GDP Growth and the Index of Economic Freedom Analysis

Summer 2012

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September 2012

Agenda

- Project Overview
- Introduction to the Index
- The Index of Economic Freedom
- Changes in the Index
- Other Metrics to Consider
- Analysis of Existing Research
- Data Collection Process
- Data Analysis Process
- GDP Forecast Models
- Results and Conclusions

Project Overview

- We observe that macroeconomic predictions are based on linear applications of growth factors to prior period GDP

- We believe this is a fundamentally flawed approach, only made worse as the projection extends further from the date on which the projection is released

- Our goal is to determine whether or not we can create a better lens through which to make forecasts by using the Heritage Foundation's Index of Economic Freedom ("The Index") to project economic outcomes

- Through our research and application of The Index, we seek to answer three questions:

  - Can we predict GDP growth by applying The Index as a contextual measure with predictive value?

  - If not, can we augment The Index with other indicators in order to create a greater correlation to GDP growth, and therefore predict GDP growth based on this modified index?
    - For example, does adding personal credit and the velocity of money make a material difference in the quality of the projections?

  - If we cannot affirmatively answer either of the previous questions, can we predict dislocations in GDP growth by developing a continuum of performance for each indicator ranging from green to yellow to red to indicate that one or more of the indicators has, given the size or growth rate of the GDP under analysis, moved from an acceptable range into a range suggesting dislocation is increasingly probable

Source: International Monetary Fund, World Economic Outlook April 2012

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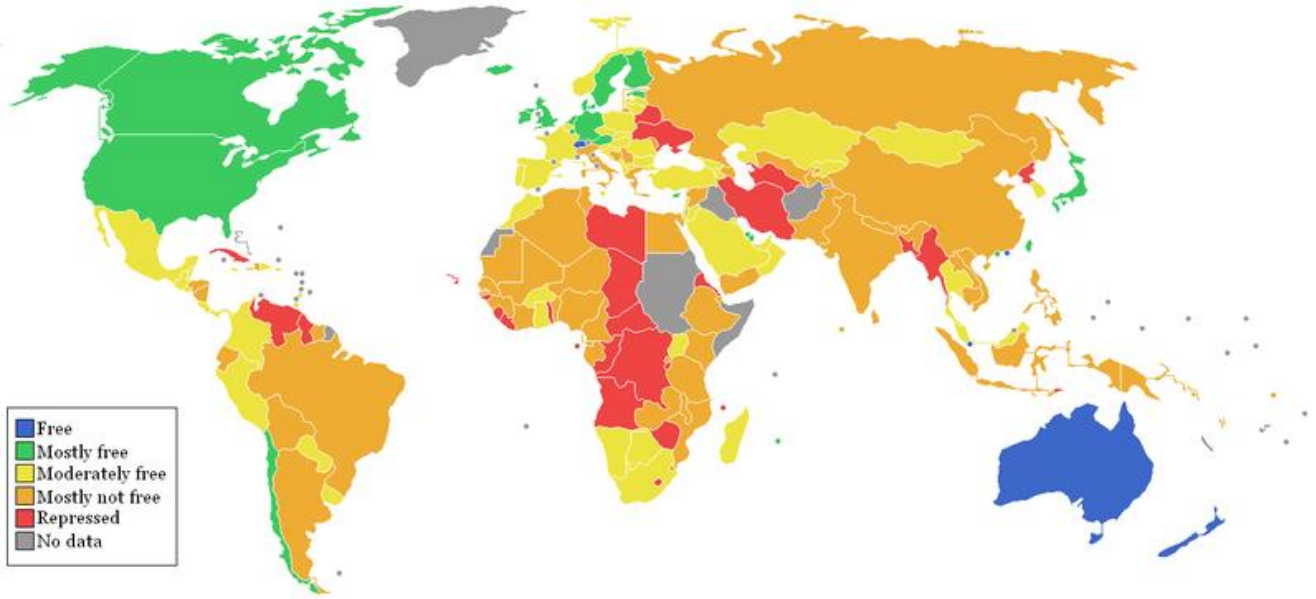
The Index of Economic Freedom: Background

- The Index was created by the Heritage Foundation and is published by *The Wall Street Journal*
- It was created in 1995, and is a series of ten economic factors, which group countries into five categories, ranging from repressed to free
- The Index is an essential measurement used to determine the level of autonomy within a country and quantify it's relative freedom
- The map below illustrates the 2012 world map of The Index:



Source: Heritage Foundation's 2012 Index of Economic Freedom, Executive Highlights

Why is it important?

"To be controlled in our economic pursuits means to be controlled in everything." —Friedrich Hayek

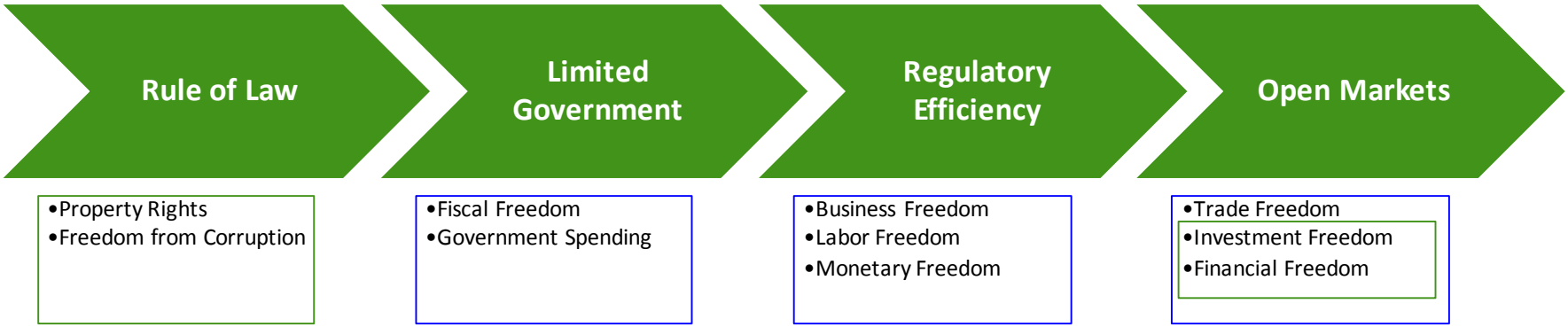
- The Index promotes economic growth and well-being in countries due to it's proven correlation with several economic factors of prosperity and wealth
- The relationship between support for innovative ideas and sustained economic growth demonstrated by trends in The Index would ideally result in government implementation of policies to increase individual freedom
- Economic Freedom is "a condition or state of livelihood in which individuals can act with autonomy while in the pursuit of livelihood"
- Contrasting economic freedom is economic contraction, which according to Antony Davies is when, "someone tells you you must spend your resources in a way that you would not choose to spend of your own volition"
- The importance of measuring these freedoms is derived from their correlation with the following:
  - Prosperity in terms of GDP
  - Reductions in poverty
  - Higher levels of per capita income
  - Income growth rates
  - Entrepreneurial activity

The Index measures the economic freedom of nations to demonstrate the correlation between the results and the prosperity of countries

Source: Heritage Foundation's 2012 Index of Economic Freedom, Executive Highlights; "Does Government Spending Create Economic Growth?" By Antony Davies

The Index of Economic Freedom Composition (Heritage Foundation)

- The Index measures economic freedom through ten factors grouped into four broad categories:



- Together these categories create a barometer for the ability of individuals within a country to "work, produce, consume, and invest in any way they please under a rule of law, with their freedom at once both protected and respected by the state"

The Index is a complete measurement of economic freedom that quantitatively measures freedom by evaluating factors that encompass all aspects of the economy

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Economic Freedom of the World (Fraser Institute)

- The Economic Freedom of the World ("EFW"), produced by the Fraser Institute, is another index that measures economic freedom, much like The Index. It is based upon the following "key ingredients of economic freedom":
  - Personal choice
  - Voluntary exchange coordinated by markets
  - Freedom to enter and compete in markets
  - Protection of persons and their property from aggression by others

- In this index, there are five broad areas of measurement that reflect the "key ingredients of economic freedom." These five areas of measurement encompass 23 categories and include 42 variables

Size of Government	Legal Structure and Security of Property Rights	Access to Sound Money	Freedom to Trade	Regulation of Credit, Labor and Business
•Government consumption spending •Transfers and subsidies •Government enterprise and investment •Top marginal tax rate	•Judicial independence •Impartial courts •Property rights •Military interference •Integrity of legal system •Legal enforcement of contracts •Restrictions on sale property	•Money growth •Standard deviation of inflation •Current inflation •Freedom to own foreign bank accounts	•Taxes on international trade •Regulatory trade barriers •Size of trade sector •Black-market exchange rates •International capital market controls	•Credit market regulation •Labor market regulations •Business regulations

- Each variable/sub-category score is determined on a scale of 0 to 10, which are then averaged together to determine category scores, averaged once again to determine area scores, and each of the 5 area scores are averaged to get a total score

Source: Economic Freedom of the World 2011, Annual Report

The Index (Heritage) vs. Economic Freedom of the World (Fraser)

- What are the similarities and differences?
  - Both indices measure economic freedom using similar categories and variables, having the same ultimate goal of determining the relative economic freedom of nations in hopes of promoting economic growth
  - These measures utilize much of the same data and philosophies to determine their scores, but the differences arise in the sources of data and how each uses the initial variables to convert them and obtain a final score
  - The final calculation of both indices involve a simple average of the factors. However, the EFW has five broad areas of measurement compared to the ten factors used in The Index
    - This makes it difficult to reconcile the two, as many of the factors in The Index may be included in one factor in the EFW
  - The EFW uses factors that are primarily outcome variables, while The Index focuses on policy variables that governments can actually control
  - The EFW is measured over five year time intervals, where as The Index is recorded annually
  - The EFW extended their data sets back in time, while The Index does not

- Why The Index?
  - Considering the EFW is only recorded every five years and we have a limited time span of data available, it is better to use the annual Index scores to account for more true fluctuations in the data over time
  - The EFW has a lot of missing data for its five underlying indexes, which prevents a constant aggregation of the summary score
  - The Index keeps its categories separate until the final score calculation. This makes it much easier for us to manipulate their final calculation by changing the significance of each factor
  - The flexibility built into this model enables The Index to be altered by using weights for each factor based on the impact and correlation with GDP that we determine by analyzing data

Source: Economic Freedom of the World 2011, Annual Report; Index of Economic Freedom 2012 and "Economic Freedom and Economic Growth: A Short-Run Causal Investigation" by J. Heckelman

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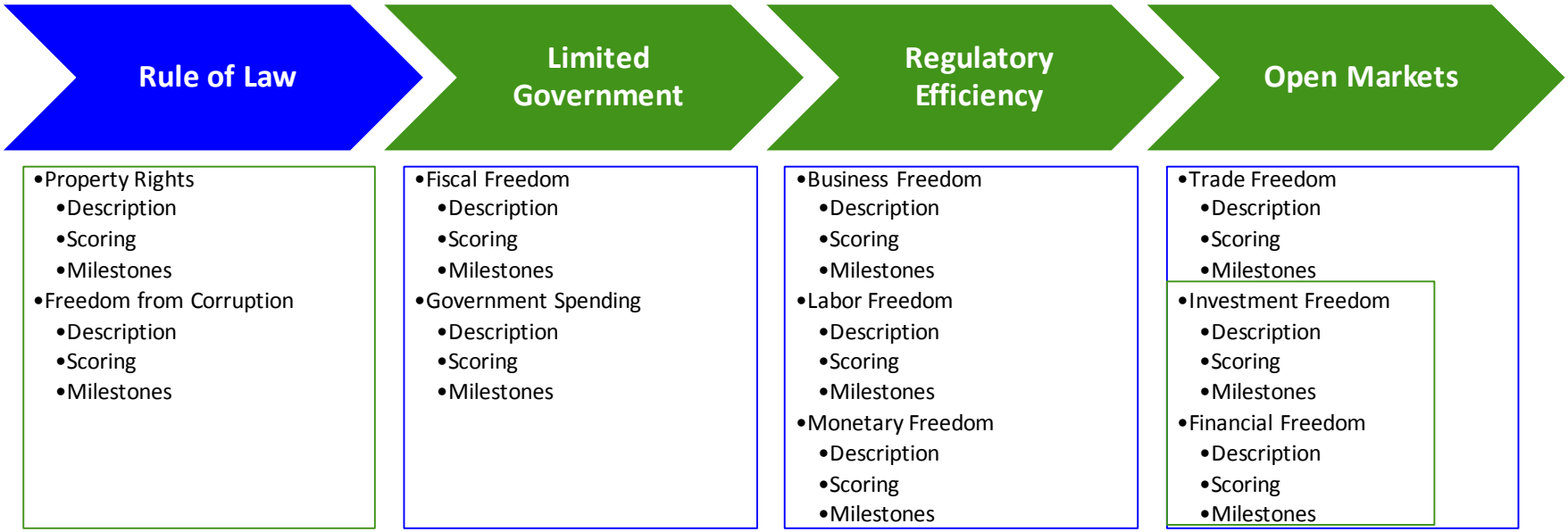


The Index: Rule of Law

- The Rule of Law category within The Index measures the abilities of a nation's government to protect and respect the rights of its citizens

- There are two metrics within this category:
  1. **Property Rights**
  2. **Freedom From Corruption**

- **Property Rights** measures the ability of individuals to own private property
  - This factor determines the degree to which the laws of a nation protect private property, the regularity with which those laws are enforced, and the efficiency of the court system

- **Freedom from Corruption** measures the level of perceived corruption in a nation's government
  - This factor uses Transparency International's Corruption Perceptions Index ("CPI") to rank nations based on their perceived corruption

- Together, these two scores measure Rule of Law by determining the protections of the law, the efficiency and effectiveness of the court system, and the level of corruption in the government

Source: Index of Economic Freedom, Methodology

Rule of Law: Property Rights

- Property Rights are fundamental to economic freedom because they create an environment that fosters investment, business transactions, and economic growth
- By defining ownership of land, capital, and objects, Property Rights form the backbone of a capitalist society
- With ownership defined, individuals have more incentive to buy, sell, trade, and invest in assets because they are more confident in their ability to reap a required rate of return
- Strong Property Rights and an efficient legal system create environments in which ideas can be capitalized
  - Economic growth depends not only on ideas, but on ideas that can be shared and capitalized. "Ideas are best generated and shared in an environment where they can be protected and financed"
- When Property Rights are not protected by the state, individuals have little incentive to trade or invest in their property because they are uncertain as to whether they will own the property in the future
- Even if Property Rights are defined, without legal protection of those rights, individuals with power can simply take property from the people, preventing the democratization of property and therefore stagnating the economic development of the country

Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology, "Strengthening Globalization's Invisible Hand: What Matters Most?" by Siems and Ratner, and "Property Rights: The Key to Economic Development" by O'Driscoll and Hoskins

Property Rights: Scoring

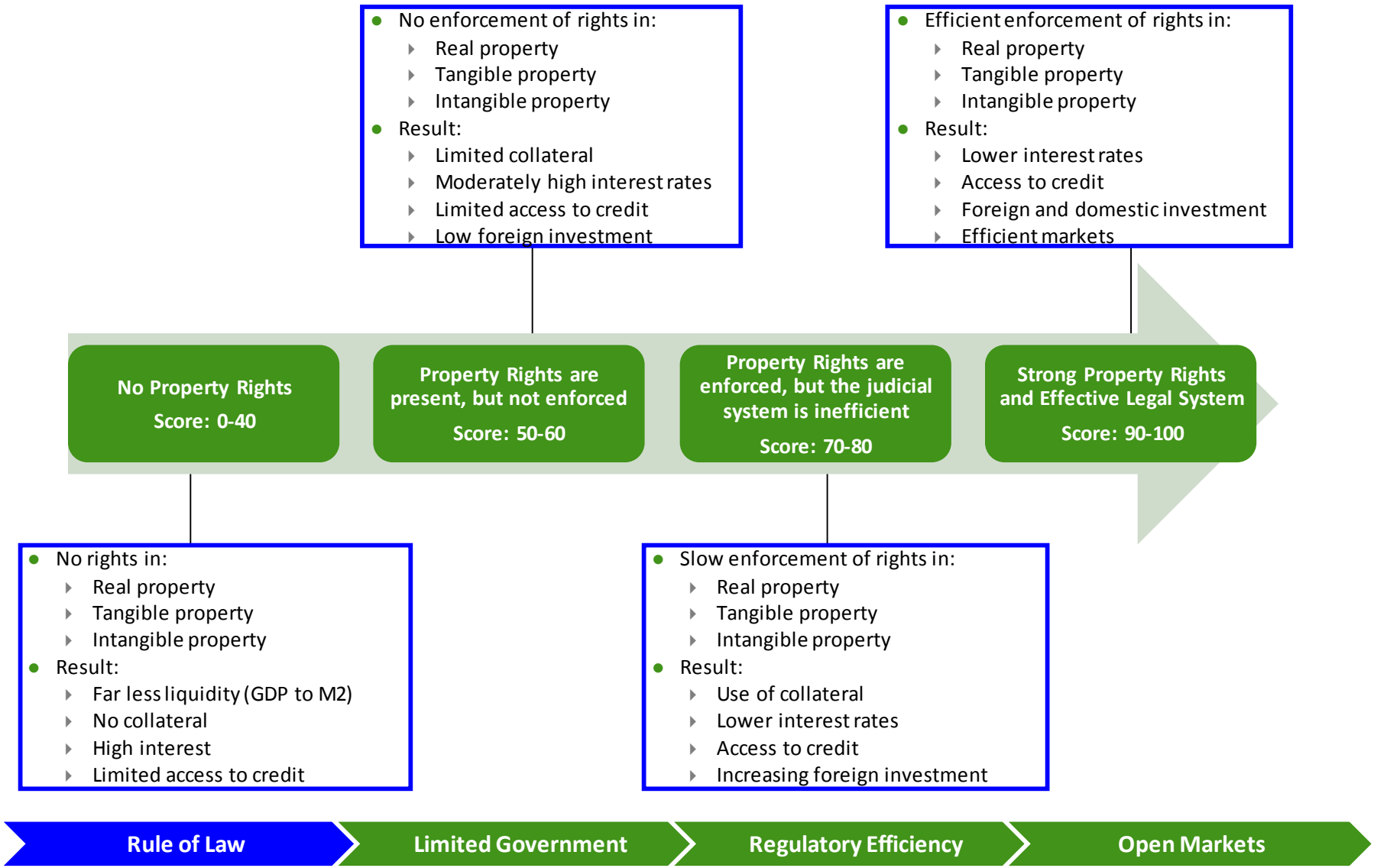
- The Index measures Property Rights based on the following four factors:
  - The ability of individuals to accumulate private property
  - The degree to which the state protects those rights
  - The likelihood of expropriation
  - The ability of individuals to enforce contracts

