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State Capacity and Export Oriented Industrialization

I. Abstract

The rise of East Asian Newly Industrialized Countries; South Korea, Singapore, Taiwan, and Hong Kong in the 1980s through 90s was a unique phenomenon of immense economic growth through export-oriented industrialization. The combination of liberalization practices and strong governments exhibiting high state capacity in these countries were thought as the main contributors of their success. This paper attempts to find the relationship between state capacity, measured by fiscal capacity—with manufacturing exports using ordinary least squares and instrumental variables regression. I regress manufactured exports share of GDP to total tax/GDP and income tax/GDP ratios. OLS and IV regressions show that there is significant negative correlation between fiscal capacity and manufactured goods exports, and OLS regression shows negative correlation between FDI net inflows/GDP and manufactured goods exports. I also find that fiscal capacity in total tax/GDP ratio has a significant positive correlation with net FDI/GDP ratio.

II. Background

Modern economic development theories have hailed export-oriented growth as the passage to development. This strategy largely refers to exports of industry products, which are items that have undergone value addition process, instead of commodity goods. Countries that have taken on this path are usually referred as Export Oriented Industrialization (EOI) and have experienced rapid growth post-Cold War Era. The most prominent example of this phenomena is the Asian

Tigers that comprise of Hongkong, South Korea, Taiwan, and Singapore while China has been leading EOI growth in more recent decades. I will refer to these countries as the Asian NICs. Studies prove that these Asian NICs did not only experience an increase in overall output but have achieved a "considerable degree of restructuring in favor of manufacturing and away from commodity production since the 1970s" (Lee and Naya 1988).

Scholars have long addressed the relationship between politics and economic growth. Therefore, the political institutions or forces acting in a particular country should affect the country's economic outcome, be it in industrialization, trade or both. Acemoglu and Robinson argue that political institutions are prerequisites to the subsequent economic growth that the country might experience. According to this neo-institutionalist framework, economic growth in a state is only possible by first having inclusive political institutions. There are two strands to inclusive political institutions; plurality in government (democracy), and a centralized government. I argue that a centralized government is able to foster better economic growth. Centralized government is associated to state capacity (Dincecco 2009, 2017). Consequently, state capacity is positively correlated with economic growth because it attracts capital by providing public goods such as protection for private property, infrastructure and government services that would ease the process of investment. Investment will in turn, spur economic growth.

Additionally, the relationship of state capacity and economic growth goes back to the study of early modern Spain by Drelichmann and Voth. From the late 1500s to the 18th century, Spain went from the biggest European power to the weakest empire in the area. Revenues in silver grams declined by more than a half and number of armed troops declined by more than two thirds. Drelichmann and Voth argue that this decline is attributed to the lack of state capacity presented by the kingdom to the regions under Spain. The government's weakness gave regions less

incentive to comply in taxation activity, hence these regions ended up free-riding. The failure of the central government to exercise their state capacity caused regions to ignore the rule of law, hence declining revenues and federal armed troops over time.

How does this theory apply to the Asian NIC phenomenon in the 80s? Scholars have long attributed the "Asian Miracle" to their switch to an open market economy that enables their governments to set efficient market prices (James, Naya, and Meier 1989). However, more recent studies by scholars such as Wade, Bradford and Amsden suggest that the neoclassical economic explanation is not sufficient to explain this success. Doner states that institutionalism; political-economic explanations regarding government structures and policy in each NIC are the most promising school of thought that can be employed to explain this occurrence. Therefore, I aim to explore the relationship between the two concepts and see if there is a correlation between institutions (state capacity) and economic growth through manufacturing exports. Although my motivation comes from looking at the Asian success story in the post-Cold War era, I will look into the broader scheme of things in my research. Additionally, I exploit the existence of Foreign Direct Investment as a mechanism that translates of state capacity to manufacturing exports. I argue that states with high state capacity attract foreign direct investment through the provision of public goods that make investment less risky (states are more stable or secure with aforementioned public goods). My argument is supported by the fact that most Asian NICs had strong governments during their period of growth. Singapore boomed under by a strong single party, the People's Action Party (PAP) that was able to consolidate the country and efficiently administer the country. South Korea was an authoritarian-style market economy under Rhee Syngman. Similarly, China boasts one of the strongest and most-centralized governments in the world. It is important to

analyze the source of growth in these economies because policymakers in developing countries attempt to replicate their successes.

I hypothesize that countries that demonstrate higher state capacity have bigger manufactured goods exports sector relative to other exported merchandises. Furthermore, the connection hinges on foreign direct investment intensity. Countries demonstrating higher state capacity are more able to provide "rules of the game" (Dincecco 2009, 2017), making the country more attractive to foreign capital, thus attracting more foreign direct investment. Foreign direct investment entering developing countries from more developed countries usually comes in the form of factory creation, which increases manufactured goods exports. For the purposes of this research, I will use fiscal capacity as a proxy for state capacity, further discussed in section IV.

III. Literature Review

a. Fiscal Capacity

This research largely draws on a study done by Dincecco and Prado ("Fiscal Capacity and Economic Performance"). Dincecco and Prado argue that states that have low state capacities are unable to provide basic public goods that improve worker productivity, which influences a country's economic performance. These public goods include police force, legal system and transportation infrastructure. Consequently, low worker productivity is associated with impeded economic growth. Dincecco and Prado also mention the low economic performance of Latin American heavily conflicted countries such as Guatemala in contrast to the development experiences of East Asian countries under strong states.

The relationship between fiscal capacity and economic performance is therefore studied by regressing GDP per worker as the benchmark of worker productivity on direct taxation as a

measure of fiscal capacity. They find that there is a significant positive correlation between direct taxation share of GDP and total tax share of GDP, making direct taxation a good measure of fiscal capacity. From their cross-sectional regression analysis of 112 countries from 1975 to 2004, greater fiscal strength significantly improves worker productivity: a 10-percentage point increase in fiscal capacity leads to a 21 to 44 percent increase in GDP per worker for the average income sample country. Dincecco and Prado utilize legal origin as an instrument for their instrumental variable regression, which I also exploit in my paper. Their instrumental variable regression also shows a positive correlation between fiscal capacity and worker productivity.

b. Foreign direct investments and manufacturing exports

There have been plenty of research on Foreign direct investment and exports. I use one article from Camarero and Tamarit (2004) that analyzes specifically the relationship between Foreign Direct Investment and manufacturing exports. Camarero and Tamarit use a sample of 13 OECD countries to test out the substitution and complementary effects of Foreign Direct Investment on exports of manufactured goods. Substitution means that FDI inflow decreases trade volume, complementary means that FDI inflow increases trade volume. Among the 13 countries, significant correlations were found in 8 countries. Austria, Denmark, Finland, France and Sweden show positive significant correlation, signifying a complementary effect of FDI. Belgium, Spain, and the USA show negative correlation, signifying a substitution effect of FDI.

I also refer to other scholars' work on the effect of FDI on total trade. Marjeed and Ahmad find positive relationship between the two variables in developing countries while Pain and Waeklin indicate that eight out of eleven countries found inward FDI complements exports while the inward FDI substitutes exports in Japan, Italy and Denmark.

