0.28901	0.75210	0.384	0.708
`8`	0.50347	0.84415	0.596	0.563
`9`	0.20271	0.73171	0.277	0.787

Residual standard error: 4.852 on 11 degrees of freedom
(1 observation deleted due to missingness)
Multiple R-squared: 0.2719, Adjusted R-squared: -0.39
F-statistic: 0.4108 on 10 and 11 DF, p-value: 0.9139

- Nothing is statistically significant at $\alpha = 0.95$.
- When looking at plots of each subcategory, It's clear that there is no real pattern and that it's just clusters of points with 4-5 outliers in each case.

Regresion of future growth rates on 1994 export composition

Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-4.98434	35.36637	-0.141	0.890
x_and_y_94$`0`	0.02934	0.35859	0.082	0.936
x_and_y_94$`1`	-0.76793	0.57399	-1.338	0.206
x_and_y_94$`2`	0.05963	0.38847	0.154	0.881
x_and_y_94$`3`	0.05847	0.35953	0.163	0.874
x_and_y_94$`4`	0.21571	0.45661	0.472	0.645
x_and_y_94$`5`	0.18252	0.34803	0.524	0.610
x_and_y_94$`6`	0.06752	0.37172	0.182	0.859
x_and_y_94$`7`	0.05996	0.36404	0.165	0.872
x_and_y_94$`8`	0.19426	0.36532	0.532	0.605
x_and_y_94$`9`	0.01286	0.36760	0.035	0.973

Residual standard error: 2.331 on 12 degrees of freedom
Multiple R-squared: 0.5056, Adjusted R-squared: 0.09361
F-statistic: 1.227 on 10 and 12 DF, p-value: 0.3632

- Again nothing is statistical significant at $\alpha = 0.95$
- The variable that is closest to significant is Category 1: Beverages(?!)

Panel Regression: Random Effects

Oneway (individual) effect Random Effect Model

Coefficients:

	Estimate	Std. Error	z-value	Pr(>|z|)
(Intercept)	-29.11870	42.38110	-0.6871	0.4920
I0	0.24396	0.42964	0.5678	0.5702
I1	-0.45506	0.63541	-0.7162	0.4739
I2	0.36167	0.43855	0.8247	0.4095
I3	0.27649	0.42842	0.6454	0.5187
I4	0.35627	0.48673	0.7320	0.4642
I5	0.40003	0.41360	0.9672	0.3335
I6	0.33620	0.44193	0.7608	0.4468
I7	0.30758	0.42841	0.7180	0.4728
I8	0.46209	0.43447	1.0636	0.2875
I9	0.32896	0.42553	0.7731	0.4395

Total Sum of Squares: 471.21
Residual Sum of Squares: 320.81
R-Squared: 0.31917
Adj. R-Squared: 0.11893
Chisq: 15.9391 on 10 DF, p-value: 0.10139

- A random effects model, is used in the analysis of panel data when one assumes no fixed effects(it allows for individual effects)
- This model is more statistically significant for $\alpha = 0.90$.

Part 4 - Export Partners

Questions

A. How does trade partner concentration affect growth?
B. How does trade partner wealth affect growth?

Data

- International Trade Data - Harvard
  - **Who** trades **How Much** of **What** with **Whom When**
- World Development Indicators - World Bank
  - GDP per capita (2010 USD)
  - Growth rate in GDP per capita (%)

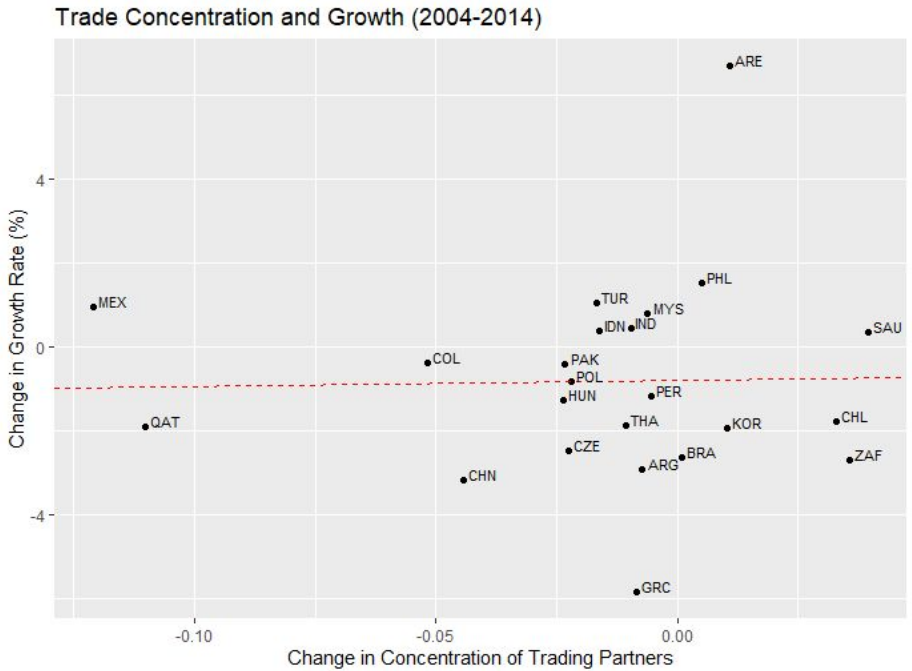
Procedure - A (Partner Concentration)