- These measurements are taken and compared to the final score (between 0 and 100) that the nation receives for Property Rights, determined by the following scale:

Score	Description
0	All property is state owned and corruption is rampant
10	Most property is state owned and private property is rarely protected by the state, corruption is rampant and expropriation regular
20	Private property is weakly protected, the legal system is inefficient and corrupt and so contracts are difficult to enforce and most disputes are settled outside the legal system. Expropriation is frequent
30	Private property is weakly protected, the legal system is inefficient, corruption exists, the judiciary is not independent, and expropriation is possible
40	The courts are highly efficient, the judiciary is not independent, and expropriation is possible
50	The court system is inefficient, corruption likely exists, the judiciary is no independent, but expropriation is rare
60	The judiciary is not independent, corruption is rare but possible, rights enforcement is inefficient and delays are frequent, expropriation is rare
70	Private property is guaranteed by the government, courts are lax in enforcing contracts and experience delays, corruption rarely exists, and expropriation is unlikely to happen
80	Private property is guaranteed by the government, the courts are efficient but some delays still exist, corruption is rare, and expropriation is highly unlikely
90	Private property is guaranteed by the government, courts enforce contracts without delays, justice system is efficient, corruption barely exists, and expropriation is highly unlikely
100	Private property is guaranteed by the government, court system is effective and efficient, justice system is effective and efficient, and no corruption or expropriation exists

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Property Rights: Key Milestones and Economic Correlations



Sources: Besley, "Property Rights and Investment Incentives: Theory and Evidence from Ghana"; O'Driscoll and Hoskins, "Property Rights: The Key to Economic Development"

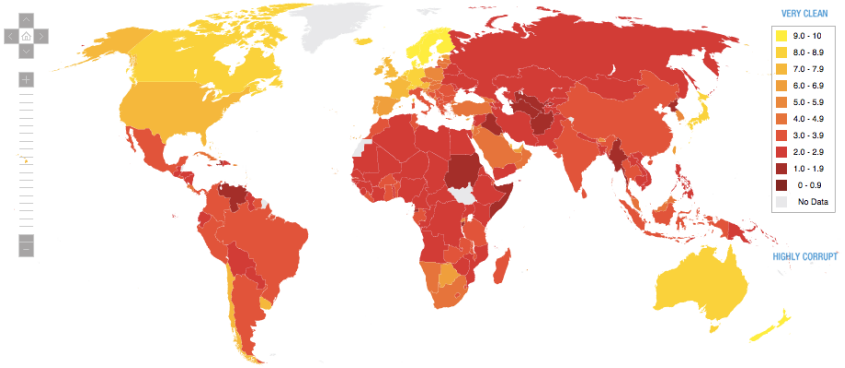
Rule of Law: Freedom from Corruption

- Freedom from Corruption is a direct measure of a population's perception of corruption in a country's governing body and an important factor in determining economic freedom
  - Corruption is defined as "abuse of public power for private benefit"
- National corruption causes heightened insecurity and uncertainty within economic relationships, decreasing public perception of the economy, and therefore driving down the economic freedom of the nation
- Over the life of The Index (1995-2012), increased government regulation or activity in the economy is positively correlated with high levels of national corruption. Conversely, heightened transparency of the government is negatively correlated with high levels of national corruption
- While the significance of the Freedom from Corruption score, as a factor in determining economic freedom, is apparent, the difficulty in obtaining reliable input data on Corruption must be addressed

Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology and *Influence of Corruption on Economic Growth Rate and Foreign Investment* by Podobnik, et. al

Corruption Perceptions Index

- The Heritage Foundation utilizes data collected by Transparency International, the global organization leading the fight against corruption, in calculating the Freedom from Corruption score in The Index
- The CPI was first calculated by Transparency International in 1995 to expose and rank the countries of the world based on their level of current corruption in order to promote transparency within governing bodies
- The CPI measures the perception of a country's overall corruption in 178 countries on a scale from 0-10, with 0 being the most corrupt and 10 being the least
- Transparency International draws information from 17 different distributed surveys and assessments that measure the overall opinions and specific experiences people have had related to bribery among government officials, embezzlement of public funds, and the existence and extent of national anti-corruption efforts
- The following map depicts CPI variations in each continent (yellow—10; red—0):



Rule of Law | **Limited Government** | **Regulatory Efficiency** | **Open Markets**

Sources: Hardoon, Deborah. "Corruption Perceptions Index 2011: What's in a number?" and "Corruptions Perceptions Index 2011." *by Transparency International*

Freedom from Corruption: Scoring

"Cases of corruption, that we know or have evidence of, make up just a fraction of the full extent of corruption across society" –Deborah Hardoon

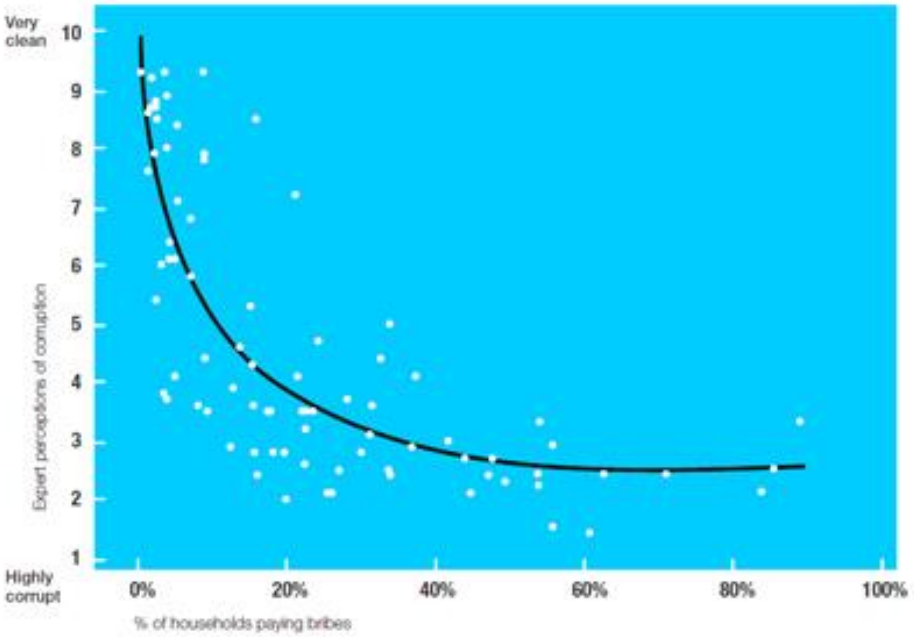
- Although corruption is a key factor in a country's overall economic freedom, it is difficult to measure due to the high level of concealment of data regarding national corruption
- Because of corruption's hidden nature, our ability to obtain information regarding its scale depends on three factors:
  - Freedom of information
  - Quality of anti-corruption legislation
  - Effectiveness of the laws and institutions holding guilty parties accountable
- It is crucial to the accuracy of The Index that researchers obtain these perceptions from a large distribution of surveys and reliable sources
- The CPI is used as the data for Freedom from Corruptions scores for 178 of the 184 countries included in The Index
  - Multiply CPI by 10 to get the score used in calculating The Index

Sources: Hardoon, Deborah. "Corruption Perceptions Index 2011: What's in a number?"

Freedom from Corruption: Scoring Concerns

- CPI's method of ranking and measuring corruption based on perceptions is heavily disputed, raising questions regarding its accuracy and validity

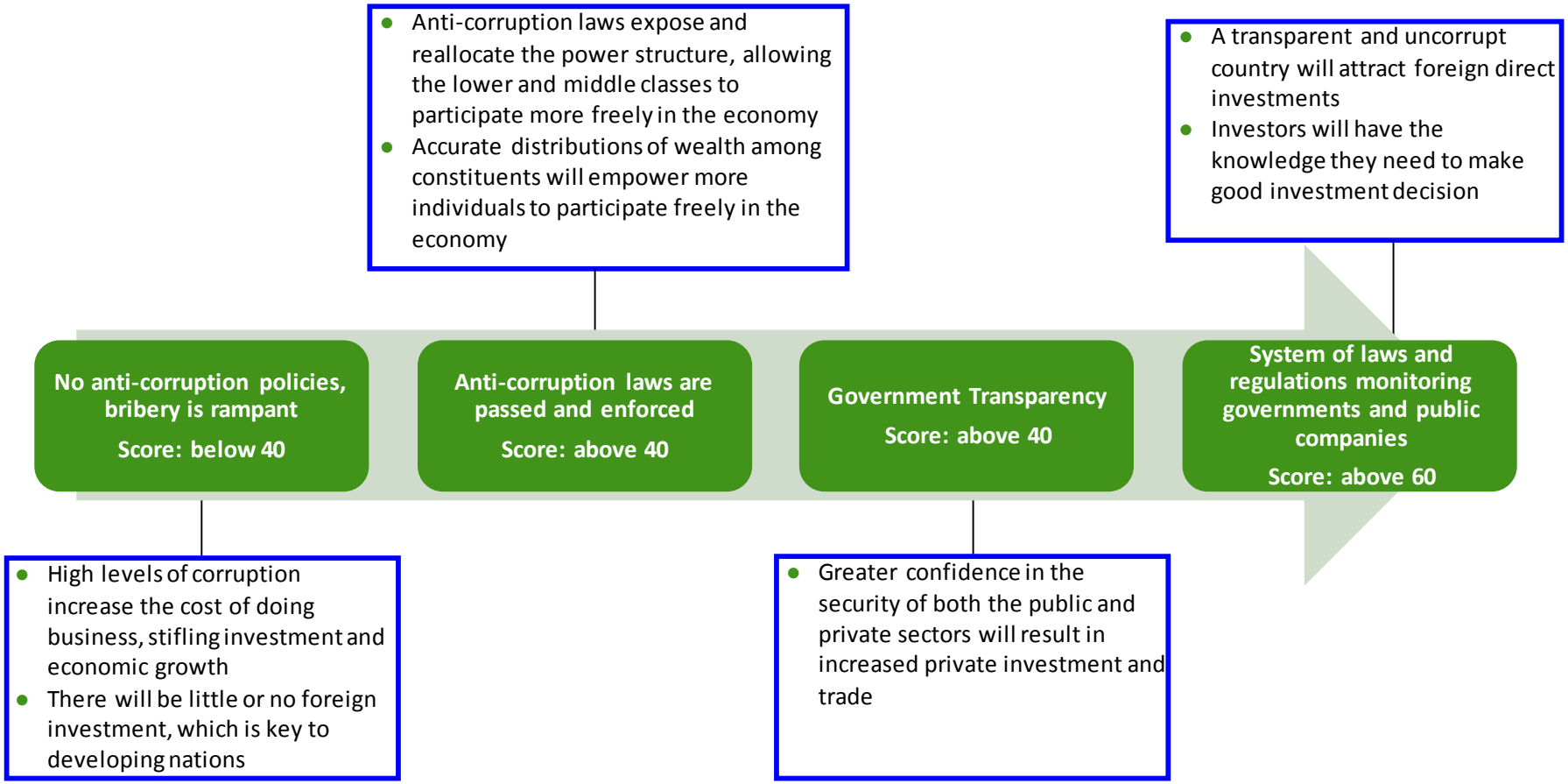
- Studies comparing past perceptions of corruption to actual, exposed corruption supports the validity of the CPI
  - For example, when compared to the number of families in 86 countries who had admittedly paid a bribe for public services, the trend line (below) displayed a strong negative correlation between the CPI and the percentage of households paying bribes



Rule of Law | Limited Government | Regulatory Efficiency | Open Markets

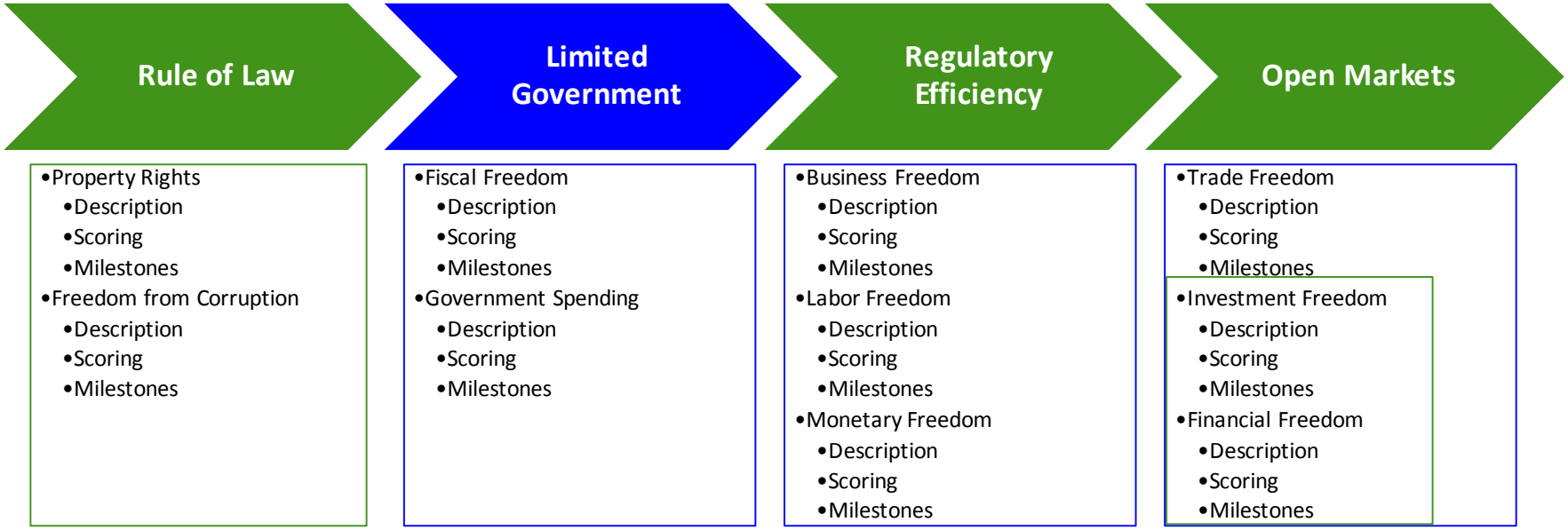
Sources: Hardoon, Deborah. "Corruption Perceptions Index 2011: What's in a number?"; *Heritage Foundation's 2012 Index of Economic Freedom Methodology*

Freedom from Corruption: Key Milestones and Economic Correlations



Rule of Law | **Limited Government** | **Regulatory Efficiency** | **Open Markets**

Sources: Influence of Corruption on Economic Growth Rate and Foreign Investment by Podobnik, et. al;[2] *Heritage Foundation's 2012 Index of Economic Freedom Methodology*



The Index: Limited Government

- The Limited Government category within The Index measures the size of government and the resulting burden on the nation's economy. It rewards those governments that place little burden on their citizens and interfere little with their lives while at the same time penalizing those that severely burden their citizens and constantly interfere in the market

- There are two metrics within this category:
  1. **Fiscal Freedom**
  2. **Government Spending**

- **Fiscal Freedom** measures the tax burden within a country, placing equal emphasis on personal income taxes, corporate income taxes, and the overall tax burden
  - This factor gives high scores to governments with low taxes, and low scores to governments with high taxes

- **Government Spending** measures the amount of government spending relative to GDP
  - This factor gives low scores to governments that spend large amounts relative to their GDP, and high scores to governments that spend small amounts relative to their GDP

Source: Index of Economic Freedom, Methodology

Limited Government: Fiscal Freedom

- The Index calculates Fiscal Freedom in order to measure the burden the government places upon its citizens and businesses through taxation. This value is important because taxation removes income from citizens and limits their ability to make economic decisions
- Higher tax rates result in a lower score for Fiscal Freedom, moving the country from a free a more repressed economy
- Tax rates indicate the percentage of income collected from individuals and business by the government. This is the percentage of income earned that citizens and companies are no longer free to use at their own discretion
- Tax policies serve as either incentives or disincentives to individuals and businesses. Higher tax rates disincentivize the action being taxed, whether that be work, investment, or the buying of cigarettes
- These tax policies induce individuals and businesses to invest differently than they would in an otherwise free market

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Fiscal Freedom: Scoring

- There are three factors in the Fiscal Freedom calculation:
  1. The top income tax rate
  2. The top corporate tax rate
  3. The overall tax burden as a percentage of GDP
     - This is the total amount of tax revenue collected by the government

- The following quadratic model is used to determine Fiscal Freedom:

$$Fiscal\ Freedom_i = 100 - \alpha(factor_i)^2$$

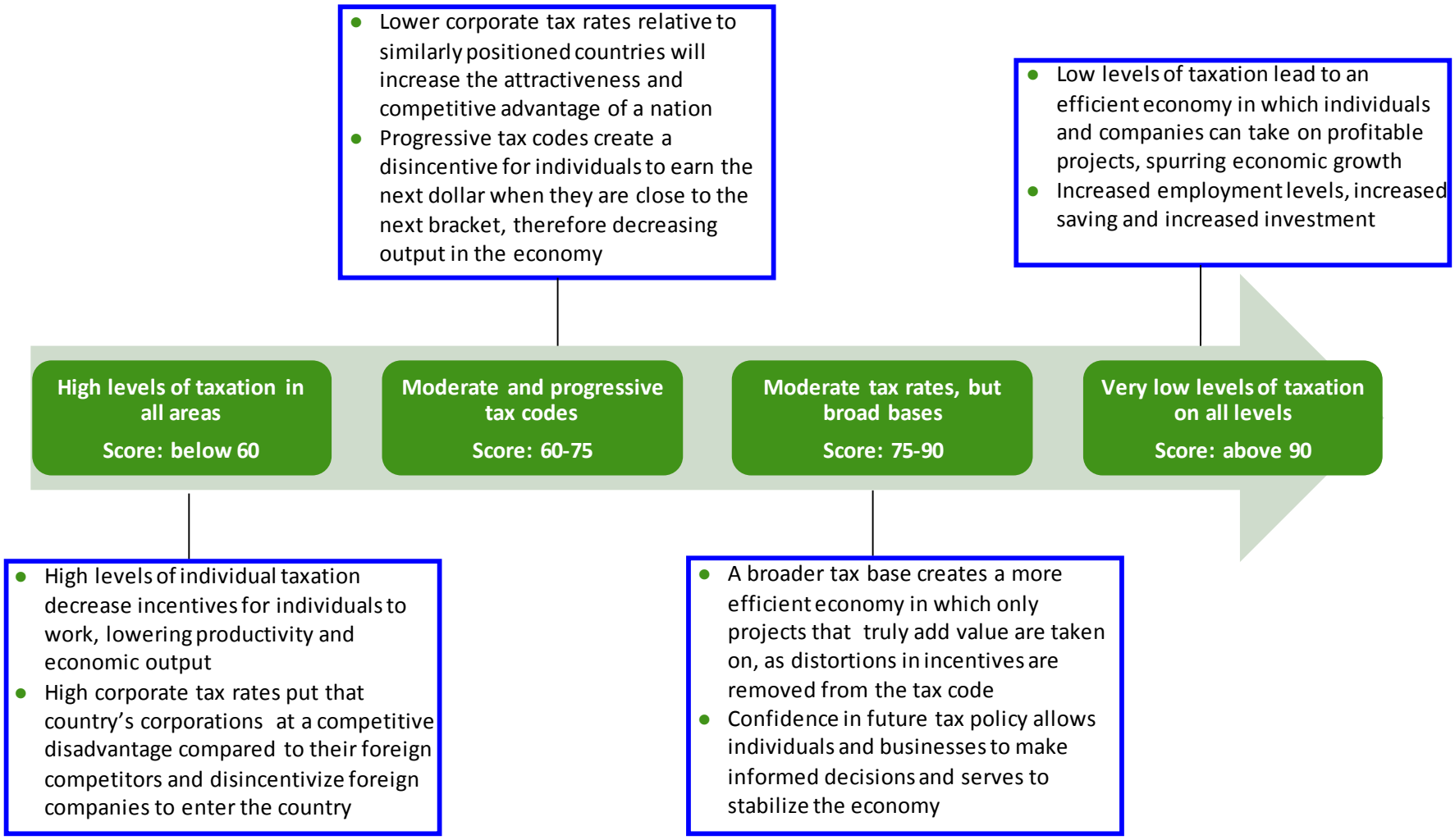
  - **Factor$_i$** represents the value for each of the three factors
  - **α** is a coefficient set to 0.03 to account for variation
  - **Fiscal Freedom$_i$** is the Fiscal Freedom score for each factor *i* (FF$_i$)
  - The factor value is squared, making the function quadratic, to reflect the "diminishing revenue returns from very high rates of taxation"