IV. Data and Methodology

a. Empirical Methodology

This research attempts to find the correlation between state capacity and a country's degree of manufactured goods exports. I hypothesize that countries that demonstrate higher state capacity have bigger manufactured goods exports sector important to its GDP. Furthermore, the connection hinges on foreign direct investment intensity. Countries demonstrating higher state capacity are are more attractive to foreign capital, thus attracting more foreign direct investment. Foreign direct investment entering developing countries comes in the form of factory creation, which increases manufactured goods exports. To find the correlation of state capacity to manufactured goods exports we need to first find the measures for state capacity then construct a regression of manufactured goods exports on that measure.

b. Fiscal Capacity as measure of state capacity

State capacity is defined by Besley and Persson as *institutional capability of the state to carry out various policies that deliver benefits and services to households and firms* (Besley and Persson 2009). I also draw on Mann's classic notion of the infrastructural power of the state, which he defined as the capacity of the state actually to penetrate civil society and to implement logistically decisions throughout the realm. Thus, the state capacity yardstick we use must be a measure of what is actually exercised by the state, not just its potential. Besley and Persson build a model of state capacity using two determinants; "legal" and "fiscal" capacity.

For the purposes of this research, I will focus on the latter. Fiscal capacity is used because its impact to economic development is easier discerned as it is interchangeable to taxation. Fiscal capacity is defined as a state's capacity to generate tax revenue. If taxation is low, a government

will be less able to provide for public goods that will generate economic development. Dincecco uses worker productivity as a form of economic development and writes "weak fiscal states that lack the capacity to raise sufficient tax resources cannot provide adequate amounts of basic public goods that improve worker productivity."

An essential gauge of fiscal capacity is level of direct taxation attained by the country. I decide to follow Besley and Persson's (2009) model that includes different kinds of taxes to measure fiscal capacity. I choose tax/GDP ratio and Income tax/GDP ratio as Dincecco has also done. Tax/GDP ratio provides a systematic look at the state's potential economic role. Income tax/GDP ratio acts as a 'harsher' measure for state capacity because the collection of income tax requires the government to enforce compliance towards its subjects, therefore demanding more administrative capacity (Besley and Persson 2013). Using both indicators will give a good comparison on state capacity. Dincecco shows that there is strong positive correlation between both average tax/GDP ratio and average income tax/GDP ratio on per capita GDP (Figure 1 and Figure 2). I use the tax/GDP ratio and income tax/GDP ratio data from the IMF Government Finance Statistics Yearbook. More information on these datasets are available below.

c. Manufactured exports per GDP Ratio

To measure the size of manufactured goods exports, I choose to use Manufactured Exports per GDP ratio. I multiply the share of manufactured exports to total merchandise exports in current US$ to value of total merchandise exports in current US$, then dividing the resulting data with real GDP in PPP (in 2011 US$) data to obtain manufactured exports per GDP ratio.

d. Regression Models

After defining the measures for both the dependent variable and variable of interest in question, I can finally construct a regression to test the paper's hypothesis. My hypothesis is "high fiscal capacity causes a high degree of manufacturing exports" as the country takes on the path of Export Oriented Industrialization (henceforth referred to as EOI). Hence, I use a fixed effects ordinary least square regression using panel data of Share of manufactured exports from total exports as the dependent variable and tax/GDP ratio or income tax/GDP ratio as the variable of interest. Therefore, I will have two basic regression equations, one with Tax/GDP ratio as the interest variable and another one with Income tax/GDP ratio as the interest variable.

I use control variables to produce a coefficient that only captures the effect of fiscal capacity measured by tax/GDP ratio or income tax/GDP ratio to EOI. These controls are; Total Factor Productivity, Capital stock in current PPPs (2011 million US$), Manufactured goods share of GDP, Real GDP per Capita in chained PPP in 2011 USD and human capital measured by Penn World Table's human capital index. I take logs of the merchandise exports, capital stock, and GDP/Capita.

Manufactured goods consist of goods with a much higher level of processing and technological content due to going through industrial processes. Technology is accounted for in Total Factor Productivity and thus is important to include as a control variable. Some countries could export more manufactured goods because they are inherently better in allocating their production factors through technology and not because of fiscal capacity.

Model 1

$$Manufactured\ exports/GDP_i = \beta_1 Tax/GDP_i + \beta_2\ ln\ Merchandise\ exports_i + \beta_3\ TFP + \beta_4\ lnCapital\ stock_i + \beta_5\ lnGDP/Capita_i + \beta_6\ Manufacture\ share\ of\ GDP\ + + \epsilon_i$$

Model 2

$$Manufactured\ exports/GDP_i = \beta_1 Income\ Tax/GDP_i + \beta_2\ ln\ Merchandise\ exports_i + \beta_3\ TFP + \beta_4\ lnCapital\ stock_i + \beta_5\ lnGDP/Capita_i + \beta_6\ Manufacture\ share\ of\ GDP\ + \epsilon_i$$

Where model 2 uses income tax/GDP ratio instead of tax/GDP ratio. Then, I add fixed country and fixed time effects where δ_i is country fixed effects and δ_i time effect to generate models 3 and 4.

Model 3

$$Manufactured\ exports/GDP_i = \beta_1 Tax/GDP_i + \beta_2\ ln\ Merchandise\ exports_i + \beta_3\ TFP + \beta_4\ lnCapital\ stock_i + \beta_5\ lnGDP/Capita_i + + \beta_6\ Manufacture\ share\ of\ GDP + \delta_i + \delta_t + \epsilon_i$$

Model 4

$$Manufactured\ exports/GDP_i = \beta_1 Income\ Tax/GDP_i + \beta_2\ ln\ Merchandise\ exports_i + \beta_3\ TFP + \beta_4\ lnCapital\ stock_i + \beta_5\ lnGDP/Capita_i + \beta_6\ Manufacture\ share\ of\ GDP + \delta_i + \delta_t + \epsilon_i$$

Country fixed effects allow us to control for the omitted variables that are constant through time but differ between countries at a certain time (features unique to each country that are not represented in the other control variables). Time fixed effects control for trends in the global economy that are different across time frames but constant across countries (experienced by all countries in the dataset). Eliminating omitted variable bias through fixed effects allows us to

determine a purer coefficient for fiscal capacity (in tax/GDP or income tax/GDP) that is not affected by internal distinctions between countries or across-the-board global macroeconomic shocks or trends.

e. Channel

Wilhelms' Institutional FDI Fitness theory postulates that "it is institutions, their policies and implementation, rather than generic inflexible variables that give a country a competitive advantage in the global FDI market that stable countries with better economic environment attract more foreign capital." (Wilhelms 1998). I argue that a high degree of manufacturing exports is mostly achieved through Foreign Direct Investment (FDI) as the main channel, since FDI commonly takes the form of industrial plants or factories. Hence, the relationship between fiscal capacity, FDI and export manufacture share shall not be overlooked.

I account for Foreign Direct Investment as a secondary output variable. I will regress the same basic equation, substituting Share of manufactured exports with Foreign direct investment to see whether fiscal capacity is positively correlated to FDI.

This produces the FDI regression model as follows:

Model 1 (FDI)

$$FDI/GDP_i = \beta_1 Tax/GDP_i + \beta_2 \ln Merchandise\ exports_i + \beta_3 TFP + \beta_4 lnCapital\ stock_i + \beta_5 lnGDP/Capita_i + + \beta_6 Manufacture\ share\ of\ GDP + \delta_i + \delta_t + \epsilon_i$$

Model 2 (FDI)

$$FDI/GDP_i = \beta_1 Income\ Tax/GDP_i + \beta_2 \ln Merchandise\ exports_i + \beta_3 TFP + \beta_4 lnCapital\ stock_i + \beta_5 lnGDP/Capita_i + + \beta_6 Manufacture\ share\ of\ GDP + \delta_i + \delta_t + \epsilon_i$$

Then, I regress manufactured exports share of GDP (main y-variable) on FDI to see its correlation.