- Include only emerging markets on MSCI 2019 list
- Create measure of export concentration (between 0 and 1)

$$ExportConcentration_{country} = \sum_{partners} (exportshare_{partner})^2$$

- Average growth rate and export concentration around 2004 and 2014 for all countries (+/- 3 years)
- Perform first difference regression of growth rate ~ export concentration

Results - A


Trade Concentration and Growth (2004-2014)
Change in Growth Rate (%)
4
0
-4
-0.10
-0.05
0.00
Change in Concentration of Trading Partners
ARE
PHL
MEX
TUR
MYS
IDN
IND
SAU
COL
PAK
POL
HUN
PER
QAT
THA
KOR
CHL
CZE
BRA
ZAF
CHN
ARG
GRC

Results - A

First Difference Regression of Growth ~ Concentration				
	Estimate	Std. Error	t-value	p-value
Intercept	-0.813	0.55215	-1.473	0.156
Concentration	**1.433**	13.475	0.106	**0.916**
F-statistic: 0.011 on 1 and 21 DF, p-value: **0.916**				

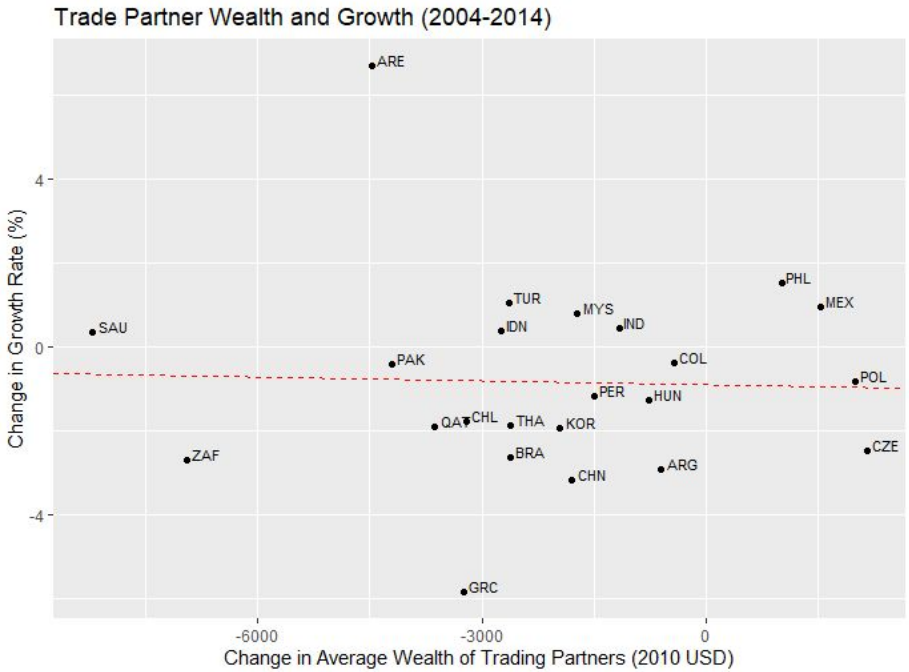
Procedure - B (Partner Wealth)

- Include only emerging markets on MSCI 2019 list
- Create measure of trade partner wealth

$$PartnerWealth_{country} = \sum_{partners} exportshare_{partner} * wealth_{partner}$$

- Average growth rate and trade partner wealth around 2004 and 2014 for all countries (+/- 3 years)
- Perform first difference regression of growth rate ~ trade partner wealth

Results - B


Trade Partner Wealth and Growth (2004-2014)
Change in Growth Rate (%)
4
0
-4
ARE
PHL
MEX
TUR
MYS
IND
IDN
SAU
PAK
COL
POL
PER
HUN
QAT
CHL
THA
KOR
CZE
ZAF
BRA
ARG
CHN
GRC
-6000
-3000
0
Change in Average Wealth of Trading Partners (2010 USD)

Results - B

First Difference Regression of Growth ~ Trade Partner Wealth				
	Estimate	Std. Error	t-value	p-value
Intercept	-0.896	0.662	-1.353	0.191
Wealth	**-2.889 e-5**	2.041 e-4	-0.142	**0.889**
F-statistic: 0.020 on 1 and 21 DF, p-value: **0.889**				

Conclusion

Summary

Reg	Effect Direction	Significance
Export Dependence	Negative	None
Export Concentration	Positive	None
Export Type	Depends	$p \lesssim .10$
Partner Concentration	Positive	None
Partner Wealth	Negative	None

Future Research

- Statistical significance limited by sample size
  - Perhaps including developed and frontier markets to compare to
  - Data missing for many emerging markets in the past and in the current
- Compare with imports for emerging markets, it’s neighbors, and imports to developed markets from emerging and frontier markets