- These three values for Fiscal Freedom$_i$ are then averaged together to obtain the final Fiscal Freedom score by using the following formula:

$$Fiscal\ Freedom = \frac{FF_1 + FF_2 + FF_3}{3}$$

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Fiscal Freedom: Key Milestones and Economic Correlations



Rule of Law | Limited Government | Regulatory Efficiency | Open Markets

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology; American Economic Journal, The Effect of Corporate Taxes on Investment and Entrepreneurship; Rizzi and Sallet, "Corporate Tax Reform and Innovation"; Shultz, Boskin, Cogan and Taylor "Principals for Economic Revival"; Rivlin, Testimony before the Senate Finance Committee

Limited Government: Government Spending

- Excessive levels of government spending lead to immense public debts that severely limit the freedom of countries' economies unless that country's economy is severely repressed

- Studies show negative correlations between total government expenditures and economic growth
  - According to Fölster and Henrekson's study of a sample of wealthy nations from 1970-1995, there is a strong negative correlation between total government expenditures and economic growth, as well as a less robust negative correlation between total tax revenue and economic growth

- While there is no ideal level of government expenditure, it is evident that high government spending decreases the rate of economic growth and the level of economic freedom
  - For repressed nations, government spending stimulates the economy by providing public goods such as infrastructure and national defense. However, at a certain point, government spending decreases economic freedom by driving up public debt and crowding out private sector investment

- The inverse relationship between government spending and economic freedom is contrary to the policies of many governments, including the United States, and the beliefs of many people in our world today
  - Government Spending is included as a factor in The Index in order to account for this observed negative correlation

Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology and *Government Size and Growth* by Bergh & Karlsson

Government Spending: Scoring

- The Index measures government spending as a percentage of GDP to account for the lack of an ideal level of government spending with the following non-linear, quadratic equation:

$$GE_i = 100 - \alpha(Expenditures_i)^2$$

  - **GE_i** represents the Government Spending score in country i
  - **α** is a coefficient used to mitigate variation among scores (set at 0.03)
  - **$Expenditures_i$** represents the total amount of government expenditures at all levels of government (federal, state, and local) as a portion of GDP (between 0 and 100)
  - GE_i ranges from 0-100; zero being the worst and 100 the best

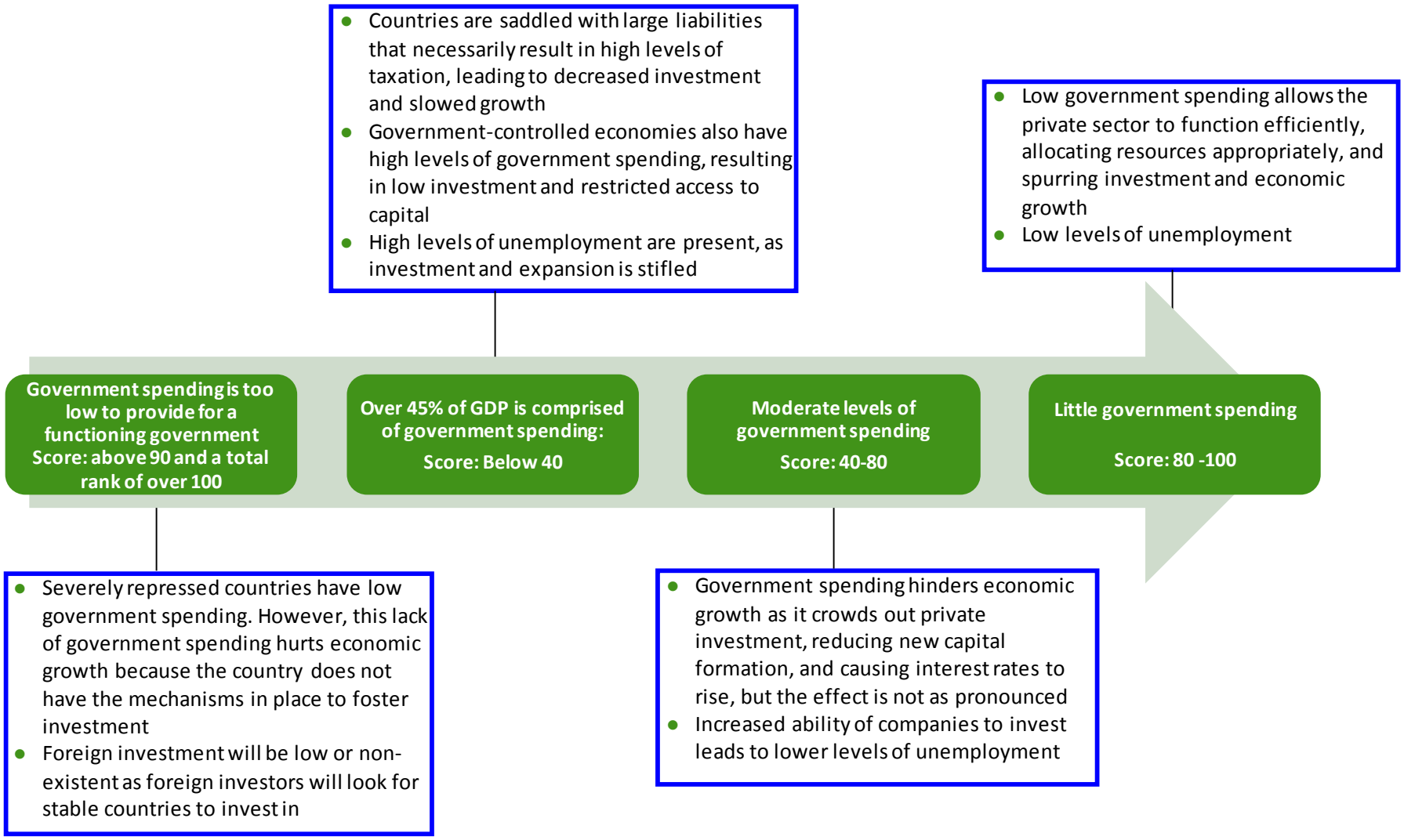
- Due to the quadratic nature of this model, percentages of GDP close to zero are only slightly penalized while those over 30% of GDP are penalized much more heavily
  - Government expenditures as a percentage of GDP greater than 58% receive a GE_i of zero

- Accurately measuring the impact of government spending on economic freedom is difficult due to the following inescapable factor:
  - Underdeveloped countries' scores will be inflated since they have little capacity for government expenditures and cannot provide for public goods
  - The Index justifies these skewed scores by pointing out that these same countries will receive lower scores in other areas, such as Property Rights and Financial Freedom

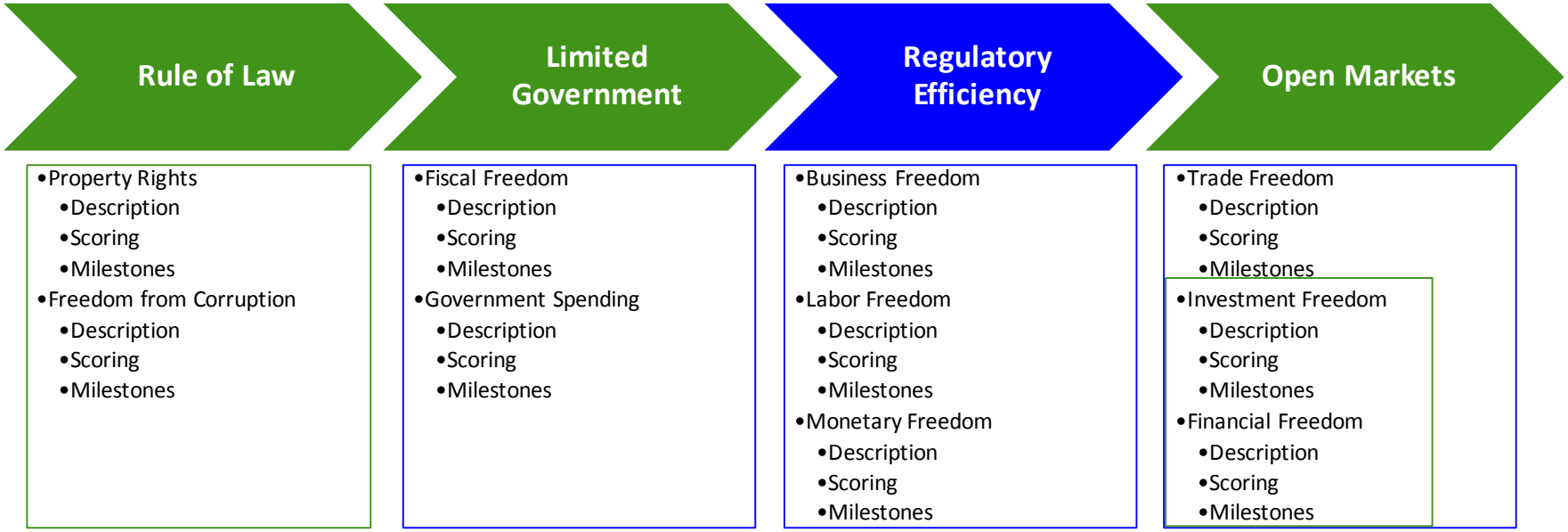
- In countries that do not provide data for all tiers of government, the expenditures of the central government are used

Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology and *Government Size and Growth* by Bergh & Karlsson

Government Spending: Key Milestones and Economic Correlations



Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology and *Does Government Spending Create Economic Growth?* By Antony Davies



The Index: Regulatory Efficiency

- The Regulatory Efficiency category measures the burden and efficiency of regulation on a country's economy by evaluating the amount of regulation and the effects that result

- There are three metrics within this category:
  1. **Business Freedom**
  2. **Labor Freedom**
  3. **Monetary Freedom**

- **Business Freedom** measures the burden and efficiency of government regulation on starting, operating, and closing a business
  - This factor includes ten individual factors covering the entire scope of the ease of doing business

- **Labor Freedom** determines the regulatory burden on the labor force
  - This factor includes six factors that include both employee and employer freedoms

- **Monetary Freedom** measures the stability of prices and the presence and level of price controls
  - This factor includes inflation metrics and price control penalties

- Together, these three measures determine the regulatory burden on all components of the market

Source: Index of Economic Freedom, Methodology

Regulatory Efficiency: Business Freedom

- The Index calculates Business Freedom in order to measure the ease of starting and operating a business in each nation
- This metric measures the regulatory burden placed upon existing businesses, reflecting the ease of continuing to do business, and therefore, the businesses' ability to operate and expand
- It measures how easily an individual can close a business, and the cost incurred in doing so
- This factor scores based on the amount of regulation that exists and the efficiency of that regulation by not only punishing the existence of regulation, but also measuring the amount and costs (in time and money) incurred
- Business Freedom is important because it measures the ease with which entrepreneurial activity can occur in a country, a major impetus for economic growth
- This measure is an attempt to determine the ability of individuals to start, operate, and close a business, and through that measure, gain insight into the government regulation in a country

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Business Freedom: Scoring

- The following ten factors are included in the Business Freedom score, each rated on a scale from 0 to 100, with 100 being the most free:

1. Number of procedures required to start a business
2. Number of days it takes to start a business
3. Cost to start a business (percentage of income per capita)
4. Minimum capital needed to start a business (percentage of income per capita)
5. Number of procedures to obtain a license
6. Number of days to obtain a license
7. Cost to obtain a license (percentage of income per capita)
8. Number of years to close a business
9. Cost to close a business (percentage of estate)
10. Recovery rate from closing a business (cents on the dollar)

- These scores are combined into the following model to determine the final factor score for each value:

$$Factor\ Score_i = 50 \times \frac{Factor_{average}}{Factor_i}$$

  - **Factor$_i$** is the initial rating which the nation received for the factor on a scale of 0 to 100
  - **Factor$_{average}$** is the average of all initial ratings for the factor for the year
  - The average, initial score is divided by the initial factor score for the nation and multiplied by 50 to compute the final Factor Score$_i$. This is done for each factor *i*

- These ten values for $Factor\ Score_i$ are then averaged together to obtain the final Business Freedom score by using the following formula:

$$Business\ Freedom = \frac{FS_1 + FS_2 + FS_3 + FS_4 + FS_5 + FS_6 + FS_7 + FS_8 + FS_9 + FS_{10}}{10}$$

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Business Freedom: Key Milestones and Economic Correlations

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Ease of Starting a Business

Bottom Quartile in Starting a Business → Lower costs and greater access to resources (median scores) → Top Quartile in Starting a Business

Dealing with Licensing

Bottom Quartile in Licensing → Property rights protected (median scores) → Top Quartile in Licensing

Resolving Insolvency

Bottom Quartile in Resolving Insolvency → Established laws protecting creditors (median scores) → Top Quartile in Resolving Insolvency

- High barriers to entry limit investment in new businesses and push more business into the informal sector
- High regulations increase costs, decreasing investment in otherwise profitable projects
- High exit costs lead companies in business to stay in business even when not profitable

- As economies develop, they make access to necessary resources such as electricity available, lowering the cost of starting and doing business, therefore enabling more business growth
- Increases in property rights and protection of creditors allow for access to credit and increasing foreign and domestic investment

- Individuals can start businesses quickly and easily, encouraging investment and innovation leading to economic growth
- Lower costs of doing business allow for more efficient allocation of assets
- Higher recovery rates reduce the barriers to exit

Rule of Law → Limited Government → **Regulatory Efficiency** → Open Markets

Source: Doing Business 2012 by The World Bank Group

Regulatory Efficiency: Labor Freedom

- The Labor Freedom factor of The Index is included to measure elements of the labor market such as "the hiring and redundancy of workers and the rigidity of working hours" and their impacts on economic growth
- The labor market is no different from the market for goods; free and voluntary exchange is key
- The legal and regulatory aspects of a nation that impact the freedom in the labor market include:
  - Minimum wage
  - Laws inhibiting layoffs
  - Severance requirements
  - Unions
  - Regulatory burdens on hiring/hours/etc.
- Labor laws restrict labor freedom by reducing employees' and employers' abilities to bargain their own terms of employment
  - For example, labor unions, which originally formed to enhance working conditions, protect workers, and ultimately increase freedom in the labor market, are now using their power to dictate collective bargaining conditions to employees
- Productivity is enhanced not only by individuals' abilities to work when and where they want, but also by employers' ability to contract and dismiss workers as they are needed

Source: Heritage Foundation's 2012 Index of Economic Freedom, Ch. 1 and Methodology and Unions, Economic Freedom, and Growth

Labor Freedom: Scoring

- The Labor Freedom score is measured according to six quantitative factors:
  1. Ratio of minimum wage to the average value added per worker
  2. Hindrance to hiring additional workers
  3. Rigidity of hours
  4. Difficulty of firing redundant employees
  5. Legally mandated notice period
  6. Mandatory severance pay

- Each score is converted to a scale of 10 based on the following equation:

$$Factor\ Score_i = 50 \times \frac{Factor_{average}}{Factor_i}$$

  - **Factor$_i$** is the data from country *i* from each of the six factors
  - **Factor$_{average}$** is the relative world average of the respective factor being measured
  - Each ratio is then multiplied by 50

- These six values for $Factor\ Score_i$ are then averaged together to obtain the final Labor Freedom score by using the following formula:

$$Labor\ Freedom = \frac{FS_1 + FS_2 + FS_3 + FS_4 + FS_5 + FS_6}{6}$$

- The data for these factors is drawn from The World Bank's *Doing Business 2012* report
  - These six factors are not grouped in *Doing Business 2012*, but The Index analyzes their data in this way
  - For the eight countries not included in the *Doing Business 2012* report, data regarding labor market flexibility is drawn from other reliable and internationally recognized sources

Source: Heritage Foundation's 2012 Index of Economic Freedom, Ch. 1 and Methodology and Unions, Economic Freedom, and Growth

Labor Freedom: Data Assumptions

- To make data comparable for all economies, several assumptions are used regarding the worker and the business:

The Worker

- Is a full-time, male, nonexecutive employee
- Earns a salary plus benefits equal to the economy's average wage during the entire period of his employment
- Has a pay period that is the most common for workers in the economy
- Is a lawful citizen who belongs to the same race and religion as the majority of the economy's population
- Resides in the economy's largest business city
- Is not a member of a labor union, unless membership is mandatory

The Business

- Is a limited liability company
- Operates in the economy's largest business city
- Is 100% domestically owned
- Operates in the manufacturing sector
- Has 60 employees
- Is subject to collective bargaining agreements in economies where such agreements cover more than half the manufacturing sector and apply even to firms not party to them
- Abides by every law and regulation but does not grant workers more benefits than mandated by law, regulation or (if applicable) collective bargaining agreement

Source: "Employing Workers Methodology" in *Doing Business 2012* by The World Bank

Labor Freedom: Key Milestones and Economic Correlations

- High levels of regulation including a high minimum wage and high levels of required unionization increase costs for businesses, resulting in higher levels of unemployment, especially for the poor, young and unskilled workers
- Higher costs also lead to decreased levels of output and investment
- In developing countries, the presence of these regulations will likely shift employment to the informal sector