Model 5

$$Manufactured\ exports/GDP_i = \beta_1 FDI/GDP_i + \beta_2\ ln\ Merchandise\ exports_i + \beta_3\ TFP + \beta_4\ lnCapital\ stock_i + \beta_5\ lnGDP/Capita_i + \beta_6\ Manufacture\ share\ of\ GDP + \delta_i + \delta_t + \epsilon_i$$

I also add FDI as a control variable in the original regression equations of Models 3 and 4.

Model 6

$$Manufactured\ exports/GDP_i = \beta_1 Tax/GDP_i + \beta_2\ ln\ Merchandise\ exports_i + \beta_3\ TFP + \beta_4\ lnCapital\ stock_i + \beta_5\ lnGDP/Capita_i + + \beta_6\ Manufacture\ share\ of\ GDP + \beta_8\ FDI/GDP_i + \delta_i + \delta_t + \epsilon_i$$

Model 7

$$Manufactured\ exports/GDP_i = \beta_1 Income\ Tax/GDP_i + \beta_2\ ln\ Merchandise\ exports_i + \beta_3\ TFP + \beta_4\ lnCapital\ stock_i + \beta_5\ lnGDP/Capita_i + + \beta_6\ Manufacture\ share\ of\ GDP + \beta_8\ FDI/GDP_i + \delta_i + \delta_t + \epsilon_i$$

If adding FDI causes the significance of taxation to decrease, it suggests that FDI really is an effective channel or translator of state capacity to manufactured exports to GDP ratio. In other words, the effect of fiscal capacity to manufactured exports is encapsulated in foreign direct investment.

f. Test for Robustness

There is a possibility of endogeneity in my models because there might be a confounding factor in the error term that affects both fiscal capacity and manufacturing exports ratio. I use an instrumental variable regression to address this endogeneity issue.

Following Dincecco, La Porta and Besley & Persson, I use legal origin as an instrument for fiscal capacity (tax/GDP ratio and income tax/GDP ratio). Besley & Persson argue that an

instrument for fiscal capacity should be an event or occurrence that acts as past investment that make a state more able to raise taxes. Legal origin is both endogenous to the regressor (fiscal capacity) and exogenous to the outcome variable (manufactured exports share of GDP). Legal origin is endogenous because it determines the country's taxation system, thus its fiscal capacity measured in tax/GDP ratio and income tax/GDP ratio, but also exogenous to the outcome because it is unlikely that a country's legal origin affects its manufactured good exports in the present. All legal origin types (British, French, German, Scandinavian and Socialist) have country examples that vary in terms of export and manufacturing.

The first stage regression for my instrumental variable model is as follows;

$$Tax/GDP_i = \beta_1 Legal\ origin + \epsilon_i$$

Similarly, tax/GDP can be substituted with Income tax/GDP. Thus, the resulting instrumental variables model looks like this:

$$Manufactured\ exports/GDP_i = \beta_1 Tax/GDP + X + \delta_t + \epsilon_i$$

Where Legal origin is a dummy variable instrument, tax or income tax/GDP is the instrumented variable and X is a vector of all controls in previous models. I drop country fixed effects from my regression because the legal origin of each country does not change across years.

I use Dincecco's database in classifying countries into having British, French, Scandinavian, or Socialist legal origins using dummy variables. The classification relies on a country's historical influences such as previous colonizer or affiliation. For instance; an ex-USSR country like Yugoslavia is classified as having socialist legal origin, the United States is classified as having British legal origin, Guinea is classified as having French legal origin, Denmark is classified as having Scandinavian legal origin and Belgium as having German legal origin.

V. Data

Table 1: Summary Statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Tax/GDP	3,172	0.183	0.0812	0.00192	0.565
Income tax/GDP	2,564	0.0713	0.0510	0.000515	0.328
Manufactured Exports/GDP	6,412	0.113	0.166	4.46e-08	1.513
Total merchandise exports	6,741	5.013e+10	1.675e+11	62,631	2.342e+12
Capital Stock	5,297	1.152e+06	4.046e+06	103.1	6.938e+07
TFP	3,958	0.753	0.410	0.105	5.740
Real GDP per capita	5,297	13,953	16,763	246.1	191,229
Manufactured Goods/GDP	6,834	12.76	7.158	0	54.21
FDI/GDP	3,246	0.0470	0.150	-0.583	4.517

I use the IMF Government Finance Statistics Yearbook (WoRLD database) for tax revenue as percent GDP and Income tax revenue as percent GDP data. Tax revenue refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue. The dataset contains data from 185 countries from year 1990 to 2014 and data points are collected annually using weighted average. For income tax revenue as percent GDP, the dataset contains data from 167 countries from year 1990 to 2014. Government finance statistics are reported in local currency at the end of each fiscal year. There are no adjustments made to the data. The mean for Tax/GDP ratio is 18.3% and 7.13% for Income tax/GDP. The standard deviations are 8.12% ad 5.10% respectively.

The maximum values for both Tax/GDP and Income tax/GDP are held by Denmark across all years, which is unsurprising being a Scandinavian country famous for high tax collection. The minimum value of Tax/GDP ratio is held by Kuwait in 1991, coinciding with the Iraq invasion of Kuwait. This signifies low fiscal capacity caused by an event that might not be related to the country's actual fiscal capacity on regular times. The lowest value of Income tax/GDP ratio is held

by Algeria in 1981. I also averaged all Tax and Income tax/GDP data from 1990-2014 and ranked countries from lowest to highest. Middle Eastern countries dominate the lower values and Scandinavian countries dominate the upper values. Middle Eastern countries have low tax/GDP ratios because their wealth largely relies on foreign capital and foreign oil consumption. There is little to no pressure for the government to build state capacity through taxation. More importantly, raising taxes will scare away corporations from doing business or buying commodity in these countries.

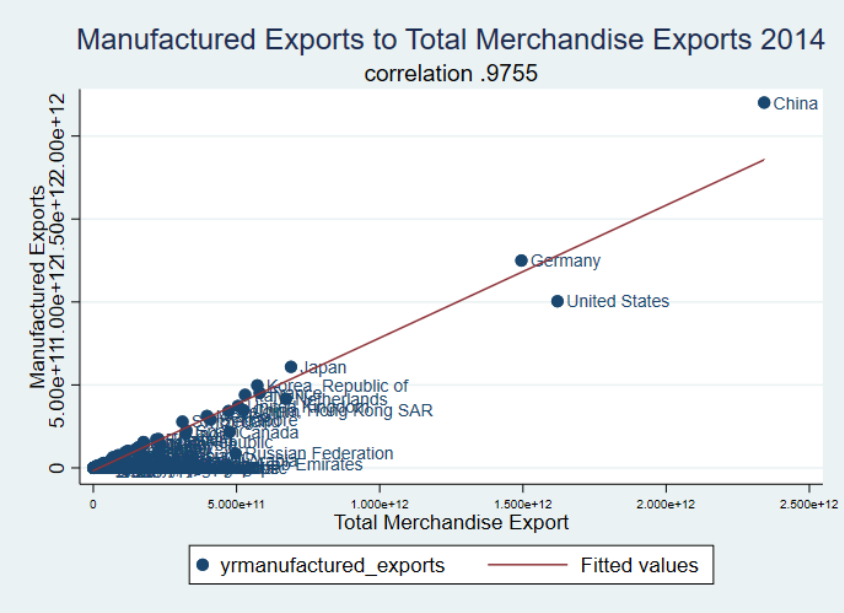

Figure 1: Manufactured Exports to Total Merchandise Exports

Share of manufactured exports as percentage of total merchandise export data is taken from the World Bank dataset from the United Nations Comtrade database through the WITS platform and is computed using weighted average. In this dataset, manufactures comprise commodities in SITC sections 5 (chemicals), 6 (basic manufactures), 7 (machinery and transport equipment), and 8 (miscellaneous manufactured goods), excluding division 68 (non-ferrous metals). This dataset contains data for 183 countries from 1960 to 2017. I multiply this data to total merchandise export

data also from the World Bank database to find total manufactured exports, then divide it by real GDP (expenditure-side at chained PPP in million 2011 US Dollars) data from Penn World Tables. The mean manufactured exports/GDP ratio is 11.3% and the standard deviation is 16.6%. The maximum value is held by Hong Kong which ranks highest across the board. The maximum value of manufactured exports share of GDP is found in Hong Kong (in all years). Hong Kong manufactured exports share of GDP values are consistently above 1. This is an interesting case due to Hong Kong's industrial nature and high reliance on exports and demands further discussion. The minimum value of manufactured exports share of GDP is Iraq in 2010. As an oil exporting country, it is expected to have very low reliance on manufactured exports, however the year 2010 is a dramatically low number even compared to 2009 and 2011. This might be caused by country-and-time specific events, as 2010 was the year where US decided to withdraw troops from Iraq and Iraq held elections. This situation might have caused instability that drastically stopped manufacturing exports for a year.