- Minimum wages and regulations are largely below the world averages, giving these countries a competitive advantage and attracting investment
- While unions are allowed, a large part of the economy does not engage in unionization, lowering costs for businesses, and increasing investment, output and employment

High levels of control and lack of Protection
Score: 20 and below

Highly regulated and strong unions
Score: 20-50

Regulations protect workers and allow for more freedom of contract
Score: 50-80

Strong ability to contract, adequate protection of workers
Score: 80-100

- Economies that are run by governments have high levels of control over the economy, and in addition, their workers are not protected
  - Employers, often tied to governments, have a great deal of power in labor negotiations, which often results in rent-seeking behavior. This means that workers are often taken advantage of and their individual liberties violated

- Regulations to protect workers are present, so costs are increased, but they are not stifling
  - While regulations on minimum wage, firing workers etc. raise costs, these countries have a competitive advantage compared to those countries with more regulation, and will attract more foreign and domestic investment
- Lower levels of regulation allow workers to join the formal sector

Rule of Law | **Limited Government** | **Regulatory Efficiency** | **Open Markets**

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology; Unions, Economic Freedom, and Growth; *Holcombe and Gwartney, " Unions, Economic Freedom and Growth"; Boeri, Helppie, and Macis, "Labor Regulations in Developing Countries"; Freeman, "Labor Regulations, Unions, and Social Protection in Developing Countries"* ; Botero et al. "The Regulation of Labor"

Regulatory Efficiency: Monetary Freedom

- Monetary Freedom measures both price stability with an assessment of price controls
- Price controls distort the allocation of resources in a nation by creating shortages in the presence of price ceilings and surpluses in the presence of price floors
- The inability of the price system to ration the available supply leads to one or more of the following: queues, quality deterioration of goods, tie-in sales, black-markets, or rationing
- Price stability without government regulation or intervention is the ideal state for a free market and is a key factor in creating economic freedom

Sources: Price Controls in The Concise Encyclopedia of Economics and *Heritage Foundation's 2012 Index of Economic Freedom Methodology*

Monetary Freedom: Scoring

- The monetary freedom score is based on two factors:
  1. Price Stability: The weighted average inflation rate for the most recent three years
  2. Price controls

- The Weighted Average Inflation rate (WAI) is calculated with the following equation:

$$WAI_{it} = \theta_1 Inflation_{it} + \theta_2 Inflation_{it\text{-}1} + \theta_3 Inflation_{it\text{-}2}$$

  - **θ_1 through θ_3** represent the three weights for the inflation in the past three years
    - The values sum to one and are 0.665, 0.245, and 0.090, respectively
  - **$Inflation_{it}$** is the absolute value of the annual inflation rate in country *i* during year *t* as measured by the consumer price index

- This WAI value is then used in the following equation to calculate Monetary Freedom:

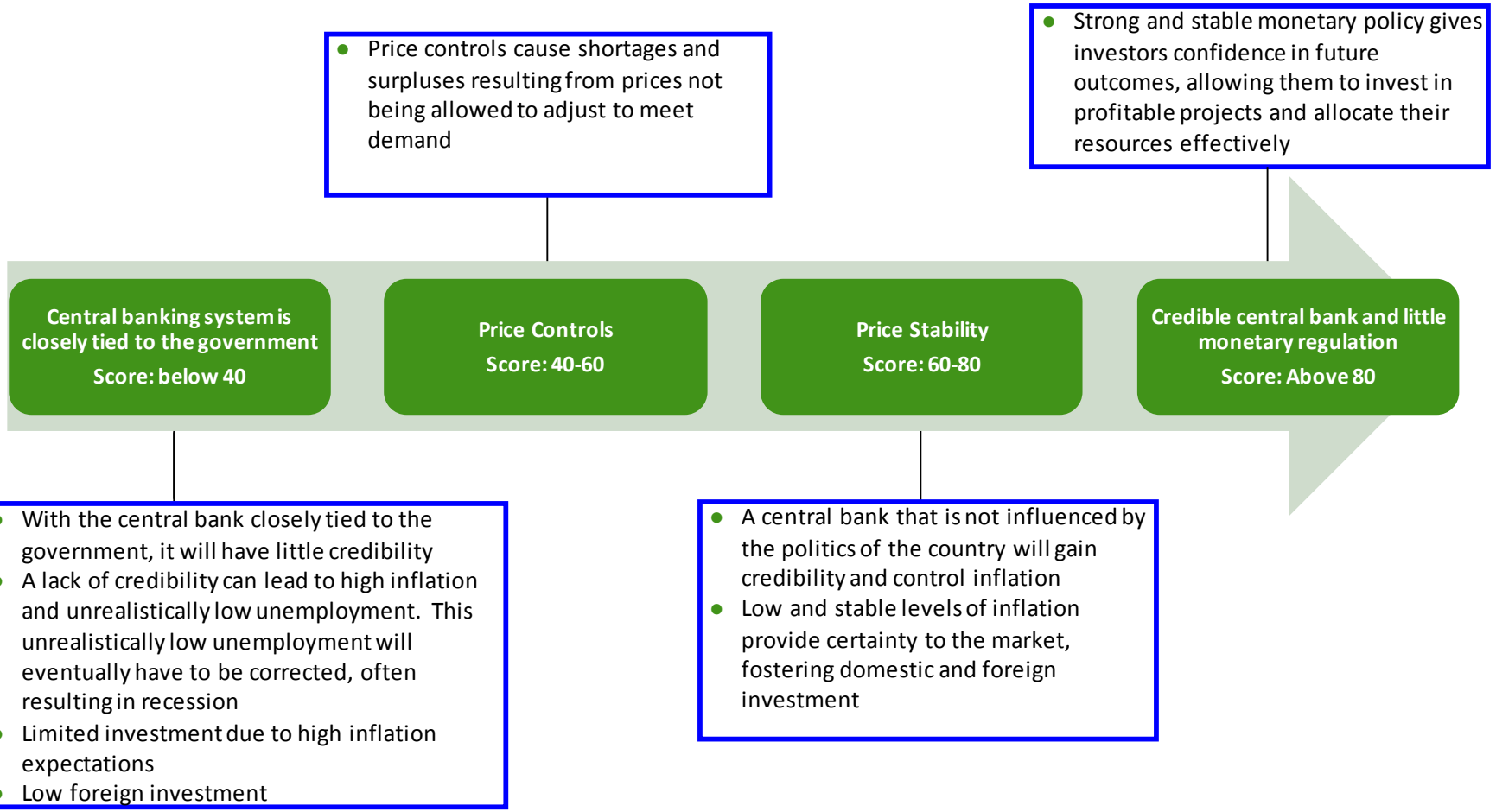
$$Monetary\,Freedom_i = 100 - \alpha\sqrt{WAI_i} - PC\ penalty_i$$

  - **α** represents the coefficient that stabilizes the variance of scores
    - The value of α is set to equal 6.333, which converts a 10% inflation rate into a score of 80.0 and a 2% inflation rate into a score of 91.0
  - **Price Control (PC) penalty** is a value ranging from 0–20 based on the level of price controls in the country

- The convex square-root function was chosen to create separation among countries with low inflation rates
  - A concave function would treat all hyperinflations as equally bad, no matter if it were 100 or 1,000 percent price increases per year, while the square-root function is much more gradual

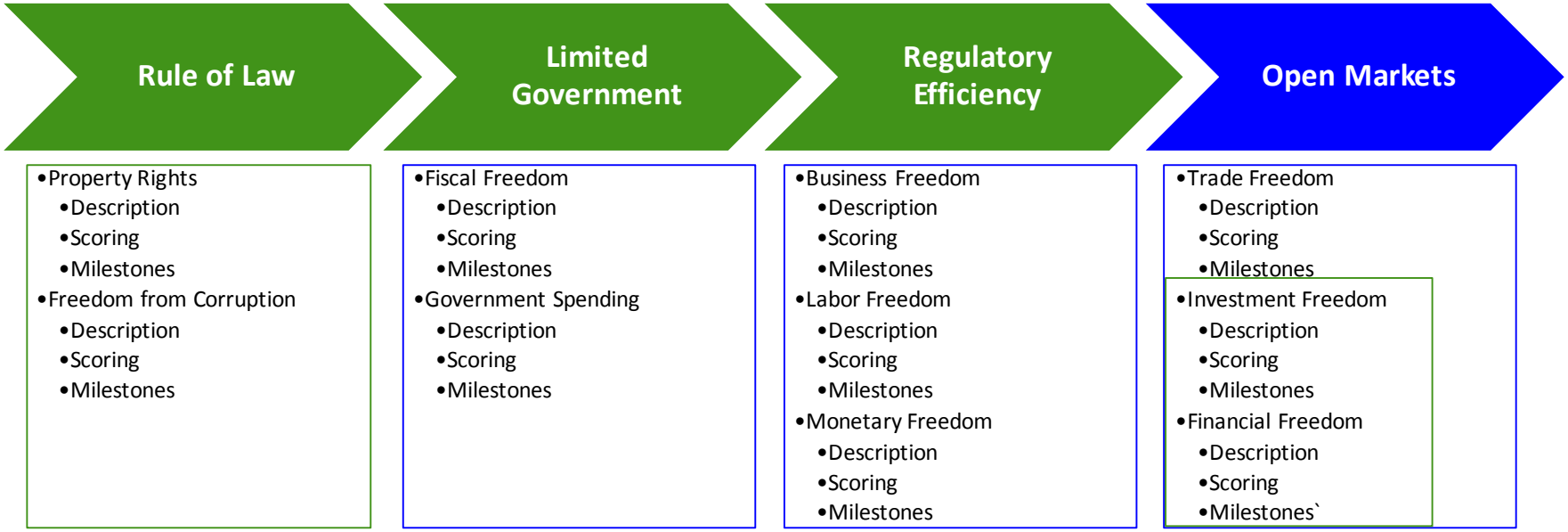
Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology

Monetary Freedom: Key Milestones and Economic Correlations



Rule of Law | Limited Government | **Regulatory Efficiency** | Open Markets

Sources: Inflation: Inflation And Investments at investopedia.com and *Monetary stability and economic growth or: Why stable prices are good for private enterprise in France and the Netherlands* by European Central Bank; *Andres and Hernando, "Does inflation harm economic growth? Evidence for the OECD"; Blinder, "Central Bank Credibility: Why do we care? How do we build it?"*



The Index: Open Markets

- The Open Markets category within The Index determines the degree to which a nation's markets are open to trade and investment. It measures the ability of markets to realize, through supply and demand, the natural equilibrium of the economy

- There are three metrics included in this category:
  1. **Trade Freedom**
  2. **Investment Freedom**
  3. **Financial Freedom**

- **Trade Freedom** measures the degree to which a nation is open to international trade
  - This metric includes both tariffs and a variety of other policy-induced trade barriers

- **Investment Freedom** measures the degree to which investments are free to occur in a nation
  - This metric determines the level of restrictions placed on investment for both foreign and domestic investors

- **Financial Freedom** evaluates banking efficiency, the degree of independence the financial sector has from government regulation, and the level of government interference in financial markets

- Together these three metrics determine the level of freedom in a nation's markets by measuring the nation's willingness to engage in international trade and the restrictions placed upon the nation's financial markets and investments

Source: Index of Economic Freedom, Methodology

Open Markets: Trade Freedom

- The Trade Freedom metric is a measure of the degree to which a nation allows or impedes international trade

- Government impede international trade through the imposition of tariffs or other Non-Tariff Barriers ("NTBs")
  - Tariffs restrict the import and export of goods and services between nations
  - NTBs include various ways in which the government implements policies to stop international trade without directly levying a tax

- The Index measures six broad categories of NTBs:
  1. Price Restrictions
  2. Regulatory Restrictions
  3. Quantity Restrictions
  4. Investment Restrictions
  5. Customs Restrictions
  6. Direct Government Intervention

- Descriptions of each category of NTB, provided by the Heritage Foundation, are included in the appendix

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Trade Freedom: Scoring

- The initial Tariff Score is calculated using the following equation:

$$Tariff\ Score = \frac{Tariff_{max} - Tariff_{average}}{Tariff_{max} - Tariff_{min}} \times 100$$

1. **$Tariff_{max}$** is the maximum tariff a country levies (tariff upper bound)
2. **$Tariff_{min}$** is the minimum tariff a country levies (tariff lower bound)
3. **$Tariff_{average}$** is the trade-weighted average tariff rate
   - This is the ratio of total tariff revenue over the total value of imports
   - If the $Tariff_{average}$ was not available, the average tariff rate or the Most Favored Nation ("MFN") average tariff rate was used

- NTBs can result in deductions of 0, 5, 10, 15, or 20 points from the score based upon the following scale:

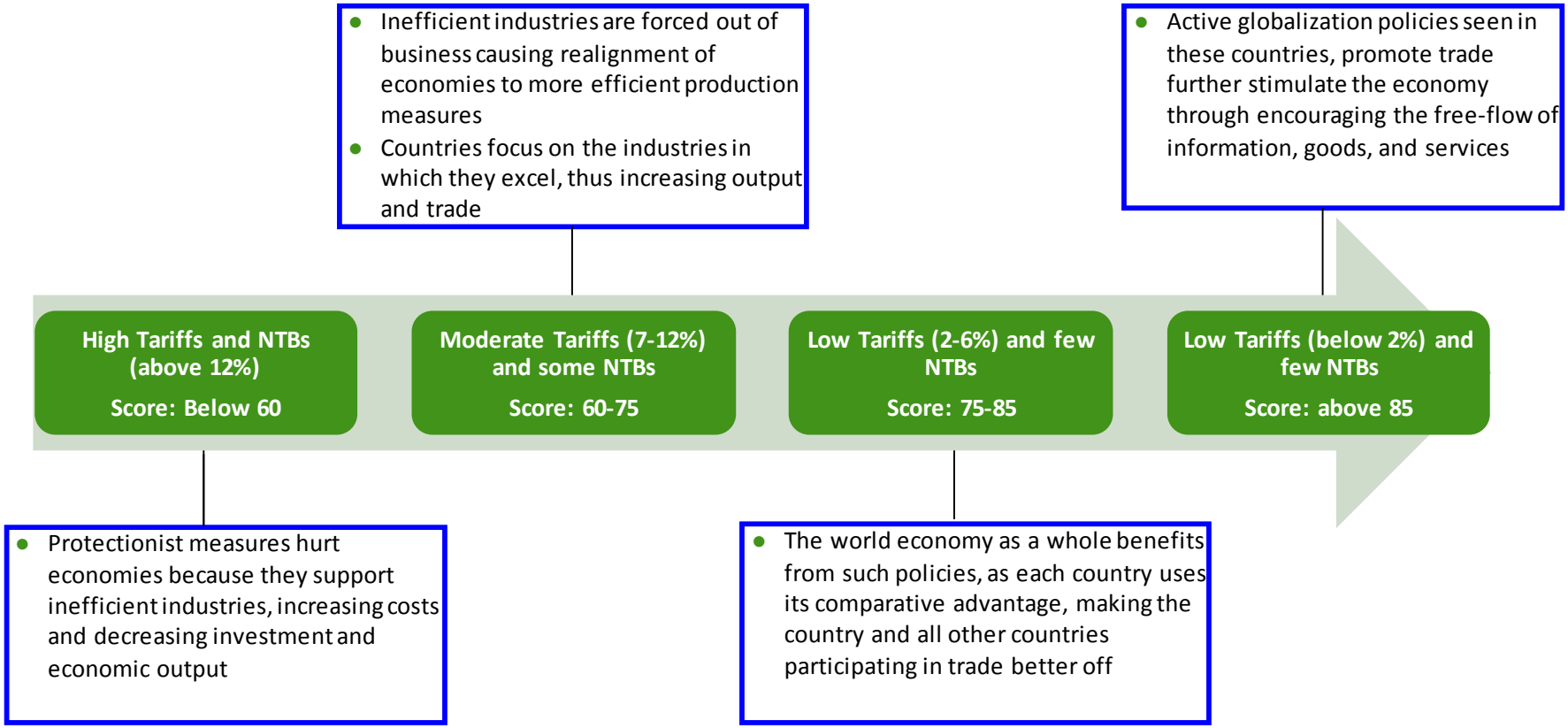
NTB Deduction	Description
0	No NTBs are used to limit international trade
5	NTB use is uncommon, they are used only to protect a few, specific goods and services and/or simply have little impact upon international trade
10	NTBs are used to protect some goods and services and do have a measurable impact on international trade
15	NTBs are used throughout the economy and/or they have a significant impact on international trade
20	NTBs are used extensively throughout the economy and/or impact almost all international trade

- To calculate the total score for Trade Freedom, the Tariff Score and NTB penalty are combined in the final equation:

$$Trade\ Freedom = Tariff\ Score - NTB\ penalty$$

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Trade Freedom: Key Milestones and Economic Correlations



Rule of Law | Limited Government | Regulatory Efficiency | Open Markets

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology; OECD, Protectionism: The Case Against; The World Trade Organization, "10 benefits of the WTO trading system"

Open Markets: Investment Freedom

- The Investment Freedom metric measures the degree to which investment capital can flow unimpeded throughout a nation and across borders by evaluating the laws and the extent to which these laws impede investment

- Nations inhibit investment with rules and regulations on foreign investment, domestic investment, foreign exchange, payments, transfers, and capital transactions

- Investment control measures are implemented by the government to restrict foreign investment, protect industries, and restrict the scope of domestic investments
  - Labor regulations, corruption, "red tape," weak infrastructure, political conditions, and national security conditions can also affect the freedom of investors

- The majority of the metric is based upon the rules and regulations concerning investment that a nation has in place, but in addition, The Index looks at indirect factors that influence investment, even though not implemented by the government

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Investment Freedom: Scoring

- The Investment Freedom score covers seven categories that measure the degree to which a nation's laws and regulations restrict investment and the movement of capital:

1. **National Treatment of Foreign Investment**: Rules for foreign investors based upon their nationality
2. **Foreign Investment Code**: Rules determining the manner of foreign investment
3. **Restrictions on Land Ownership**: Rules determining property purchases for foreigners and residents
4. **Sectoral Investment Restrictions**: Regulations preventing foreign investment in certain industries
5. **Expropriation of Investments Without Fair Compensation**: Government seizure of investments
6. **Foreign Exchange Controls**: Regulations meant to restrict the purchase and sale of foreign currencies
7. **Capital Controls**: Variety of regulations to regulate the capital account of a nation, namely to restrict capital from leaving the country

- The metric also includes **General Penalties**, a more broad category, that covers security problems, lack of basic investment infrastructure, and other government policies that limit investment freedom indirectly

- Each country's score starts at 100 and is then deducted according to the degree to which it restricts investment in each of the seven categories