Plotting a scatterplot (Figure 1) of total manufactured exports shows positive linear relationship of total manufactured exports to total merchandise exports suggesting that the two are complementary. An increase in share of manufactured exports is likely not only a substitution or switch from commodity or agriculture exports but caused by a volume growth in the manufactures exports sector, i.e., a bigger pie instead of just a bigger slice of the same pie.

I obtain Foreign Direct Investment net inflows data from the World Bank database. The data is compiled from the IMF Balance of Payments database, supplemented by data from UNCTD (UN Conference on Trade and Development) and other official national sources. I then divide it with real GDP (expenditure-side at chained PPP in million 2011 US Dollars) data from the Penn

World Tables 9.0. to find FDI/GDP ratio. The highest FDI/GDP ratio is held by Malta in 2007, when it experienced a sudden surge of net FDI inflow.

I plot scatterplots for Tax/GDP ratio and Income tax/GDP ratio against Manufactured exports share of GDP data.

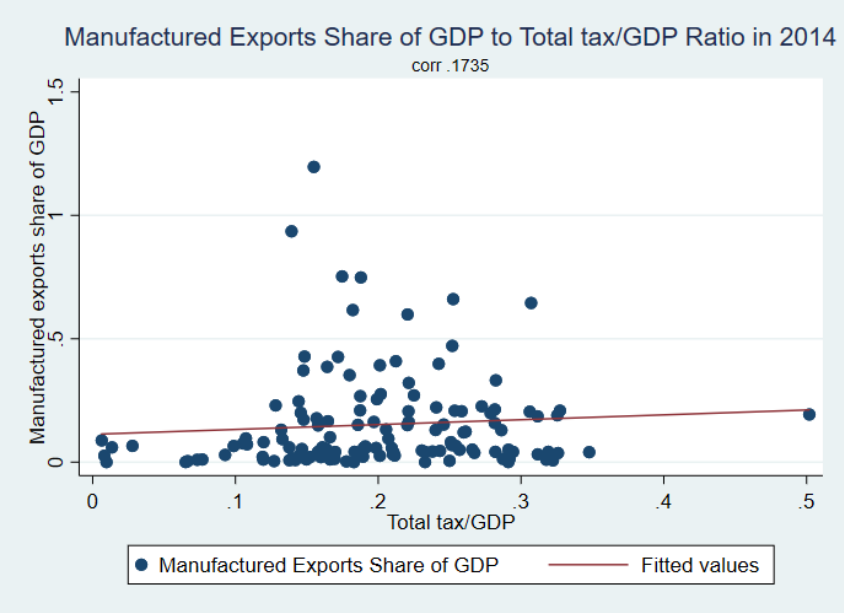

Figure 2: Manufactured Exports Share of GDP to total tax/GDP ratio

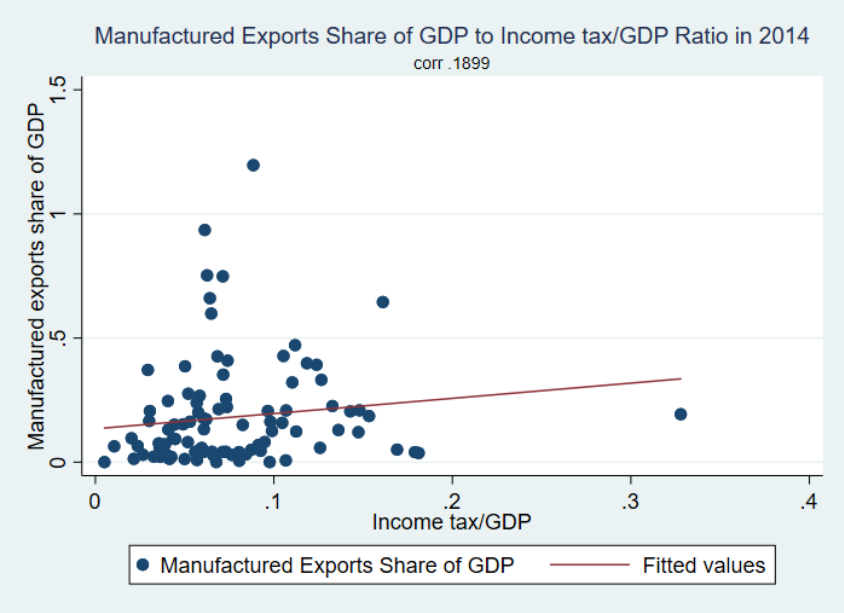

Figure 3: Manufactured Exports Share of GDP to Income tax/GDP ratio

The scatterplots (Figure 2 and 3) show fiscal capacity measured through income tax and total tax/GDP ratio has a weak relationship with manufactured exports share of GDP. I hypothesize is that the relationship will be more apparent after controlling for endogenous factors, so we can see the purer correlation between fiscal capacity and manufactured exports.

Total Factor Productivity and Capital Stock data at current PPPs in million 2011 US Dollars are obtained from the Penn World Tables. The classification of countries into French, British, Scandinavian or Socialist legal system for the IV regression robustness test uses Dincecco's database and relies on a country's colonial history. An ex-British colony will be coded as having British legal system, an ex-USSR country will be coded as having a socialist legal system. Countries that are affiliated to Russia or was a part of USSR pre-dissolution are coded as having socialist legal origin.

I also calculated subsample means and standard deviations for East Asian NICs and OECD countries (not included in summary statistics table). The mean Tax/GDP ratio for the East Asian

NICs is 14.60% with a standard deviation of 3.55% while the mean for Income tax/GDP ratio is 5.48% with a standard deviation of 2.29%. Parallel to the theory, the mean manufactured exports share to GDP ratio for East Asian NICs is very high at 53.14%. However, there is very high variability as the standard deviation is 39.48%. This is possibly because of their rapid growth of the manufacturing sector and economy as a whole—the economic conditions of these countries experienced a shock from the years after independence and cold war (circa 1960s) to the late 80s and early 90s. The mean Tax/GDP ratio for OECD countries is 24.94% with a standard deviation of 6.56%, possibly driven by Scandinavian countries inside the organization. The mean Income tax/GDP ratio is 11.63% with a standard deviation of 5.09%. The mean manufactured/GDP ratio is 17.39%, as richer economies shift to service or knowledge economy and OECD is a coalition of mostly very rich countries. The standard deviation is 14.94%.

VI. Results

My sample contains 115 countries from years 1990-2014.