- Each category has different criteria for restricting points that are specified on the following slides; different levels of points may be deducted in each category

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Investment Freedom: Scoring (continued)

- **National Treatment of Foreign Investment:**
  - 25 points deducted: no national treatment, prescreening
  - 15 points deducted: some national treatment, some prescreening
  - 5 points deducted: some national treatment or prescreening
    - National treatment is a principle of law which states that a nation accords the same rights and benefits to citizens of other nations that are within its borders as its grants to its own citizens
    - Prescreening of foreign investors requires foreign investors to be approved through a screening process before they are able to invest in a nation

- **Foreign Investment Code:**
  - 20 points deducted: no transparency and burdensome bureaucracy
  - 10 points deducted: inefficient policy implementation and bureaucracy
  - 5 points deducted: some investment laws and practices are non-transparent or are inefficiently implemented

- **Restrictions on Land Ownership:**
  - 15 points deducted: all real estate purchases restricted
  - 10 points deducted: no foreign purchases of real estate
  - 5 points deducted: some restrictions on purchases of real estate

- **Sectoral Investment Restrictions:**
  - 20 points deducted: multiple sectors restricted
  - 10 points deducted: few sectors restricted
  - 5 points deducted: one or two sectors restricted

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Investment Freedom: Scoring (continued)

- **Expropriation of Investments Without Fair Compensation**
  - 25 points deducted: common with no legal recourse
  - 15 points deducted: common with some legal recourse
  - 5 points deducted: uncommon but occurs

- **Foreign Exchange Controls**
  - 25 points deducted: no access by foreigners or residents
  - 15 points deducted: access available but heavily restricted
  - 5 points deducted: access available with few restrictions

- **Capital Controls**
  - 25 points deducted: no repatriation of profits; all transactions require government approval
  - 15 points deducted: inward and outward capital movements require approval and face some restrictions
  - 5 points deducted: most transfers approved with some restrictions

- **General Penalties**
  - Up to 20 points deducted due to:
    - Security problems
    - Lack of basic investment infrastructures
    - Government policies that indirectly burden the investment process and limit investment freedom

- With these deductions, the Investment Freedom score is tabulated

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Investment Freedom: Key Milestones and Economic Correlations

- Less regulation of foreign investment draws greater foreign investment capital, spurring economic growth. The lack of basic infrastructure in these countries, however, still deters foreign and domestic investment and inhibits economic growth

- Allowing capital to flow freely in and out of the country allows individuals to invest where they believe they will receive the highest returns

High amounts of regulation in all areas measured and lack of infrastructure
Score: below 30

Lack of infrastructure, but less regulation
Score: 30-60

Strong infrastructure, but continued regulation of foreign investments
Score 60-80

Strong infrastructure and low regulation
Score: above 80

- Investment is key to economic growth, and without the necessary infrastructure, investors will not invest their capital
- High levels of restriction on investment keep individuals and companies from using their resources efficiently and in ways that promote growth

- Strong infrastructure leads to confidence in the financial system and greater access to capital for individuals and businesses, therefore fostering investment
- Increased foreign investment, as regulations decrease and infrastructure improves
- Deregulation of investment in certain sectors, reduces barriers to entry and encourages a more efficient allocation of assets

Rule of Law | **Limited Government** | **Regulatory Efficiency** | **Open Markets**

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology ; Center for Global Development, Foreign Investment and Economic Development: Evidence from Private Firms in East Africa; Foreign Investment: A Big Boost for Small Business; Alesina, Ardagna, Nicoletti, Schiantarelli, "Regulation and Investment"

Open Markets: Financial Freedom

- Financial Freedom is a measure of banking efficiency and government control & interference in the financial sector

- Government ownership of banks, insurers, or capital markets reduces competition and lowers available services from such financial institutions

- The ideal banking and financing environment in a nation would:
  - Minimize the level of government interference
  - Allocate credit on market terms
  - Prohibit government ownership of financial institutions
  - Allow financial institutions to provide various financial services to individuals and companies more freely
  - Allow banks to conduct operations in foreign currencies
  - Treat foreign institutions as if they were domestic institutions

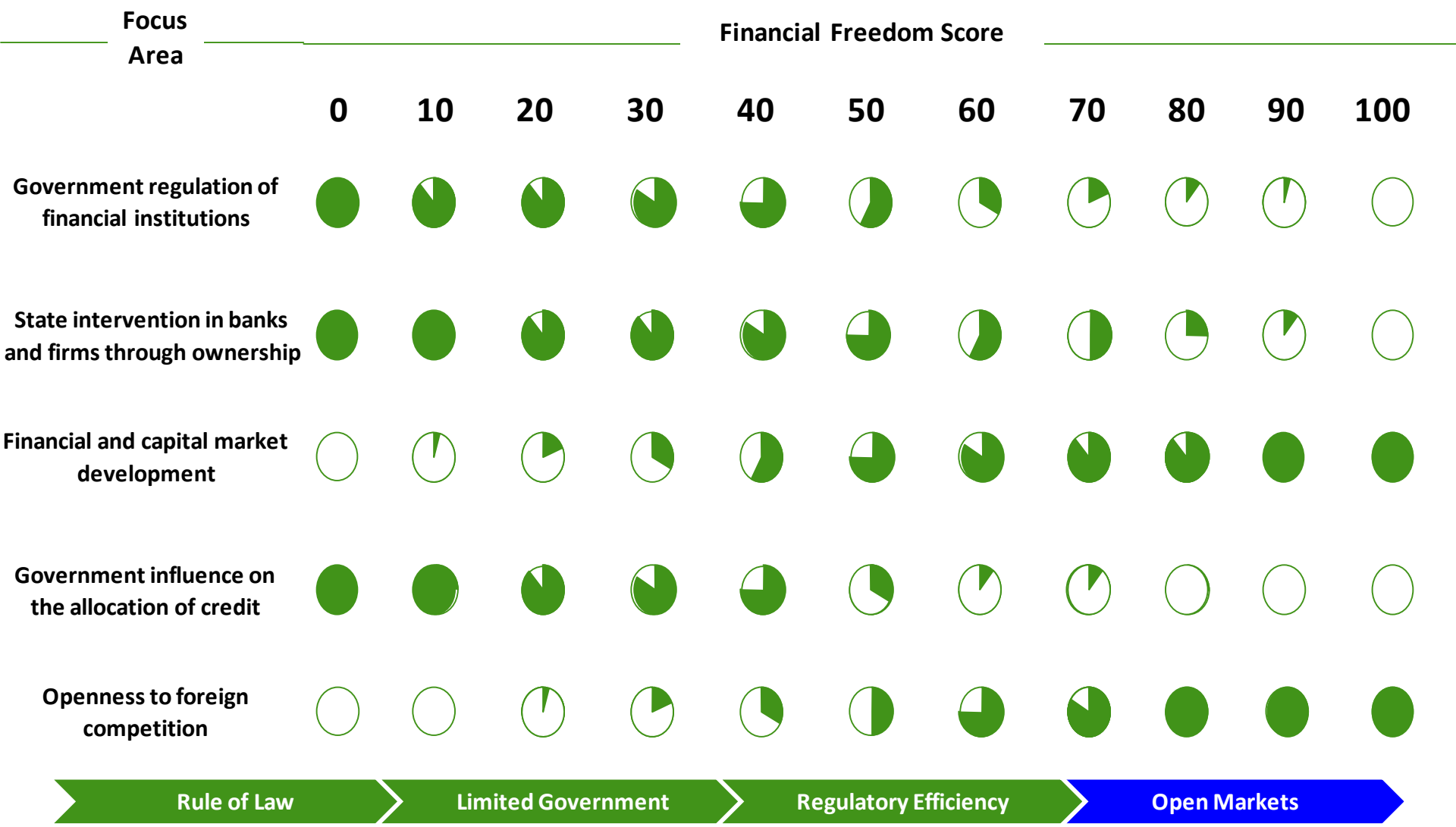
- Financial Freedom measures the feasibility and access to financing opportunities in the private sector of the economy based on the following five areas:

1. The extent of government regulation of financial services
2. The degree of state intervention in banks and financial firms through ownership
3. The extent of financial and capital market development
4. Government influence on the allocation of credit
5. Openness to foreign competition

Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology

Financial Freedom: Scoring

A score on a scale of 0 to 100 is given to assess Financial Freedom based on the levels of the following five areas:



Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology

Financial Freedom: Scoring (continued)

Score	Description
0	Repressive. Supervision and regulation are designed to prevent private financial institutions. Private financial institutions are prohibited
10	Near repressive. Credit allocation is controlled by the government. Bank formation is restricted. Foreign financial institutions are prohibited
20	Heavy government interference. The central bank is not independent, and its supervision of financial institutions is repressive. Foreign financial institutions are discouraged or highly constrained
30	Extensive government interference. Credit allocation is extensively influenced by the government. The government owns or controls a majority of financial institutions or is in a dominant position. Financial institutions are heavily restricted, and bank formation faces significant barriers. Foreign financial institutions are subject to significant restrictions
40	Strong government interference. The central bank is subject to government influence, its supervision of financial institutions is heavy-handed, and its ability to enforce contracts and prevent fraud is weak. The government exercises active ownership and control of financial institutions with a large minority share of overall sector assets
50	Considerable government interference. The ability of financial institutions to offer financial services is subject to significant restrictions. Credit allocation is significantly influenced by the government, and private allocation of credit faces significant barriers. Foreign financial institutions are subject to some restrictions
60	Significant government interference. The government exercises active ownership and control of financial institutions with a significant share of overall sector assets. The central bank is not fully independent, its supervision and regulation of financial institutions are somewhat burdensome, and its ability to enforce contracts and prevent fraud is insufficient. The ability of financial institutions to offer financial services is subject to some restrictions
70	Limited government interference. Government ownership of financial institutions is sizeable. Credit allocation is influenced by the government, and private allocation of credit faces almost no restrictions.. Foreign financial institutions are subject to few restrictions
80	Nominal government interference. Government ownership of financial institutions is a small share of overall sector assets. Financial institutions face almost no restrictions on their ability to offer financial services
90	Minimal government interference. Regulation of financial institutions is minimal but may extend beyond enforcing contractual obligations and preventing fraud
100	No government interference

Sources: Heritage Foundation's 2012 Index of Economic Freedom Methodology

Financial Freedom: Key Milestones and Economic Correlations

- A more credible central bank is better able to control inflation, thus increasing the incentives for investment. However, because the government still has influence, it may be difficult for the central bank to maintain credibility, and control inflation in the long-run Foreign investment is weak due to government control of the financial system

- Free market systems allow the economy to operate efficiently
- The nation's laws and regulations are easily enforced, giving confidence to investors, and therefore spurring economic growth

Largely government-controlled financial system
Score: 30 and below

Government influences, but does not control the financial sector
Score: 40-50

Developed financial systems, but some government interference
Score: 60-70

Developed financial system that protects investors
Score: 80-100

- Highly inefficient financial market due to lack of competition
- Central bank is not credible, and therefore is not able to control inflation
- Foreign investment will be essentially non-existent, impeding economic growth
- Government-controlled credit systems will stifle growth, as individuals and businesses with good ideas are not be able to implement them

- Interference by the government in these nations reduces the market's ability to make corrections, therefore prolonging recessions
- A largely developed market allows for worldwide competition among financial institutions, generally increasing the quality of financial institutions. As a developing nation's institutions are forced to compete with their foreign counterparts, the quality of those institutions will increase and contribute to their economic growth

Rule of Law → **Limited Government** → **Regulatory Efficiency** → **Open Markets**

Sources: Government Intervention for Economy Makes Things Worse by The Daily Reckoning and *Finance, Regulation, and Inclusive Growth by* Mary Levine; "*Foreign Banks, Financial Development, and Economic Growth"* by Ross Levine

Agenda

- Project Overview
- Introduction to the Index
- The Index of Economic Freedom
- Changes in the Index
- Other Metrics to Consider
- Analysis of Existing Research
- Data Collection Process
- Data Analysis Process
- GDP Forecast Models
- Results and Conclusions

Changes to The Index

- The Index was introduced in 1995 and over the next several years expanded to include 184 countries

- Throughout The Index's history, there have been a few changes that have improved it's methodology through increases in accuracy, specificity, and breadth of data
  - Regardless of the changes to The Index since its inception, the Heritage Foundation recalculates the data from past years to ensure consistency of year-on-year comparisons

- In 2007, the Labor Freedom was given its own score
  - Prior to 2007 there was no sufficient, reliable data source for labor data
  - The labor component was then fine-tuned over the next several years in order to properly integrate this data component
  - With the introduction of Labor Freedom to The Index, it was retroactively calculated and added for the years 1995-2006

- In 2012, The Index recorded public debt as a statistic for the first time
  - Debt was not included directly in The Index calculations but was included indirectly in through the factors of Monetary Freedom, Government Spending, Fiscal Freedom, Financial Freedom, and Investment Freedom

Over the past 18 years, The Index has made changes to more accurately measure economic freedom. Economic freedom has increase in most of the world, but has been hindered recently by increased Government Spending

Source: Heritage Foundation's 2012 Index of Economic Freedom, Preface, Executive Highlights, and Chapter 3

The Index: Concerns

- The current academic literature questions whether Fiscal Freedom and Government Spending accurately accounts for the fundamental necessity of a government within a country
  - **Recommended Approach**: Our team will examine the weights of the data included in The Index, and create our own weights of each value to determine their relative importance in the final overall score

- Data sourcing across the 184 countries is an issue due to restraints on the scope of the data from the Heritage Foundation's underlying sources
  - Certain scores are forced to use alternate sources for a small portion of the countries because the main source doesn't encompass all 184 countries included in The Index
  - **Recommended Approach**: Our team will only include the countries with the best quality of data

- The data in The Index is lagged, with data for the 2012 Index obtained from July 1, 2010 through June 30, 2011
  - While most factors are based on only one year, some contain metrics from multiple years. This results in different data collection periods for certain factors
  - The set time period ensures that there is consistency for each factor so that world events are accurately accounted for in each countries' score
  - **Recommended Approach**: Our team will need to focus on the periodicity of the data for GDP and potential additional variables

- The presence of qualitative data in The Index, particularly factors regarding perceptions, introduces an element of subjectivity, however this may more accurately depict the state of the economy in certain situations
  - **Recommended Approach**: We cannot change the data, so we will be sure to note the effects of this in our overall analysis

Source: Dawson, Causality in the freedom-growth relationship; Gordillo and Alvarez-Arce, The Chicken and the Egg: Economic Growth and Freedom; De Haan and Siermann, Further Evidence on the Relationship Between Economic Freedom and Economic Growth; Wu, Economic Freedom, Economic Growth, and China; De Haan and Sturm, On the Relationship Between Economic Freedom and Economic Growth; Gwartney, Holcombe, and Lawson, Economic Freedom, Institutional Quality, and Cross-Country Differences in Income and Growth

The Index: Concerns on the Weighting of Factors

- The Index averages the ten factors "so that the overall score will not be biased toward any one component or policy direction"
  - Also, all variables within each factor are given equal weight except for Investment Freedom
- The Index considers this approach to be a fair way to measure economic freedom because each factor is thought to be of equal importance
- When the factors are averaged together, the scores are not normalized, inherently weighting the various factors because of the large variation in means
  - For example, the mean scores range from 39.3 to 74.8 for Freedom from Corruption and Fiscal Freedom, respectively
- This raises the following questions regarding the validity of equally weighing all variables and the reasoning behind each factor's inclusion:
  - Is the value of each factor really the same?
  - Do they interact in ways that The Index does not account for?
- Given these concerns, the validity of The Index is unaltered due to the fact that it was not "designed specifically to explain economic growth or any other dependent variable… the raw data for each component are provided so that others can study, weight, and integrate as they see fit"
- The Heritage Foundation is not attempting to make any statements about specific correlations with The Index, but rather are simply rating economic freedom and leaving the correlations and causations to third parties

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

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Velocity of Money

- Velocity of Money is a metric that attempts to measure how often money is spent in the economy

- When a dollar (or other unit of currency) is introduced to the economy, it is used multiple times for various transactions
  - For example, when someone is paid by an employer and then purchases a bag of chips, the money spent on the chips does not simply sit in a cash register for all eternity. Instead the money spent is used again. This process is repeated throughout the economy
  - In this way, GDP is much larger than the money supply. Multiple transactions allow the same set of money to be used in the creation of a much larger GDP value

- The Velocity of Money is determined in order to see how many times each dollar in the money supply is used in transactions of new goods and services
  - It does not include money spent on used goods as they do not contribute to GDP

- GDP data is already required and so it does not present an issue, therefore nominal transactions data is unnecessary

- The required money supply data is not consistent or easily accessed, and therefore also presents an issue:
  - Some nations use foreign currencies (the U.S. Dollar) as either official currency or there de facto primary currency
  - This data is not easily accessible, especially not on a historic basis

- Because of complications around obtaining the required data, Velocity of Money is not a good metric to be included in the analysis

Source: http://www.econbrowser.com/archives/2010/12/velocity_of_mon.html

Percentage of Population Paying Income Taxes

- Another metric that may be useful to add to The Index is the percentage of the population paying income taxes
- This figure is readily available in the United States and has been the subject of much political discourse
- In other nations, the figure is not recorded or discussed so regularly
- Nations do publish their income tax data, and so it is theoretically possible to use the published income tax rates with published earnings of the population to determine the percentage of population that pays income taxes
- This presents a great degree of difficulty in accurately measuring the data for each nation, which is compounded when the number of years of data required is considered (1995-2012)
- It is possible to gather this data, but there is a two-fold question as to whether we should
  - Can we gather this data, while accomplishing our other research, within the time frame of the summer?
  - If we can gather this data, is it worth it to sacrifice time spent on other projects to find this income tax data?
- Furthermore, the likelihood of finding a significant amount of accurate data is low. For instance, the IMF only publishes employment figures for 34 nations. Determining the amount of the population not paying taxes in the remaining countries becomes much more difficult without data from which to determine it

Source: International Monetary Fund, World Economic Outlook April 2012

Public Debt-to-GDP Ratio

- The public debt-to-GDP ratio should be considered as another factor to include in our predictive analysis of GDP
- Public debt negatively impacts GDP by raising interest rates, crowding out private investment, and limiting the flexibility of government to respond to future economic or national security crises
- In particular, public debt is a threat to the economic freedom of future generations
  - The future generation is obligated to pay off past debt which leads to an increase in the ratio of government spending to GDP and reduces economic freedom
- The correlation between public debt-to-GDP ratios and economic freedom in advanced and developing economies is noted through the findings of many recent studies
  - There is a much stronger negative correlation between the debt-to-GDP ratio and economic freedom of advanced economies (-0.48) than there is for the debt-to-GDP ratio and economic freedom for developing economies (-0.29)
  - Reinhart & Rogoff and Kumar & Woo found insignificant and inconsistent impacts for low and moderate levels of debt but a significant impact for debt exceeding 90% of GDP in advanced economies, or 60% of GDP in developing economies
- The level of economic freedom in a country plays a critical role in determining the impact of debt
  - When economic freedom is high, debt may be sustainable even at higher levels
  - When economic freedom is low, the impact of even moderate levels of debt is likely to be negative

Source: International Monetary Fund, World Economic Outlook April 2012

Public Debt-to-GDP Ratio: Issues

- Although the relationship between the public debt-to-GDP ratio and economic freedom is quite apparent, public debt-to-GDP ratio is already accounted for by five of the ten factors in The Index:

1. Monetary Freedom:
   - Inflation is a result of high levels of public debt in a nation and is a direct factor in the score for Monetary Freedom
2. Government Spending:
   - Increases in government spending as a result of increasing public debt will directly lower the Government Spending scores in The Index
3. Fiscal Freedom
   - In order to reduce public debt, the government may increase taxes to finance debt service payments, which would directly lower the Fiscal Freedom scores in The Index
4. Financial Freedom
   - Financial Freedom scores will be negatively impacted since public debt crowds out private-sector access to credit and raises interest rates
5. Investment Freedom
   - The potential positive effects of high levels of investment freedom can be undercut if government borrowing to finance public debt siphons funds from the economy which would otherwise find their way into private-sector enterprises

- While the impact of public debt-to-GDP ratios on economic freedom and growth are substantial, the fact that public debt is accounted for by the five factors above would decrease the value of adding this ratio as a variable

- The information added by the ratio would not significantly improve our analysis of GDP in the presence of these other variables due to multicollinearity

Velocity of Money | Percentage of Population Paying Income Taxes | Public Debt-to-GDP Ratio | Household Debt

Source: International Monetary Fund, World Economic Outlook April 2012

Household Debt

- Household Debt is another metric that can be considered for linkage to GDP growth and The Index
- The data for Household Debt, much like other kinds of debt, indicates that household debt is both good and bad for an economy
- The IMF suggests that excessive amounts of household debt during economic booms increase the depth of the trough during recessions
- Small amounts of Household Debt help the economy grow, but amounts of Household Debt in excess of 85% of GDP in aggregate can stall or reverse economic growth
- Accordingly, Household Debt may be either a positive force or a negative force in the economy. Debt leads to growth, but too much debt
- The data on Household Debt is available for many of the countries in the Organisation for Economic Co-operation and Development ("OECD"), along with Taiwan
  - This would provide data for 35 developed economies
- There is data available for this statistic in much less volume than the size of The Index
- Due to the lack of data across developing nations and the world, Household Debt does not appear to be a viable metric to augment The Index

Source: International Monetary Fund: World Economic Outlook, April 2012; Cecchetti, Mohanty, and Zampolli, The Real Effects of Debt

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Evaluating Economic Freedom's Effects

- Economic freedom has been considered necessary for economic growth for hundreds of years. Adam Smith and David Ricardo believed that economic freedom was essential to growth. Friedrich Hayek wrote that efficient market outcomes require freedom. Finally, Milton Friedman states that the only reason free societies exist is because "economic freedom is so much more productive than other methods of controlling economic activity"

- The idea of economic freedom is evident through the writings of these well-respected economists. However, these men presented ideas that were qualitative understandings of how economic freedom promotes growth or incomplete, micro-economic examples of growth resulting from increased freedom

- It has only been in the past two decades that quantitative, holistic models have explained the link between economic freedom and growth

- Economic freedom needed quantification before economists could analyze the relationship between economic freedom and growth. A variety of methods were used before the development of The Index and the EFW; these two indices became the standard for quantifying economic freedom

- From this data, there is an academic consensus that economic freedom and growth are positively correlated
  - On average, the nations with the highest degree of economic freedom have higher growth rates than those nations with lower degrees of freedom

- Although economic freedom correlates with economic growth, some studies show that not every variable within The Index has a correlative relationship. Specifically, trade freedom, fiscal freedom, and government spending often have no correlation with economic growth. In fact, government spending and taxes often increase with economic growth

Source: Dawson, Causality in the freedom-growth relationship; Gordillo and Alvarez-Arce, The Chicken and the Egg: Economic Growth and Freedom; De Haan and Siermann, Further Evidence on the Relationship Between Economic Freedom and Economic Growth; Wu, Economic Freedom, Economic Growth, and China; De Haan and Sturm, On the Relationship Between Economic Freedom and Economic Growth; Gwartney, Holcombe, and Lawson, Economic Freedom, Institutional Quality, and Cross-Country Differences in Income and Growth

Causality Between Economic Freedom and Economic Growth

- Correlation does not imply causation. Most of the literature available only concerns correlation between economic growth and economic freedom, and does not address causation

- When correlative models are adjusted for causality, they produce different results

- Various models have been used to determine the causal relationship between economic freedom and growth. These models produce similar results about the causality of the relationship:
  - Increases in overall economic freedom lead to increases economic growth
  - Not all the categories of economic freedom directly cause economic growth, instead there are several different types of relationships between elements of economic freedom and economic growth
    - Causal: An increase in freedom results in an increase in growth
    - Endogenous: Freedom and growth increase together
    - Complex: The factor is endogenous with growth but such endogeneity is an incomplete explanation
    - Non-Correlative (further inquiry): The data shows that growth is not related to freedom for all or part of the data range

- The elements of The Index can be divided into these three categories:
  - Causal: Property Rights, Business Freedom, Labor Freedom, and Financial Freedom
  - Complex/Endogenous: Monetary Freedom, Investment Freedom, and Freedom from Corruption
  - Further Inquiry: Trade Freedom, Fiscal Freedom, and Government Spending

Source: Dawson, Causality in the freedom-growth relationship; Gordillo and Alvarez-Arce, The Chicken and the Egg: Economic Growth and Freedom; De Haan and Siermann, Further Evidence on the Relationship Between Economic Freedom and Economic Growth; Wu, Economic Freedom, Economic Growth, and China; De Haan and Sturm, On the Relationship Between Economic Freedom and Economic Growth; Gwartney, Holcombe, and Lawson, Economic Freedom, Institutional Quality, and Cross-Country Differences in Income and Growth

Causality Between Economic Freedom and Economic Growth

Factor	Causal	Complex/Endogenous	Further Inquiry
Property Rights	✓		
Freedom From Corruption		✓	
Fiscal Freedom			✓
Government Spending			✓
Business Freedom	✓		
Labor Freedom	✓		
Monetary Freedom		✓	
Trade Freedom			✓
Investment Freedom		✓	
Financial Freedom	✓		

Source: Dawson, Causality in the freedom-growth relationship; Gordillo and Alvarez-Arce, The Chicken and the Egg: Economic Growth and Freedom; De Haan and Siermann, Further Evidence on the Relationship Between Economic Freedom and Economic Growth; Wu, Economic Freedom, Economic Growth, and China; De Haan and Sturm, On the Relationship Between Economic Freedom and Economic Growth; Gwartney, Holcombe, and Lawson, Economic Freedom, Institutional Quality, and Cross-Country Differences in Income and Growth ; Bengoa and Sanchez-Robles; Foreign Direct Investment, Economic Freedom and Growth: New Evidence from Latin America; Swaleheen and Stansel, Economic Freedom, Corruption, and Growth

Causality Between Economic Freedom and Economic Growth

- The classification of The Index's ten factors as causal, complex/endogenous, and non-correlative provides insight into how The Index can be re-weighted to provide a better model for predicting economic growth

- The causal relationship is non-linear and non-specific
  - For example, the effects of an increase in Property Rights do not necessarily occur in the next year or even the next five years. Changes in institutions require time to take full effect in the economy
  - Although the causal relationship between elements of economic freedom and growth is present, there is no quantitative formula for a change in an element of freedom resulting in economic growth. For example, increasing property rights will improve growth, but the extent to which growth changes depends on the nation and its developmental state

- Understanding the true impact of these variables is difficult because different literature suggests causal, correlative, or reverse causal relationships depending upon the analysis used and the source of the data

- The relationships between different types of factors and growth is complicated, the categories do not explain the nuances between the factors and economic growth
  - Variables are classified as endogenous because they trend with economic growth. Studies show that they are positively correlated with economic growth
  - Non-correlative variables present much the same problem as endogenous variables in that they are still linked to economic freedom, just not by causation or direct correlation

Source: Dawson, Causality in the freedom-growth relationship; Gordillo and Alvarez-Arce, The Chicken and the Egg: Economic Growth and Freedom; De Haan and Siermann, Further Evidence on the Relationship Between Economic Freedom and Economic Growth; Wu, Economic Freedom, Economic Growth, and China; De Haan and Sturm, On the Relationship Between Economic Freedom and Economic Growth; Gwartney, Holcombe, and Lawson, Economic Freedom, Institutional Quality, and Cross-Country Differences in Income and Growth

Factor Classifications

- Investment Freedom primarily measures the degree to which an economy is open to foreign investments. In more developed nations, foreign investment is endogenous to growth but not causal. In less developed nations, foreign direct investment can spur economic growth but other foreign investment is generally endogenous. Thus Investment Freedom has an endogenous relationship that is sometimes causal as well

- The Freedom from Corruption metric is generally endogenous with growth. As economies grow they become less corrupt, and more developed economies are generally less corrupt. However, the metric does not include an understanding of different types of corruption. Evidence shows that there are multiple kinds of corruption and that some corruption (especially in developed nations) allows for greater economic freedom and spurs growth while most corruption (especially in developing nations) hurts growth and economic freedom

- Trade Freedom is related to economic growth via a reverse-causal relationship. Studies show that there is not a causal relationship between Trade Freedom and economic growth, suggesting that protectionist trade policies that have occurred throughout history may have some basis. Instead, international trade and trade freedom increase as a result of an increase in overall economic freedom increasing suggesting a reverse-causal relationship

- Fiscal Freedom and Government Spending are two related metrics; their inclusion in The Index has been questioned in academic literature. These metrics do not acknowledge the necessity of government and do not include a range for acceptable government even though the definition of freedom includes the government "protecting and respecting" the rights of citizens. There is evidence that Government Spending can slow economic growth, there is evidence that the size of government increases with economic growth (decreasing the score of each factor), and there is evidence that there is little to no negative correlation up to a reasonable amount of Government Spending. The differing data simply affirms the conviction that there is not a causal relationship between decreased Government Spending or Fiscal Freedom and long-term economic growth

Source: Dawson, Causality in the freedom-growth relationship; Gordillo and Alvarez-Arce, The Chicken and the Egg: Economic Growth and Freedom; De Haan and Siermann, Further Evidence on the Relationship Between Economic Freedom and Economic Growth; Wu, Economic Freedom, Economic Growth, and China; De Haan and Sturm, On the Relationship Between Economic Freedom and Economic Growth; Gwartney, Holcombe, and Lawson, Economic Freedom, Institutional Quality, and Cross-Country Differences in Income and Growth ; Bengoa and Sanchez-Robles; Foreign Direct Investment, Economic Freedom and Growth: New Evidence from Latin America; Swaleheen and Stansel, Economic Freedom, Corruption, and Growth

Past Research

- There have been many academic studies on the relationship between GDP and an assortment of economic and political indicators:
  - Most have determined that there is no “robust” linear relationship between these indicators and GDP growth.
  - Many of the studies agree that “events” or “thresholds” have some affect on long run average GDP growth rates including Reinhart & Rogoff (2009), Altman (2008), and Barro (2003).
  - Some suggestions made in the conclusions involve studying the interdependencies of the variables and thresholds.
    - Changes in variables have varying effects depending on profile of the country, magnitutde of the change and ability of internal or external market participants to capitalize on a positive change in Freedom.
    - Studies by Morris Altman have shown that below certain thresholds, long run GDP growth rates are negatively impacted by poor Freedom Scores and a country’s GDP can be predicted within a range depending on those scores. Above a certain level of Freedom, ranges of GDP growth rates can vary greatly.

Source: International Monetary Fund, World Economic Outlook April 2012

Democratic Events Roll & Talbott (2001)
Why Many Developing Countries Just Aren't

- Roll & Talbott(2001):
  - Split countries into three groups based on presence of democratic events:
    - (1) Countries with democratic events in past 50 years and no subsequent non-democratic event
    - (2) Countries with no democratic event and no long history of democracy
    - (3) Long term democracies
  - Determine relationship between per capita income and factors based on cross section of countries:
    - Property Rights, black market activity and regulation have a strong relationship with per capita income
      - A system for transferring and protecting property and the trade of goods and services increases economic activity both internally and externally through the development of domestic businesses and investments and trade involving foreign companies.
      - In general, stronger systems, fewer trade barriers and more democratic countries tend to have higher GDP per capita.

Democratic Events Roll & Talbott (2001)
Why Many Developing Countries Just Aren't

- Countries with anti-democratic events:
  - Saw significant declines in their GDP growth rate following these events
  - In no sub-period did their growth reach the average growth rate experienced by countries with positive democratic events
- There are countries with low Freedom Index Scores but high growth:
  - China, since Deng Xiaoping instituted market reforms in 1978 has seen a number of changes that while not necessarily democratic or lead to major increases in Freedom Index scores, has improved the functioning of trade and industry in the country.

Democratic Events
Why Many Developing Countries Just Aren't

- Countries with anti-democratic events:
  - Saw significant declines in their GDP growth rate following these events
  - In no sub-period did their growth reach the average growth rate experienced by countries with positive democratic events
- The change in growth rates for both groups:
  - Shows that Democratic Events are a cause of an increase in a country's GDP growth rate
  - Anti-Democratic events cause a decrease in a country's GDP growth rate.

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We reduced the universe of countries being analyzed and grouped them

- In addition to the Economic Freedom data, our analysis requires GDP data, which we collected from the International Monetary Fund ("IMF") and the Economic Research Service ("ERS")
  - GDP growth data came from the IMF and real GDP per capita from the ERS

- After collecting all the data, we pared our country list down to 91 from 184 by removing those countries that do not have Index data for all the years (1995-2012), those that were not included in the CPI, those that are not included in The World Bank's *Doing Business 2012* Report, and those that are not included in the IMF data

- We also excluded the Labor Freedom factor from our analysis because the scores begin in 2005

- In addition to preparing the data for general analysis, we divided the data into three different categories to run analysis on a smaller scale on. We based our division on The World Bank's economic and geographic classifications
  1. We used The World Bank Data to classify the nations as low income, lower middle income, upper middle income, and high income to achieve **Income Classification**
  2. We divided the nations into the groups based upon location to achieve **Geographic Classification**
  3. We classified the OECD nations and other developed nations as "developed," and classified the developing nations by geography to achieve **Semi-Geographic Classification**
  4. We divided the nations by their primary colonizer, focusing on influence of law. Those nations that were colonizers or not colonized are grouped together, to achieve a **Colonization Classification**
     - England's colonies are divided into categories to reflect the different colonization strategies in each area. Group (1) follows the extractive patterns typical of colonization while Group (2) colonies developed more inclusive institutions

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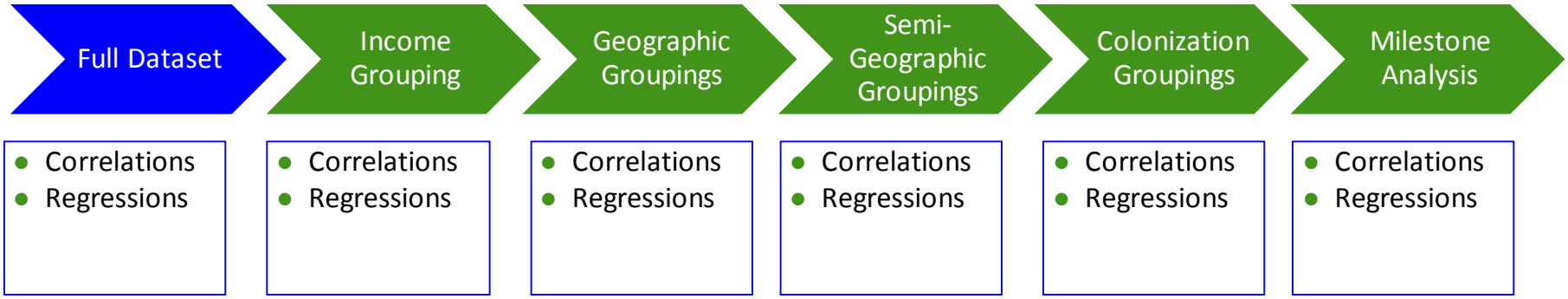


High positive correlations with real GDP per capita suggest that this is the metric we should use in our analysis

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP Per Capita	Real GDP per capita change
Overall Score	1.000												
Business Freedom	0.771	1.000											
Trade Freedom	0.570	0.418	1.000										
Fiscal Freedom	0.160	(0.068)	0.054	1.000									
Government Spending	(0.022)	(0.253)	(0.289)	0.561	1.000								
Monetary Freedom	0.591	0.355	0.225	0.036	0.011	1.000							
Investment Freedom	0.699	0.557	0.336	(0.078)	(0.207)	0.274	1.000						
Financial Freedom	0.731	0.520	0.400	(0.027)	(0.180)	0.345	0.597	1.000					
Property Rights	0.783	0.730	0.418	(0.254)	(0.377)	0.349	0.618	0.567	1.000				
Freedom from Corruption	0.753	0.694	0.473	(0.242)	(0.432)	0.412	0.485	0.513	0.804	1.000			
GDP Growth	(0.064)	(0.115)	(0.115)	0.150	0.143	0.097	(0.125)	(0.117)	(0.132)	(0.111)	1.000		
Real GDP Per Capita	0.628	0.628	0.512	(0.374)	(0.503)	0.382	0.451	0.482	0.733	0.805	(0.147)	1.000	
Real GDP per capita change	0.276	0.253	0.220	(0.156)	(0.209)	0.176	0.185	0.188	0.328	0.368	0.406	0.407	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

- There are high correlations between real GDP per capita and the factor scores. High correlations are not found with either GDP growth or the change in real GDP per capita
  - This indicates that real GDP per capita should be used in our analysis

- We note that there are high correlations between real GDP per capita and Property Rights, as well as between GDP per capita and Freedom from Corruption
  - These two factors are highly correlated themselves

Low correlations of factor growth rates resulted in their exclusion from the analysis