Table 2: Manufactured Exports Share of GDP OLS Regressions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
tax_gdp yr	-0.340***		-0.340***			-0.333***	
	(0.070)		(0.055)			(0.055)	
incometax_gdp yr		-0.851***		-0.377***			-0.351***
		(0.113)		(0.097)			(0.097)
yrfdi_gdp					-0.003***	0.000	0.002
					(0.001)	(0.006)	(0.006)
yrManufacturedgdp	0.048**	0.027	0.064***	0.094***	0.063***	0.065***	0.097***
	(0.020)	(0.026)	(0.008)	(0.012)	(0.009)	(0.008)	(0.012)
lmerchandise_exports	0.169***	0.200***	0.093***	0.104***	0.087***	0.094***	0.104***
	(0.009)	(0.011)	(0.007)	(0.009)	(0.007)	(0.007)	(0.009)
TFP level at current PPPs (USA=1)	-0.370***	-0.272***	-0.033*	-0.035	-0.027	-0.029	-0.024
	(0.025)	(0.024)	(0.020)	(0.029)	(0.020)	(0.021)	(0.032)
lnck	-0.167***	-0.193***	-0.029***	-0.038***	-0.024***	-0.027***	-0.034***
	(0.008)	(0.009)	(0.008)	(0.011)	(0.008)	(0.009)	(0.011)
lnrgdpe_pc	0.079***	0.059***	-0.058***	-0.063***	-0.042***	-0.060***	-0.068***
	(0.007)	(0.007)	(0.015)	(0.020)	(0.014)	(0.015)	(0.021)
Constant	-2.202***	-2.442***	-1.450***	-1.157***	-1.536***	-0.890***	-1.677***
	(0.092)	(0.104)	(0.161)	(0.133)	(0.162)	(0.131)	(0.190)
Observations	1,976	1,722	1,976	1,722	1,917	1,952	1,701
R-squared	0.494	0.523	0.954	0.955	0.951	0.954	0.955
Fixed Effects	None	None	Country and Year	Country and Year	Country and Year	Country and Year	Country and Year
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1							

Table 3: Manufactured Exports Share of GDP IV Regressions

VARIABLES	(1) IV	(2) IV
tax_gdp yr	-0.395***	
	(0.104)	
incometax_gdp yr		-0.776***
		(0.148)
yrfdi_gdp	-0.001	-0.002
	(0.001)	(0.001)
yrManufacturedgdp	0.048***	0.028***
	(0.008)	(0.009)
lyrmerchandise_exports	0.169***	0.200***
	(0.005)	(0.006)
TFP level at current PPPs (USA=1)	-0.375***	-0.274***
	(0.020)	(0.023)
lnck	-0.167***	-0.192***
	(0.005)	(0.006)
lnrgdpe_pc	0.082***	0.058***
	(0.008)	(0.007)
Constant	-2.212***	-2.426***
	(0.058)	(0.070)
Observations	1,976	1,722
R-squared	0.493	0.523
Fixed Effects	Year	Year

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results from both ordinary least square regression and instrumental variable regressions give significant negative coefficients. Despite the small positive relationship in the preliminary scatterplots, the regressions in Table 2 surprisingly show negative correlation between both tax/GDP and income tax/GDP with manufactured exports share of GDP. Keeping all else constant,

a 1-point increase in tax/GDP ratio is correlated to a 0.327-point decrease in manufactured exports share to GDP. A 1-point increase in income tax/GDP ratio is correlated to a 0.322-point decrease in manufactured exports share to GDP. Instrumental variable regression (Table 3) shows that a 1-point increase in tax/GDP ratio is correlated to a 0.395-point decrease in manufactured exports share to GDP while a 1-point increase in income tax/GDP ratio is correlated to a 0.776-point decrease in manufactured exports share to GDP.

These results are unexpected as I hypothesized that fiscal capacity should be positively correlated to manufactured exports/GDP intensity. I run diagnostics to check if the sign of tax coefficients changes when I restrict the factor variables. I make two diagnostic regression, the first by dropping East Asian NIC countries (Taiwan, South Korea, Hong Kong, and Singapore) and the second diagnostic by dropping OECD countries. I drop NICs because these countries might be anomalies due to their unnatural growth, therefore I want to see if the same phenomenon is experienced by the rest of the countries. The second diagnostic drops OECD countries. Results from both of my diagnostic tests (Table 4) show that there is no sign change. Thus, I conclude the negative coefficients in Tables 2 & 3 to be true.

FDI unexpectedly has a small negative correlation with manufactured exports share to GDP, although this should not be interpreted as a causal relationship (Table 2 column 5). A 1-point increase in tax/GDP ratio is correlated to a 0.514-point increase in FDI net inflows/GDP ratio and the correlation between income tax/GDP ratio and FDI is insignificant. When added as a control in the regression of manufactured exports share of GDP on tax/GDP and income tax/GDP, FDI/GDP ratio becomes insignificant, which is another puzzling data. Table 5 shows the regression results of FDI/GDP on Total tax/GDP an Income tax/GDP ratios. FDI has a significant relationship with tax/GDP ratio. This aligns with my initial hypothesis that greater fiscal capacity (as a measure

of state capacity) attracts more Foreign Direct Investment. However, this does not explain the missing link between FDI and manufactured exports.

Table 4: Diagnostics regressions

VARIABLES	(1) Drop NICs	(2)	(3) Drop OECDs	(4)
tax_gdp yr	-0.343***		-0.235***	
	(0.053)		(0.064)	
incometax_gdp yr		-0.376***		0.011
		(0.091)		(0.122)
yrManufacturedgdp	0.063***	0.094***	0.041***	0.062***
	(0.008)	-0.011	(0.008)	(0.014)
lnyrmerchandise_exports	0.094***	0.105***	0.082***	0.094***
	(0.007)	-0.009	(0.008)	(0.010)
TFP level at current PPPs (USA=1)	-0.045***	-0.056**	0.007	0.014
	(0.016)	-0.023	(0.026)	(0.058)
lnck	-0.031***	-0.042***	0.006	0.012
	(0.007)	-0.009	(0.010)	(0.015)
lnrgdpe_pc	-0.054***	-0.056***	-0.069***	-0.074**
	(0.014)	-0.019	(0.017)	(0.031)
Constant	-1.074***	-1.316***	-1.564***	-2.044***
	(0.119)	-0.147	(0.191)	(0.245)
Observations	1,927	1674	1,241	985
R-squared	0.926	0.926	0.958	0.960

Country fixed effects and Year fixed effects

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: FDI on Tax/GDP and Income Tax/GDP Regressions

VARIABLES	(1)	(2)
tax_gdp yr	0.514***	
	(0.172)	
incometax_gdp yr		0.434
		(0.271)
lyrmerchandise_exports	-0.036**	-0.044**
	(0.017)	(0.019)
TFP level at current PPPs (USA=1)	0.012	-0.030
	(0.055)	(0.095)
lnck	0.003	-0.011
	(0.017)	(0.023)
lnrgdpe_pc	0.017	0.058
	(0.037)	(0.058)
yrManufacturedgdp	-0.089***	-0.137***
	(0.032)	(0.047)
Constant	0.989**	1.064**
	(0.409)	(0.512)
Observations	1,952	1,701
R-squared	0.272	0.275
Country fixed effects and Year fixed effects		
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

VII. Discussion

The negative coefficients contradict what the institutionalist framework say about fiscal capacity. Dincecco proves that there is positive correlation between fiscal capacity and GDP per worker. Acemoglu and Robinson would argue the same, that a state's ability to tax should signal a strong government that can provide public goods to support economic growth (Acemoglu & Robinson 2012). Rodrik shows that bigger governments by government expenditure are more exposed to trade (Rodrik 1998). I propose several explanations for my data.

a. Tax/GDP ratios as inaccurate benchmarks of fiscal capacity

First, I come back to tax and income tax to GDP ratio to attempt in explaining the dissonance. I propose that the problem lies my assumption of it being a measure of a state's "ability to tax." In reality, this ratio does not only measure a state's ability to tax—fiscal capacity, but also a state's tax revenue. In other words, a high tax to GDP ratio can signal high fiscal capacity, but moreover might simply suggest high tax rates, and tax rates affect FDI (Hines). Mutti and Gruber argue that an important element in the success of low and middle-income countries seeking to attract export-oriented industries appears to have been offering lower tax rates. Case studies by Rabushka show that the East Asian NICs applied this theory; although these countries have strong governments, these countries actually had low taxation and gave away numerous tax exemptions during the Asian Growth Miracle period. This claim aligns with the summary statistics for NICs that I included in the Data section of this paper (mean taxes for NICs are lower than mean taxes for the world).