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP Per Capita	Real GDP per capita change
Overall Score	1.000												
Business Freedom	0.252	1.000											
Trade Freedom	0.406	0.007	1.000										
Fiscal Freedom	0.374	0.018	0.118	1.000									
Government Spending	(0.007)	(0.001)	(0.002)	0.003	1.000								
Monetary Freedom	0.253	0.010	0.003	0.058	0.009	1.000							
Investment Freedom	0.363	0.021	0.029	0.076	(0.002)	(0.003)	1.000						
Financial Freedom	0.524	0.071	0.182	0.187	0.050	0.014	0.219	1.000					
Property Rights	0.309	0.074	0.002	0.014	0.005	(0.005)	0.071	0.083	1.000				
Freedom from Corruption	0.344	(0.005)	0.091	0.106	(0.060)	0.082	0.018	0.127	0.057	1.000			
GDP Growth	0.003	0.034	0.029	0.010	(0.013)	(0.020)	(0.019)	(0.017)	0.006	(0.002)	1.000		
Real GDP Per Capita	(0.003)	0.038	(0.072)	(0.020)	0.051	(0.059)	0.035	(0.015)	0.061	(0.072)	(0.153)	1.000	
Real GDP per capita change	0.025	0.044	(0.027)	0.005	0.025	(0.017)	0.002	(0.010)	0.033	(0.029)	0.406	0.407	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

- Growth rates of factors tend to be less correlated. Here, we see that there are no high correlations between the factors or with real GDP per capita or the change in real GDP per capita
- As a result of the low correlations with GDP growth, real GDP per capita and the change in real GDP per capita, we decided to focus on factor scores instead of factor growth rates

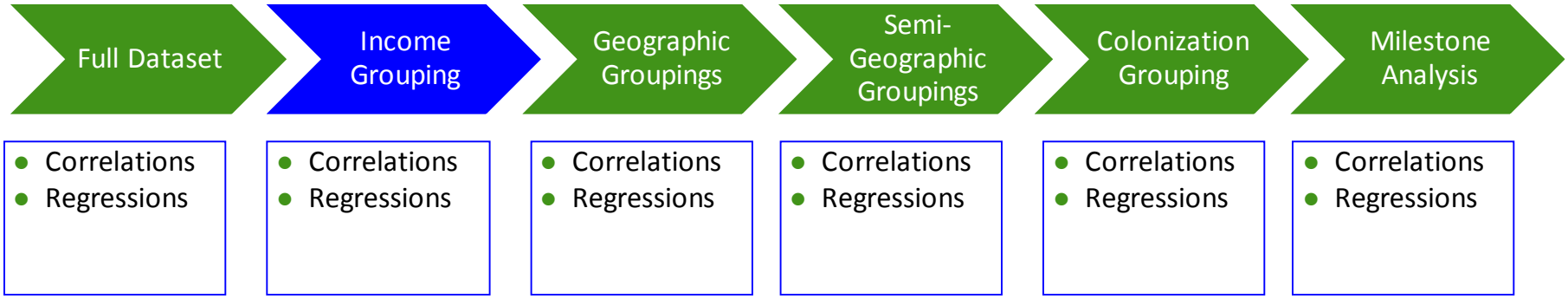
In order to obtain models that have a good fit we need to look at the data in groups of similar countries

- Our initial regression analysis confirmed that factor scores and real GDP per capita would yield the best models. We will use this approach to look for predictive value when we create our model
  - "Factor scores" exclude the Overall Score and Labor Freedom

- Using the factor scores, we ran pooled regressions with real GDP per capita as the dependent variable
  - This analysis yielded a model with a good fit, indicated by the R^2 of .74
  - Investment Freedom was the only factor that was not significant

- Using the fixed effect regression approach we started with the real GDP per capita as the dependent variable and the factor scores as the independent variables
  - The model found that Property Rights, Monetary Freedom, Trade Freedom, Fiscal Freedom and Investment Freedom were all significant
  - The model was not a particularly good fit, with an R^2 of 0.5

- The relatively poor fit of the model is likely due to the large number of countries we used in the analysis. The results show that we are likely to find good results, but that we need to have smaller and more homogeneous groups in order to obtain those results



There are few strong correlations within the data sets of the income categories

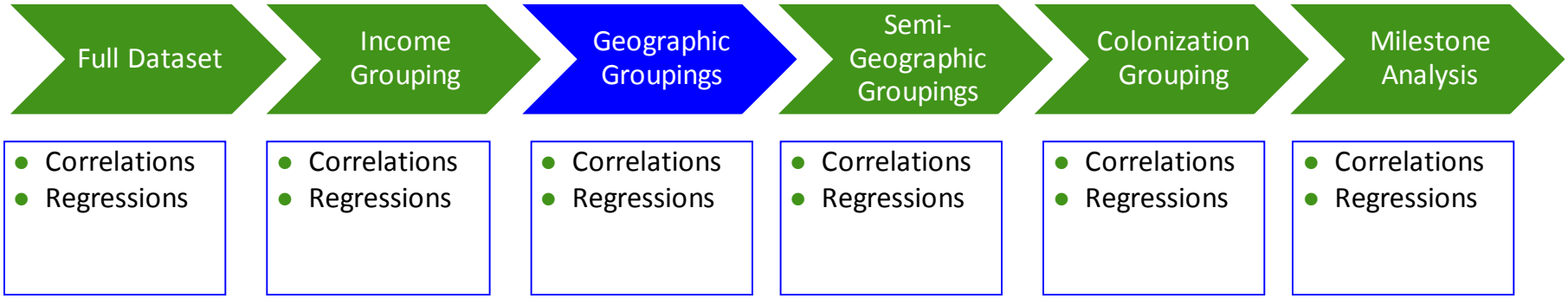
- **Upper Income**: Among Upper Income countries, there is a high correlation between Fiscal Freedom and Government Spending
  - While not above 0.7, correlations between the factors and real GDP per capita are significantly higher than between the factors and GDP Growth
- **Upper-Middle Income**: Among Upper-Middle Income countries, there are no factor correlations above 0.7
  - While not above 0.7, correlations between the factors and real GDP per capita are higher than between the factors and GDP Growth
- **Lower-Middle Income**: Among Lower-Middle Income countries, there are no factor correlations above 0.7
  - While not above 0.7, correlations between the factors and real GDP per capita are higher than between the factors and GDP Growth
- **Low Income**: Among Lower Income countries, there are no factor correlations above 0.7
  - While not above 0.7, correlations between the factors and real GDP per capita are generally – though not always – slightly higher than between the factors and GDP Growth

real GDP per capita Regressions

- The **upper income** grouping had the best fitting model of the income groups, with an R^2 of 0.96
  - All the factors were found to be significant in this model
- There are a 28 **upper-middle income** countries, and the grouping includes a wide range of geographic areas and cultures. This could contribute to the lower R^2 of 0.92
  - Trade Freedom, Fiscal Freedom, Monetary Freedom, Investment Freedom, Property Rights, and Freedom from Corruption are all significant
- The **lower-middle income** produced a model with a good fit, with an R^2 of 0.96
  - Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Investment Freedom, Property Rights, and Freedom from Corruption are significant
- The **lower income** grouping had the worst fitting model. This is likely a result of the vast differences in these countries
  - Business Freedom and Financial Freedom are the only two factors that are not significant in determining real GDP per capita in this grouping
- On the whole, we see that income groupings could prove to be a useful grouping, however, the lower income grouping may be excluded due to the difficulty in finding a model with a good fit
- Most of the factors prove to be significant in these models, but Business Freedom and Financial Freedom are found to be significant in only the upper income grouping

Business Freedom and Financial Freedom are less important than the other factors among the income classification group

	Upper Income	Upper-Middle Income	Lower-Middle Income	Lower Income
Property Rights	✓	✓	✓	✓
Freedom from Corruption	✓	✓	✓	✓
Fiscal Freedom	✓	✓	✓	✓
Government Spending	✓		✓	✓
Business Freedom	✓			
Monetary Freedom	✓	✓	✓	✓
Trade Freedom	✓	✓	✓	✓
Investment Freedom	✓	✓	✓	✓
Financial Freedom	✓			



Property Rights and Freedom from Corruption tend to be highly correlated in these groupings

- **Asia and the Pacific**: We see many strong correlations in the Asia Pacific Region. Business Freedom, Property Rights, and Freedom from Corruption are the factors most positively correlated with real GDP per capita
  - We see stronger correlations between real GDP per capita and the factors, than we do between GDP growth and the factors

- **Europe**: Again, Property Rights and Freedom from Corruption have significant correlations with real GDP per capita. We also see that Property Rights and Freedom from Corruptions are correlated themselves
  - There is once again, no significant correlation between GDP Growth and any of the factors, while there are two significant correlations between real GDP per capita and the factors

- **The Americas**: We see significant correlations between Freedom from Corruption and real GDP per capita. We also see that Property Rights and Freedom from Corruptions are correlated themselves
  - There is once again, no significant correlation between GDP Growth and any of the factors, while there is a significant correlation between real GDP per capita and Freedom from Corruption

- **Middle East & North Africa**: There are not many significant correlations between the freedom factors and real GDP per capita and GDP growth
  - Perhaps this says something about the effectiveness of the geographic grouping method

- **Sub-Saharan Africa**: We see no significant correlations in the Sub-Saharan African region. This leads us to believe that this group is not cohesive or that the information obtained from these countries is not as indicative of economic growth due to the inconsistency of these results from the results of other groups

Geographic groupings proved less helpful due to the vast differences in sizes of the economies and freedom levels of the groups

- The regression models for the geographic groups, yielded significantly lower R^2 values, and therefore poorly fit models, in comparison to other grouping methods
  - As a result, we will likely choose other groupings to use for the ultimate model
  - The geographic groupings do not separate out the developed countries from the undeveloped, and therefore the poor fit is likely due to the fact that each geographic grouping has a wide range of freedom scores and real GDP per capita levels

- The **Asia and the Pacific** region had an R^2 of 0.82 and many significant factor scores

- **Europe** had the best fitting model of the grouping, likely due to the fact that most European countries are developed and thus more homogeneous

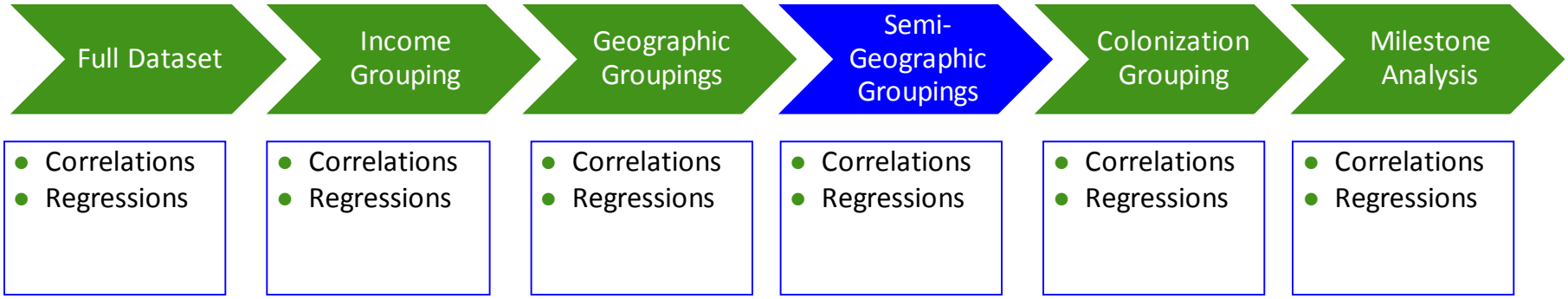
- The variation between **North, Central, and South American** countries in terms of development led to a less fit model with an R^2 of 0.69. It is interesting that Property Rights was the only factor that was not found to be significant. This is the only geographic group to have this result

- **Middle East and North Africa** model resulted in an R^2 of 0.79

- **Sub-Saharan Africa** yielded the worst fitting R^2 of 0.6. Similar to the lower income grouping, these countries may be too varied in their development and freedom scores to produce a model with a good fit

Freedom from Corruption, Fiscal Freedom, and Government Spending are the most important factors in determining real GDP per capita across geographic classifications

	Asia and the Pacific	Europe	Americas	Middle East and North Africa	Sub-Saharan Africa
Property Rights	✓	✓		✓	✓
Freedom from Corruption	✓	✓	✓	✓	✓
Fiscal Freedom	✓	✓	✓	✓	✓
Government Spending	✓	✓	✓	✓	✓
Business Freedom		✓	✓	✓	✓
Monetary Freedom	✓	✓	✓		
Trade Freedom			✓	✓	✓
Investment Freedom	✓		✓	✓	✓
Financial Freedom			✓		



Property Rights and Freedom from Corruption tend to be highly correlated in these groupings

- **Developed Nations**: Among developed nations we see high correlations between Fiscal Freedom and Government Spending as well as between Property Rights and Freedom from Corruption
  - Correlations between the factors and real GDP per capita is higher than the factors and GDP growth
- **Sub-Saharan Africa**: There are no strong correlations between factors among the Sub-Saharan African countries. Additionally, there is not a strong correlation between GDP growth and the factors
- **East Asia**: In the East Asia countries, Business Freedom is highly correlated with Property Rights and Freedom from Corruption. Government Spending and Freedom from Corruption have a strong negative correlation
  - We see mostly negative correlations between GDP growth and the factors, but some high correlations between the factors and real GDP per capita
- **Middle East**: The Middle East countries' factors are not highly correlated with one another, and their correlation with GDP growth is almost zero across the board, but correlations to real GDP per capita are higher
- **Eastern Europe & Central Asia**: There are no significant correlations between the factors in the Eastern Europe and Central Asia Countries
  - Neither correlations between real GDP per capita nor GDP growth are significant and there is a surprisingly high negative correlation between Property Rights and real GDP per capita
- **Americas**: Again, we see strong correlations between Property Rights and Freedom from Corruption
  - GDP growth is not highly correlated with any of the factors, but similar to the other semi-geographic groupings, we see stronger correlations between real GDP per capita and the than factors than between GDP growth and the factors, with Property Rights and Freedom from Corruption being particularly strong

Groupings comprised of homogeneous countries and a small number of countries yielded the best fitting models

- The **developed nations** grouping consisted of a 23 countries that are at different stages in development. This is likely why the model was not a very good fit and why all the factor scores save Freedom from Corruption were found to be significant

- **Sub-Saharan Africa** grouping is also large, including 20 countries. This model was also a poor fit, which could, in part, be a result of the vast underdevelopment of these countries. This is consistent with what we have seen in the geographic and income classifications

- **Middle East** included a smaller number and much more homogeneous group of countries, which led to a model that had a good fit, with an R^2 of 0.99

- **East Asia** has a small number of homogeneous countries that allowed for a model with a good fit

- **Eastern Europe and Central Asia** is a small grouping, but has countries that differ greatly in size, which could be why we see a lower R^2 of 0.93

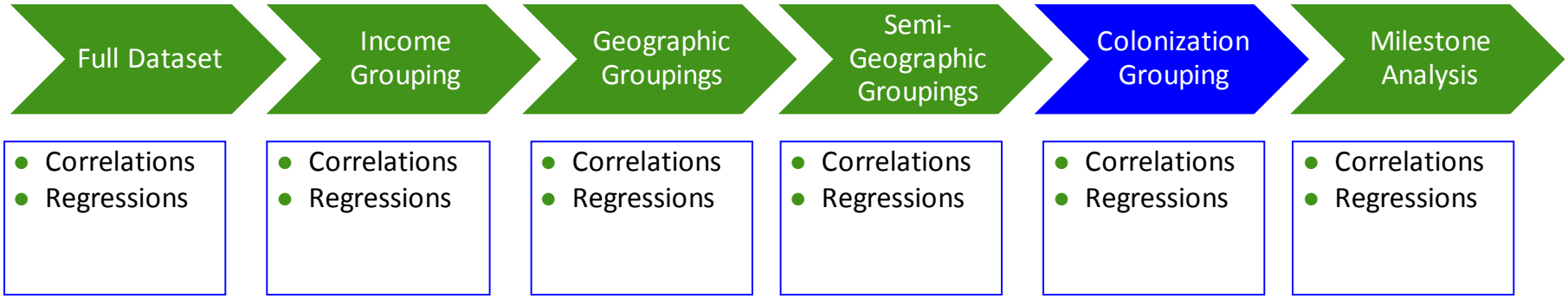
- The **Americas** grouping resulted in a model with a good fit and only two significant variables: Trade Freedom and Property Rights
  - Trade Freedom may be particularly important in these countries due to NAFTA

- Overall, the semi-geographic groupings provided betting fitting models than using the entire dataset and than the purely geographic grouping, likely due to the fact that developed nations comprised their own group

- A smaller number of significant factors in these groupings compared to the others allows for more parsimonious models

Property Rights and Fiscal Freedom are the most important factors in determining real GDP per capita across semi-geographic classifications

	Developed Nations	Sub-Saharan Africa	Middle East	East Asia	Eastern Europe & Central Asia	Americas
Property Rights	✓	✓	✓	✓	✓	✓
Freedom from Corruption					✓	
Fiscal Freedom	✓	✓	✓	✓	✓	
Government Spending	✓					
Business Freedom	✓	✓	✓		✓	
Monetary Freedom	✓				✓	
Trade Freedom	✓	✓	✓			✓
Investment Freedom	✓	✓			✓	
Financial Freedom	✓	✓			✓	



Freedom from Corruption and Property Rights are the most highly correlated with real GDP per capita in the colonization grouping

- **UK (1)**: In this grouping, real GDP per capita correlates strongly with Freedom from Corruption. Business Freedom and Fiscal Freedom also have high correlations with real GDP per capita, but there is little correlation with GDP growth
- **UK (2)**: In these countries, Property Rights correlates most strongly with real GDP per capita, but we also see high correlations with Freedom from Corruption, Trade Freedom, and Monetary Freedom
- **Spain**: There are no significant correlations with real GDP per capita, but Freedom from Corruption, Property Rights and Business Freedom show the highest correlations with real GDP per capita
- **France**: There are no significant correlations between any factor and the real GDP per capita, but again we see that Freedom from Corruption and Property rights are the most correlated
- **Portugal**: Property Rights and Freedom from Corruption both have significant correlations with real GDP per capita
- **USSR**: In former USSR nations, Investment Freedom, and Freedom from Corruption all significantly correlate with real GDP per capita. There are also a number of high correlations between factors
- **Netherlands:** Indonesia is the only country in this grouping, and therefore the results are not useful
- **Self-Ruling:** In self-ruling nations, we once again see that Property Rights and Freedom from Corruption have the most significant correlations with real GDP per capita

Colonization routes proved to be a helpful way to look at the data and resulted in strong models

- The **UK** groupings resulted in the best fitting models of the colonization groupings
  - UK (1) includes a large number of countries, including some in the Sub-Saharan and low income groupings, but still yields a model with a good fit, suggesting that colonization route may be the best way to group the countries
    - Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Financial Freedom, Property Rights, Freedom from Corruption, and Labor Freedom are significant
  - UK (2) also results in a model with a good fit
    - Trade Freedom, Government Spending, Financial Freedom, Labor Freedom, and Freedom from Corruption are significant