On the consumption side, tax rates also influence individuals' disposable incomes. A lower tax rate increases the disposable income of individuals, therefore increasing individuals' ability to consume. Higher consumption could attract businesses to produce in a country, thus increasing

manufacturing. These industries could over time experience excess production and switch to exporting their products, thus increasing the manufacturing exports sector of a country's economy.

Although promising, the explanation that taxation is an inaccurate measure of fiscal capacity falls short of the positive correlation between tax/GDP and FDI net inflows/GDP ratio in Table 5. If tax/GDP ratio really signifies high tax rates instead of high fiscal capacity, then taxation and FDI should have an inverse relationship. An explanation I propose is that these FDI inflows are channeled to the non-tradable sector such as service. This validates the broken link between FDI to manufactured exports share, as manufacturing is included in the tradable sector. My argument is consistent to Kinoshita (2011), suggesting that "countries where FDI predominantly flows to the non-tradable sector will have a higher trade deficit than countries where it flows to the tradable sector." Therefore, a more sufficient measure of FDI to apply in my model should be FDI channeled specifically to the tradable sector, or better yet, manufacturing. Additionally, the results in my OLS and IV regressions could suggest non-causal inverse relationship. I suspect that countries with high FDI net inflows to GDP ratio in my dataset are not manufacturing countries. To prove my inference, I rank countries by FDI/GDP from highest to lowest (Appendix b). The top-ranking countries by FDI/GDP ratio in my dataset are mostly non-manufacturing countries. These include island nations such as Cayman Islands, Malta, Equatorial Guinea, and Cyprus although we see Hong Kong and Singapore on the top as well. Luxembourg also ranks on top. Meanwhile, other manufacturing countries like China, India and manufacturing Southeast Asian countries rank below. This fact suggests that high FDI/GDP might just be channeled into other sectors that are non-manufacturing. This data also unveils that countries with high FDI/GDP capita might not be countries that are FDI intensive per se but have very small GDP in comparison to

their capital inflows (island nations). These two facts shed a little light on why there is negative relationship between FDI net inflows/GDP and manufactured exports share of GDP.

On the other hand, there is a possibility that the coefficients for fiscal capacity are negative not because it captures high tax rates, but because the taxing abilities of countries are not translated into the provision of public goods that goes into the manufacturing or exports sector of the economy. According to my theory, it is the provision of public goods that can influence the inflow of FDI, generate economic activity and finally spur growth of the manufacturing exports sector.

b. Other inadequate theories

I also argue that there could be a delay from the time that FDI is given to when a factory is planted and running to make manufactured exports. I do lag regression to check this out theory. The lagged regression is available on Table 6. A t-2 lag of FDI/GDP ratio does not change the coefficients seen on Table 1. Instead, the results are more negative. Thus, it could not be the case that it is due to a delay in implementation of the imported capital to the host country.

Table 6: Manufactured Exports Share of GDP OLS regressions with lagged FDI/GDP ratio

VARIABLES	(1)	(2)	(3)
tax_gdp yr	-0.364***		
	(0.058)		
incometax_gdp yr		-0.433***	
		(0.097)	
lag2 FDI/GDP	-0.013*	-0.012*	-0.015**
	(0.007)	(0.007)	(0.007)
yrManufacturedgdp	0.068***	0.095***	0.067***
	(0.009)	(0.013)	(0.010)
lnyrmerchandise_exports	0.103***	0.113***	0.097***
	(0.008)	(0.009)	(0.008)
TFP level at current PPPs (USA=1)	-0.037	-0.028	-0.045**
	(0.024)	(0.036)	(0.022)
lnck	-0.028***	-0.034***	-0.032***
	(0.010)	(0.012)	(0.009)
lnrgdpe_pc	-0.064***	-0.079***	-0.040***
	(0.017)	(0.022)	(0.015)
Constant	-1.165***	-1.349***	-1.718***
	(0.110)	(0.154)	(0.174)
Observations	1,783	1,576	1,814
R-squared	0.957	0.958	0.954

Country fixed effects and Year fixed effects
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Finally, I argue that this might be the substitution effect of FDI, which states that FDI can in fact reduce exports. In this perspective, FDI is market seeking and therefore substitutes for trade because the motivation is market access and expansion (Markusen and Venables 1998). Despite this theory, I find more literature arguing for the complementary (positive) effect of FDI on exports compared to the evidence for substitution effect as discussed in the previous section on FDI.

Camarero and Tamarit analyzed 13 OECD European countries; they found that five out of the eight significant coefficients of inward FDI to exports of manufactures are positive. However, coefficients for Belgium, Spain and the United States are negative, meaning that inward FDI decreases exports of manufactured goods (Camarero and Tamarit 2004). Therefore, there is a slight possibility that the overall effect of FDI to manufactured exports share is substitutive, although the lack of academic evidence suggests otherwise.

VIII. Conclusion

My results show that fiscal capacity is negatively correlated to manufacturing exports to DGP share. Total tax/GDP and income tax/GPD ratios are significantly positively correlated to FDI/GDP while FDI/GDP has a negative relationship with manufactured exports share to GDP. These results are puzzling and there is a dissonance between FDI to manufacturing exports, disproving my initial hypotheses. Two arguments are proposed to explain these results. First, fiscal capacity measured by tax/GDP ratio does not link to the improvement of the manufacturing sector. Fiscal capacity could provide public goods and conditions that attract FDI but not public goods that generate the growth of the manufacturing exports sector specifically. Second, FDI inflows might go to the non-tradable sector. When FDI mostly flows into nontradables, FDI will not result in the growth of manufactured goods exports. One problem might arise from using net FDI inflows instead of gross FDI inflows because manufacturing countries are usually also capital-exporting countries (bigger economies compared to island nations). Thus, my suggestion for further research is to use gross FDI inflows and specifically inflows into the tradable sector.

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Appendix

a. List of countries by average tax/GDP ratio and income tax/GDP ratio from years 1990-2014, lowest to highest (IMF WoRLD Revenue Longitudinal Database)

Country	Average Total Tax/GDP Ratio	Country	Average Income Tax/GDP Ratio
Iraq	0.87816922	Kuwait	0.24692466
Kuwait	0.98335609	Iraq	0.50741249
Bahrain, Kingdom of	1.53863364	United Arab Emirates	0.76001356
Saudi Arabia	1.57095267	Maldives	0.76350168
Timor-Leste	1.870439	Bahrain, Kingdom of	0.8291147
Oman	2.24147041	Tajikistan	0.86527394
Qatar	2.77465704	Oman	0.98415343
Guinea-Bissau	5.03922636	Myanmar	1.16102198
Congo, Dem. Rep. of	5.34029503	Guinea	1.28637165
Iran, I.R. of	5.49367058	Congo, Dem. Rep. of	1.30425392
Afghanistan, I.R. of	6.01127378	Chad	1.30757225
Libya	6.48029238	Central African Rep.	1.42296062
Bangladesh	7.08281832	Cambodia	1.55528339
Yemen, Republic of	7.32752882	Bangladesh	1.59993116
Sudan	7.45227303	Afghanistan, I.R. of	1.65431792
Sierra Leone	7.6634217	Nepal	1.79155641
Central African Rep.	7.86185369	Nigeria	1.83604626
Congo, Republic of	8.73656803	Madagascar	1.84495547
Bhutan	9.19320871	Paraguay	1.89461039
Nepal	9.4467874	Niger	1.92553492
Madagascar	9.53074459	Congo, Republic of	1.92660658
Ecuador	9.7370599	Bosnia & Herzegovina	1.94449376
Ethiopia	9.74169668	Tonga	1.97888994
Haiti	9.7996325	Ecuador	2.20628377
Cambodia	9.82879752	Sierra Leone	2.31004071
Chad	9.89050913	Ethiopia	2.34921395
Uganda	9.98449914	Bolivia	2.37296731
Equatorial Guinea	10.1209564	Sri Lanka	2.41281369
Nigeria	10.3571952	China,P.R.: Mainland	2.42318661
Dominican Republic	10.459712	Cameroon	2.45958097
Paraguay	10.5932949	Antigua and Barbuda	2.60094642
Pakistan	10.5941839	Lebanon	2.66076566
Guatemala	10.6804289	Uganda	2.66183188
Rwanda	10.7390426	Guatemala	2.70309182

Ghana	10.7775651	Dominican Republic	2.81632528
Niger	10.8276706	Gambia, The	2.87949751
Tanzania	11.1658284	Uruguay	2.94935225
Turkmenistan	11.2708428	Pakistan	2.95883146
Indonesia	11.2713002	Togo	2.96559486
Cameroon	11.2956149	Costa Rica	2.96657276
Comoros	11.3576271	Iran, I.R. of	2.96733252
Micronesia, Fed. States of	11.6143517	Nicaragua	2.98651564
Burkina Faso	11.6368302	Micronesia, Fed. States of	2.99055329
Nicaragua	11.6672104	Burkina Faso	3.07321464
Mozambique	11.92938	Albania	3.14870285
Lao People's Dem.Rep	12.0065417	Jordan	3.16080452
Venezuela, Rep. Bol.	12.0218796	Moldova	3.1667633
El Salvador	12.1354041	Mauritius	3.18895275
Maldives	12.6246316	Lao People's Dem.Rep	3.25535683
China,P.R.:Hong Kong	12.7349704	Argentina	3.3200154
Costa Rica	12.7683822	Ghana	3.39114477
Guinea	12.7805569	Mali	3.39748973
China,P.R.: Mainland	12.9140602	Cote d'Ivoire	3.39883204
Azerbaijan, Rep. of	13.0152864	Kyrgyz Republic	3.40678758
Bahamas, The	13.0770262	Benin	3.43617923
Gambia, The	13.2793583	Palau	3.44266629
Mauritania	13.3872396	Macedonia, FYR	3.575529
Benin	13.5484775	Grenada	3.58990586
Togo	13.5786783	El Salvador	3.6029366
Lebanon	13.7950261	Burundi	3.68305679
Mexico	13.8403753	India	3.80095524
Burundi	13.8792918	Honduras	3.84131005
Malawi	14.0456663	Yemen, Republic of	3.94728275
Philippines	14.1198862	Rwanda	3.97176729
Panama	14.1699436	Senegal	4.10693605
Mali	14.172364	Panama	4.11413902
Eritrea	14.4067766	Sao Tome & Principe	4.24093806
Sri Lanka	14.4266977	Armenia	4.24921335
Singapore	14.4527013	Tanzania	4.32914396
Gabon	14.6636157	Peru	4.47991138
Syrian Arab Republic	14.6652316	Colombia	4.48448221
Tajikistan	14.724058	Mexico	4.51879739
Kenya	14.8172287	Croatia	4.58894703

Liberia	14.8853079	Dominica	4.66541282
Sao Tome & Principe	14.9898783	Gabon	4.71675968
Armenia	15.0071239	Bhutan	4.77321883
Colombia	15.0777472	St. Kitts and Nevis	5.00612266
India	15.0948373	Azerbaijan, Rep. of	5.06600751
Egypt	15.2516126	Samoa	5.13342333
San Marino	15.2571762	Georgia	5.28963209
Zambia	15.4476625	Vietnam	5.46167202
Cote d'Ivoire	15.4662918	Philippines	5.54514763
Honduras	15.5683971	Liberia	5.57147196
Suriname	15.7528938	Belize	5.72264512
Zimbabwe	15.7757194	Thailand	5.80831165
Malaysia	15.8656207	Turkey	5.81971554
Kyrgyz Republic	15.9839745	Kenya	5.82239277
Thailand	16.172471	Cape Verde	5.86683852
Peru	16.2456726	Chile	5.87026394
Albania	16.3700796	Tunisia	5.91489982
Jordan	16.4318858	Serbia, Republic of	5.92631801
Antigua and Barbuda	16.4977574	Brazil	5.93495842
Mongolia	16.5048664	St. Lucia	5.96094238
United Arab Emirates	16.9003228	Swaziland	6.06524038
Senegal	17.0397891	San Marino	6.14154152
Marshall Islands	17.080255	Egypt	6.15849682
Tuvalu	17.1657683	Indonesia	6.18360755
Georgia	17.220565	St. Vincent & Grens.	6.18992617
Kiribati	17.3806275	Mongolia	6.25292687
Palau	17.4075503	Korea, Republic of	6.27740437
Korea, Republic of	17.4242538	Zambia	6.35627434
Vanuatu	17.4578079	Seychelles	6.36152215
Japan	17.4937803	Belarus	6.40026568
Mauritius	17.6343709	Singapore	6.43325907
Turkey	17.7777863	Malawi	6.44782798
Tonga	17.9073958	Venezuela, Rep. Bol.	6.45939658
Macedonia, FYR	17.9332788	Marshall Islands	6.53839207
Grenada	17.9401048	Suriname	6.61935798
Bolivia	18.1012243	Zimbabwe	6.79186487
Chile	18.1582002	Slovak Republic	6.79945192
St. Kitts and Nevis	18.6241945	Greece	6.99695427
Slovak Republic	18.8950281	Morocco	7.02013031
Czech Republic	18.9535299	Latvia	7.1006567

Romania	18.9737913
Cape Verde	18.9802292
Lithuania	18.9932386
Latvia	19.085839
United States	19.3646019
Vietnam	19.3759672
Tunisia	19.4634277
Switzerland	19.5712321
Guyana	19.7431521
Kazakhstan	20.4021482
St. Lucia	20.6027237
Argentina	20.6798314
Belize	20.7289782
Solomon Islands	20.7307591
Morocco	20.7749488
Greece	20.8579433
St. Vincent & Grens.	20.9504044
Estonia	20.9533637
Spain	21.1789379
Dominica	21.2142662
Samoa	21.2304455
Moldova	21.402467
Germany	21.6107873
Bulgaria	21.7134898
Cyprus	22.0052518
Djibouti	22.0475928
Fiji	22.3866034
Poland	22.5578175
Portugal	22.5779037
Bosnia & Herzegovina	22.7002514
Slovenia	22.7308249
Papua New Guinea	22.8278185
Brunei Darussalam	23.054244
Uruguay	23.0987942
Netherlands	23.1910195
Malta	23.3040421
Jamaica	23.4290633
Uzbekistan	23.5255236
South Africa	23.6594112
Swaziland	23.7783071

Russian Federation	7.17655827
Kazakhstan	7.19162648
Slovenia	7.27252846
Romania	7.27847733
Kiribati	7.28455853
Lithuania	7.29733367
Czech Republic	7.73412335
Mozambique	7.74817002
Fiji	7.79919808
Bulgaria	7.82641094
China,P.R.:Hong Kong	7.83173961
Estonia	7.90238969
Ukraine	8.07467525
Cyprus	8.08362329
Poland	8.09608248
Syrian Arab Republic	8.23988304
Portugal	8.53442459
Hungary	8.81998201
Barbados	8.99767169
France	9.09137596
Malaysia	9.17205444
Jamaica	9.21906295
Lesotho	9.47235215
Spain	9.69989216
Japan	9.76779778
Namibia	9.82221699
Malta	9.86593016
Netherlands	10.3767891
Solomon Islands	10.4743798
Germany	10.5527602
Papua New Guinea	11.2619032
Israel	11.293387
Botswana	11.4247592
Equatorial Guinea	11.5861448
Switzerland	11.8067257
United States	11.8149707
Austria	11.8313494
United Kingdom	12.3259734
Ireland	12.3548981
South Africa	13.1046898

Croatia	23.90684	Luxembourg	13.6055945
Ukraine	23.9339825	Italy	13.6874325
Botswana	24.1975917	Iceland	13.9008305
Serbia, Republic of	24.2866531	Trinidad and Tobago	14.7072034
Barbados	25.5032398	Canada	15.8805404
Trinidad and Tobago	25.6817366	Belgium	15.9074971
Ireland	25.902127	Angola	16.1834494
France	25.9284672	Finland	16.2807762
Hungary	26.1390021	Australia	16.6277161
Russian Federation	26.1791047	Sweden	17.3599867
United Kingdom	26.8438115	Norway	17.4397349
Luxembourg	27.0264333	Algeria	18.7142249
Brazil	27.3623782	New Zealand	20.1120882
Namibia	27.4914152	Denmark	28.4678178
Austria	27.5244482		
Israel	27.6040308		
Italy	28.1425793		
Seychelles	28.2521652		
Canada	28.7437999		
Australia	29.0419906		
Belgium	29.3777243		
Finland	31.0309914		
Iceland	31.3984659		
Norway	31.6799155		
Belarus	32.0002046		
Algeria	32.9061932		
Sweden	33.5449236		
New Zealand	34.1158392		
Angola	41.1080477		
Lesotho	44.3333754		
Denmark	46.0453519		

b. List of countries by FDI/GDP Ratio, highest to lowest (World Bank Data and Penn World Tables 9)

Country	Average FDI/GDP Ratio (1990-2014)
Malta	0.743019687
Luxembourg	0.423031097
China, Hong Kong SAR	0.246099732
Azerbaijan, Rep. of	0.186681187
Netherlands	0.171575952
Singapore	0.153486055
St. Kitts and Nevis	0.146967146
Belgium	0.132509212
Palau	0.131579503
Ireland	0.11998755
Cyprus	0.116926514
Mauritania	0.111802675
Seychelles	0.107229205
Mozambique	0.106065927
Antigua and Barbuda	0.105338427
Congo, Republic of	0.104143713
Lebanon	0.099196577
Grenada	0.097293607
Vanuatu	0.090180397
Hungary	0.089420883
St. Lucia	0.089187978
Bulgaria	0.088692545
Estonia	0.087381322
Dominica	0.082267283
Georgia	0.081132943
Kazakhstan	0.079513285
Guyana	0.075145593
Cambodia	0.074616082
Panama	0.068633739
Bahrain, Kingdom of	0.067277768
Fiji	0.065621388
Chile	0.062561991
Namibia	0.060635727
Belize	0.059700751
Jordan	0.05741905
Trinidad and Tobago	0.057278776
Zambia	0.056638612
Armenia	0.05605919
Gambia, The	0.055890286

Vietnam	0.055025995
Mongolia	0.055003551
Albania	0.054998606
Moldova	0.054905638
Maldives	0.053443962
Iceland	0.049595453
Czech Republic	0.049333482
Costa Rica	0.048985848
Djibouti	0.048638966
Kyrgyz Republic	0.048626424
Sierra Leone	0.048144641
Bosnia & Herzegovina	0.046113988
Niger	0.044755478
Nicaragua	0.044614292
Ghana	0.044021655
Sweden	0.04384443
Bolivia	0.043264137
Bahamas, The	0.043163552
Malaysia	0.042717963
Jamaica	0.042541058
Latvia	0.042194608
Croatia	0.04101556
Turkmenistan	0.041009552
Honduras	0.039697197
Botswana	0.039549921
Barbados	0.039150839
Slovak Republic	0.037077007
Uganda	0.036804289
TFYR of Macedonia	0.036604377
United Kingdom	0.036576759
Peru	0.03610216
Madagascar	0.035985645
Ukraine	0.034299313
Togo	0.03398491
Switzerland	0.033692101
Solomon Islands	0.032614361
Portugal	0.032613399
Lithuania	0.03238857
Dominican Republic	0.032248344
Uruguay	0.030848962
Sudan	0.030820486
Colombia	0.030181816
Austria	0.029972567
Romania	0.029448852
Poland	0.029442337
Finland	0.029335032

Nigeria	0.028903462
Thailand	0.028716873
Spain	0.028681634
Lesotho	0.028579441
Eritrea	0.028102378
Tunisia	0.027971276
Canada	0.027754628
Tajikistan	0.027358424
Australia	0.027140314
Brunei Darussalam	0.027056721
Israel	0.02637982
Qatar	0.025728145
Malawi	0.02481467
Brazil	0.024423095
Norway	0.024199507
Denmark	0.024060736
Mexico	0.023647369
Belarus	0.023489827
Argentina	0.023098616
Ethiopia	0.02268195
Libya	0.022601102
Russian Federation	0.021844666
Mali	0.021357663
Tonga	0.020985238
New Zealand	0.020813819
El Salvador	0.020701806
Samoa	0.020175385
Venezuela (Bolivarian Republic of)	0.019680636
France	0.019645636
Cote d'Ivoire	0.019294503
Mauritius	0.018649589
Saudi Arabia	0.018329788
Senegal	0.018178602
Papua New Guinea	0.018053364
United Arab Emirates	0.017864031
Germany	0.017510938
Oman	0.017458637
Slovenia	0.016900103
Morocco	0.016268569
Ecuador	0.01518676
Philippines	0.015080506
Rwanda	0.014781526
United States	0.014756222
Paraguay	0.014528457
Guinea	0.014310281
South Africa	0.014058102

Bhutan	0.013537005
Iraq	0.013074917
Cameroon	0.0129174
Sri Lanka	0.01237717
Pakistan	0.011976746
Benin	0.011903658
Turkey	0.011373985
Indonesia	0.011259248
India	0.011148697
Zimbabwe	0.010938967
Syrian Arab Republic	0.01072634
Algeria	0.009949658
Burkina Faso	0.009510798
Korea, Republic of	0.008855831
Iran, I.R. of	0.008685722
Italy	0.008558958
Comoros	0.008217703
Guatemala	0.00771359
Greece	0.007476195
Gabon	0.007318323
Guinea-Bissau	0.006746467
Kenya	0.006204655
Bangladesh	0.005464081
Burundi	0.004672807
Afghanistan, I.R. of	0.004367026
Kiribati	0.004152122
Timor-Leste	0.003462388
Kuwait	0.003130056
Nepal	0.002885642
Yemen, Republic of	0.002284858
Japan	0.001432786
Haiti	0.000137579
Tuvalu	-0.000575198
Angola	-0.013692589
Suriname	-0.039884953