- The model for the countries colonized by **Spain** also resulted in a model with a good fit, though it the R^2 was not quite as high at 0.96.
  - Only one factor was significant, Fiscal Freedom, which may result in less predictive value for the overall model

- The grouping of countries colonized by **France** resulted in a model with an R^2 0f 0.98. The model is also parsimonious with Property Rights, Labor Freedom, and Investment Freedom being found to be significant

- The **USSR** grouping resulted in a model with a good fit likely due to small number of homogeneous countries that comprised the group
  - Fiscal Freedom, Monetary Freedom, Investment Freedom, Labor Freedom, and Property Rights are significant

- **Portugal** and the **Netherlands** do not have enough nations (1 and 2) to obtain meaningful results

- The **Self-Ruling** grouping proved to be unhelpful as it consisted of such a wide variety of countries

The UK and USSR colonization routes resulted in the strongest models, and Property Rights is the most important factor across the groupings

	UK (1)	UK (2)	Spain	France	USSR	Self-Ruling
Property Rights	✓	✓		✓	✓	
Freedom from Corruption	✓	✓				
Fiscal Freedom	✓		✓		✓	
Government Spending	✓	✓				
Business Freedom						
Monetary Freedom	✓				✓	
Trade Freedom	✓	✓				
Investment Freedom	✓			✓	✓	
Financial Freedom		✓				

Agenda

- Project Overview
- Introduction to the Index
- The Index of Economic Freedom
- Changes in the Index
- Other Metrics to Consider
- Analysis of Existing Research
- Data Collection Process
- Data Analysis Process
- GDP Forecast Models
- Results and Conclusions

There is strong predictive value for real GDP per capita, but this does not translate into good predictive value of GDP growth

- We used neural networks analysis to predict real GDP per capita for each country over the period from 1995 to 2012
- We have used the analysis for the whole dataset, but have not yet run the analysis on the groupings
- Using this analysis, the real GDP per capita predictions are within 5% of the actual value 84.5% of the time and within 2.5% 71.4% of the time
- While you can back GDP growth out of the predictions of real GDP per capita, the predictions have much greater error
  - If GDP only grows by 2.0% and your error is 2.5%, your prediction could be off by over 100% of the actual growth
- This could be a result of the large differences in the scale of the countries' GDPs
  - We moved away from growth because of the lower correlation to the factors and the lower predictive results, so looking at absolute values may be a better way to find predictive value
- We found better results for the GDP per capita growth when we used the groupings. The developed nations and the UK 2 groupings were particularly strong

We will attempt to connect The Index and GDP growth by using Regression Trees and Nearest Neighbor

- We will use our initial statistical discoveries as a foundation and attempt to implement new statistical techniques to connect The Index and GDP growth

- Instead of Neural Networks, we are now attempting to use two other statistical methods to predict GDP, Nearest Neighbor and Regression Trees
  - Nearest Neighbor takes the entire dataset and compares each country every year, looks at the current year for predicting the next year's GDP, and then determines if it is similar to and the level of similarity with a nation in the dataset
  - Regression Trees split the data into nodes based upon the predictor variables inputted prior to regressing the data and output a value of the target variable based upon the input variables. They are "learned" by splitting the source data into subsets based on an attribute value test and repeat on all derived subsets in a manner called recursive partitioning

- The optimal regression tree for the target **Total PPP Adjusted Value Added** had an R2 of .776 with four terminal nodes
  - The most significant input variables in this tree were Country, Business Freedom, Property Rights, GDP lag, and Labor Freedom (in regressing order)

- The optimal regression tree for the target **Total GDP per Capita Valued Added** had an R2 of 0.7 with 16 terminal nodes
  - The most significant input variables in this tree were Country, Year, Corruption, Semi-Geographical grouping, Property Rights, Trade Freedom, GDP lag, and Government Spending (in regressing order)

- The optimal regression tree for the target **PPP Adjusted Value Added** had an R2 of 0.76 with 15 terminal nodes
  - The most significant input variables in this tree were Country, Semi-Geographic, Income, Property

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Review of the Index and initial conclusions

Index Overview

- The Index measures Economic Freedom through ten factors grouped into four broad categories:
  - **Rule of Law**
    - Property Rights
    - Freedom from Corruption
  - **Limited Government**
    - Fiscal Freedom
    - Government Spending
  - **Regulatory Efficiency**
    - Business Freedom
    - Labor Freedom
    - Monetary Freedom
  - **Open Markets**
    - Investment Freedom
    - Financial Freedom

Initial Conclusions

- Our analysis is consistent with academic literature and shows that there is a connection between economic growth and Economic Freedom that can be qualitatively and quantitatively measured
- Long-term economic growth and Economic Freedom are clearly linked. However, our efforts have not yet produced a model to quantitatively predict GDP

We have seen a link between Economic Freedom and GDP growth and hope to be able to quantitatively predict this relationship

- Our experiments agree with academic literature and show that there is a connection between economic growth and Economic Freedom that can be qualitatively and quantitatively measured
  - Elements of The Index correlate with growth as do the overall scores
- Long-term economic growth and Economic Freedom are clearly linked. However, our efforts have not yet produced a model to quantitatively predict GDP
- This lack of results is likely due to The Index's short time-span and our limited knowledge of statistics. Measureable economic effects from political change often take years to be fully realized and short term growth can be spurred at the expense of economic freedom
- Hopefully, with our new statistical methods, we will be able to achieve our goal. Regardless though, we have seen the linked relationship between Economic Freedom and economic growth
- In order to accomplish these statistical concepts, we will need to outsource the statistical work on regression trees, neural networks, nearest neighbor and principle components
  - Once the appropriate person has been found, it will likely take a couple of weeks to perform the final analysis

Regression analysis confirms that there is a correlation between GDP and the factors in the Index

- Our initial regression analysis confirmed that factor scores and real GDP per capita would yield the best models. We have used this approach to look for predictive value in attempting to create our model
  - "Factor scores" exclude the Overall Score and Labor Freedom

- The best way to test the type of data we have is to use a fixed effect model that can account for the fact that we have both multiple years and multiple countries
  - The regression using the entire dataset was not very useful because it had a low R^2
  - To attempt to correct this, we took the groupings we made during the Data Collection stage and applied correlations and regressions to them

- On the whole, Property Rights and Freedom from Corruption tend to be the most frequent highly correlated factors to real GDP per capita in the different country groupings
  - The smaller groupings resulted in better fitting models, with the more developed nations tending to have better fitting models
  - Overall, the Semi-geographic and Colonization groupings were the most useful

- Our initial correlations and regressions focused on GDP growth and we found that the results were not very useful; our second set of regressions focused on actual Per Capita GDP numbers and we found significance.
  - The issue with this analysis is that the academic consensus is to use GDP growth, since using actual levels of GDP is considered less accurate
  - Additionally, this analysis did not account for the momentum factor of GDP growth, thus overstating the effect of the factors

While the effect the factors have on GDP is likely lagged, we were unable to determine the length of the lag

- We attempted to determine the lagged affect that each factor has on GDP by running several lagged regressions
- There were many different results over the various groupings and regressions that we ran, but the general conclusion is that there is a time lag between the scores and the GDP metric
- However, there did not seem to be a consistency in the lag for a particular factor across the dataset
- This is problem that economists have struggled with for years, and we too have failed to uncover the mystery

While Neural Networks provided interesting results for absolute values of GDP per capita, the results for GDP growth did not prove useful

- We used Neural Networks to predict real GDP per capita within 5% error 84.5% of the time and within 2.5% error 71.4% of the time
- This data appears less useful when we "back-out" GDP growth rates from the GDP data. When growth rates are determined, we see the percent growth is much less accurate
  - For example, if GDP only grows at 2%, then a 5% error on the actual GDP number is not very useful
- We did find some better results when we ran Neural Networks on the grouped datasets rather than the full data set
  - For example, in Developed Nations we predicted GDP growth within 5%, 84% of the time
- However, our approach here is flawed because the Neural Networks model, like your brain, learns and can memorize. We used the same dataset to both train and test, which gave us positively skewed results
- When we had a training set and a testing set, the results had a much higher error rate. This is likely partly due to the fact that there was a much smaller amount of data for the model to train on
- Finally, even if we obtain good results from this approach, it is ultimately a black box, and therefore will not be as useful going forward as some other type of numerical model

Regression Trees did not prove to be as useful as we had anticipated in finding the milestones

- The reason for using the regression trees was to find at what point a factor would be significant in predicting GDP. This would give us insight into where the milestones may actually be

- We ran several versions of the regression trees
  - The optimal regression tree for the target Total PPP Adjusted Value Added had an R^2 of .77 with four terminal nodes
    - The most significant input variables in this tree were Country, Business Freedom, Property Rights, GDP lag, and Labor Freedom (in regressing order)
  - The optimal regression tree for the target Total GDP per Capita Valued Added had an R^2 of 0.7 with 16 terminal nodes
    - The most significant input variables in this tree were Country, Year, Corruption, Semi-Geographical grouping, Property Rights, Trade Freedom, GDP lag, and Government Spending (in regressing order)

- In summary, after running a number of Regression Trees we observe that predictions have large errors and groupings tend to simply fall along size creating a constant in the equation that dominates the model

PCA confirms that the factors are correlated with GDP, but it does not result in a predictive model

- Principal Component Analysis (PCA) attempts to identify the independent variables that explain the majority of the variation in a dataset. It allows us to identify significant factors and countries that are outliers

- Property Rights and Freedom from Corruption were found to be highly correlated, but all other factor scores were found to be descriptive of the variation in the
  - The high correlation between Property Rights and Freedom from Corruption suggests that we may need to drop one of them from the analysis

- PCA also allows for a visual analysis by plotting the distribution of the data
  - This allows us to identify any outliers that may be throwing off the data
  - For example, when we use the whole dataset, the United States, China, and Japan, the countries with the highest GDP, tend to be outliers
  - After running it again without these outliers, we see that Zimbabwe and Belarus tend to be outliers in this new dataset

- While this does not give us any concrete way to proceed it does confirm our prior conclusions

We did not get the output we anticipated by using Nearest Neighbor analysis

- Nearest Neighbor analysis is typically used to classify observations into discrete values, but it can be used for continuous observations by applying weights based on the distance the observation is from its neighbors to predict the dependent variables
- We used this method in two different ways, first to predict PPP Value Add and second to predict a dislocation in GDP
  - A dislocation is defined as plus or minus 1% of the trailing three-year average
- The model predicted GDP dislocations correctly 43% of the time, and was less accurate when predicting PPP Value Add
- The other issue with this model is that it is a black box. Similar to Neural Networks, it does not result in an equation that can be used going forward

Dislocation analysis has had the most promising results, though more analysis needs to be done

- We have defined a dislocation as plus or minus 1% of the trailing 3-year average, trailing 5-year average or long-term average

- Then using the full dataset we looked at the changes in the factor scores to determine whether a positive or negative change in the score resulted in a dislocation
  - Using the whole dataset we have not found any significant patterns

- Looking at the groupings, we got slightly better results
  - In general, positive factor score changes tended to lead to positive dislocations more frequently than a negative score led to a negative dislocation
  - Property Rights was one of the most consistent in predicting a dislocation above the long-term average
  - In the Middle East grouping, a negative change in Financial Freedom results in a negative dislocation 62% of the time
    - This is the only case in where a negative change is significant

- Many of the types of analysis we have used throughout the process are better suited for categorizing data, and therefore may be more useful for analyzing the dislocations in GDP than they were for actually predicting a GDP metric
  - This week we have made some progress using classification trees to "predict" a positive or negative dislocation

Having found a link between economic freedom and GDP, we need to further look into dislocations in GDP

- Our analysis is consistent with academic literature and shows that there is a connection between economic growth and Economic Freedom that can be qualitatively and quantitatively measured
- Long-term economic growth and Economic Freedom are clearly linked. However, our efforts have not yet produced a model to quantitatively predict GDP or dislocations in GDP
- The most promising aspects so far have been looking at dislocations in order to classify the data
  - Many of the tools we have been using were originally designed for classification, so we may be able to re-run some of the analysis and look for dislocations
- This lack of results may be due to the Index's short time-span and lack of granularity in the data, that measureable economic effects from political change often take years to be fully realized, and/or short term growth can be spurred at the expense of economic freedom

Next steps include finishing the classification tree analysis, analyzing the Frasier Index, and utilizing Enterra Solutions

- The focus going forward will be on dislocations
  - We may need to look into different ways of defining the dislocation in order to determine what the best definition
- Determine if there is anything else we could use to augment the index
  - We have considered adding political or financial stability, but have as of yet been unable to find a good data source
- The Frasier Index may provide a way for us to test the robustness of our analysis
  - Additionally, one of the founders of the Frasier Index is now at SMU and may prove to be a very useful resource if we choose to use the Frasier Index for further analysis
- Partnering with Enterra may be able to create a mosaic that would be useful to glendonTodd, CPGs, the Commerce Department, and others
  - The system could comb the laws, media, social media, consumer behavior and other things in order to look at the milestones in each factor and gain insights on the trends that we are not able to obtain through our simple statistical analysis
  - Ideally we would have a product that would enable us to better judge which countries to enter and when to exit a particular country

Appendix

Research Phase Appendix

Property Rights: Sourcing

- The Index uses three primary sources for determining its data on Property Rights (in order of priority):
  - Economist Intelligence Unit: Country Report 2008-2011
  - Economist Intelligence Unit: Country Commerce 2008-2011
  - U.S. Department of Commerce: Commercial Guide 2008-2011
  - U.S. Department of State: Country Reports on Human Rights Practices 2008-2011

- The Index also uses various news and magazine articles to supplement these sources

- As such, even though the score for this section is scored on a 0 to 100 basis, as every factor in The Index is, the data gathered here is difficult to quantify. These reports state the degree to which Property Rights exist and are enforced and it is The Index that synthesizes the information and gives it a quantitative value

Freedom From Corruption: Sourcing

- The Index uses several sources to obtain data for its Freedom from Corruption metric:
  - Transparency International, *Corruption Perceptions Index* 2010
  - U.S. Department of Commerce, *Country Commercial Guide* 2008-2011
  - Economist Intelligence Unit, *Country Commerce* 2008-2011
  - Economist Intelligence Unit, *Country Report* 2008-2011
  - Office of the U.S. Trade Representative, *2011 National Trade Estimate on Foreign Trade Barriers*
  - Official government publications

- The following nine nations are excluded from the CPI index and require the use of the other sources:
  - Belize
  - Burma
  - The Bahamas
  - Fiji
  - Micronesia
  - North Korea
  - Saint Lucia
  - Saint Vincent and the Grenadines
  - Suriname

Fiscal Freedom: Sourcing

- The following sources were used to determine tax data (in order of priority):
  - Deloitte: International Tax and Business Guide Highlights
  - International Monetary Fund: Staff Country Report, "Selected Issues and Statistical Appendix" 2008-2011
  - International Monetary Fund: Staff Country Report, "Article IV Consultation" 2008-2011
  - PricewaterhouseCoopers: Worldwide Tax Summaries 2008-2011
  - Countries' Investment Agencies
  - Embassy Confirmations
  - Countries' Treasury or Tax Authority
  - Economist Intelligence Unit: Country Report 2008-2011
  - Economist Intelligence Unit: Country Profile 2008-2011
  - Economist Intelligence Unit: Country Commerce 2008-2011
  - Economist Intelligence Unit: Country Finance 2008-2011

- The following sources were used to determine tax revenue as a percentage of GDP (in order of priority):
  - Organisation for Economic Co-operation and Development Data
  - Eurostat, Government Finance Statistics Data
  - African Development Bank and Organisation for Economic CO-operation and Development, *African Economic Outlook 2011*
  - International Monetary Fund, *Staff Country Report* "Selected Issues" 2008-2011
  - International Monetary Fund, *Staff Country Report* "Article IV Consultation) 2008-2011
  - Asian Development Bank, *Key Indicators for Asia and the Pacific* 2008-2011
  - World Trade Organization, *Trade Policy Reviews* 2008-2011
  - Official Government Publications of each country
  - Individual Contacts from government agencies and multinational organizations (IMF/World Bank)

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Government Spending: Sourcing

- The following sources were used to determine Government Spending data (in order of priority):
  - Organisation for Economic Co-operation and Development data
  - Eurostat data
  - African Development Bank and Organisation for Economic Co-operation and Development, *African Economic Outlook 2011*
  - International Monetary Fund, *Staff Country Report* "Selected Issues and Statistical Appendix" 2008-2011
  - International Monetary Fund, *Staff Country Report* "Article IV Consultation" 2008-2011
  - Asian Development Bank, *Key Indicators for Asia and the Pacific* 2008-2011
  - African Development Bank, *Selected Statistics on African Countries 2010*
  - Official government publications of each country
  - Economist Intelligence Unit, *Country Report* 2008-2011
  - Economist Intelligence Unit, *Country Profile* 2008-2011

Business Freedom: Ease of Starting a Business

	Procedures (number)	Time (days)	Cost (% of income per capita)	Paid-in Min. Capital (% of income per capita)
Mean	7.4	30.6	36.0	48.8
Median	7.0	18.0	12.7	0.0
Minimum	1.0	1.0	0.0	0.0
Maximum	21.0	694.0	551.4	584.2
Bottom Quartile	10.0	39.0	48.6	35.8
Top Quartile	5.0	8.0	3.1	0.0

Business Freedom: Dealing with Licensing

	Procedures (number)	Time (days)	Cost (% of income per capita)
Mean	15.8	192.6	389.3
Median	14.5	169.0	107.8
Minimum	5.0	26.0	1.1
Maximum	51.0	1129.0	6154.3
Bottom Quartile	19.6	246.6	459.5
Top Quartile	11.0	109.6	29.3

Business Freedom: Resolving Insolvency

	Time (years)	Cost (% of estate)	Recovery rate (cents on the dollar)
Mean	2.9	16.3	34.5
Median	2.8	15.0	30.6
Minimum	0.4	1.0	0.0
Maximum	8.0	76.0	92.7
Bottom Quartile	4.0	23.0	14.8
Top Quartile	1.7	8.0	52.4

Non-Tariff Barriers

- **Price Restrictions:**
  - **Price Fixing**: The government sets a certain price floor or ceiling for a product, or it sets a specific price for which the good or service must be sold
  - **Antidumping Duties**: Taxes levied on imports to prevent imports with lower prices than the industry within the nation is able to produce the same good or service for
  - **Countervailing Duties**: Import taxes levied to neutralize foreign subsidies used to produce imports at a lower cost
  - **Border Tax Adjustments**: Taxes levied in carbon-taxing countries on imports from non-carbon-taxing countries to tax carbon use in production
  - **Variable Levies**: A variable levy on imports that raises the price of the important to at least the domestic price
  - **Variable Tariff Rate Quotas**: Combines variable levies and quotas, the tariff rate changes depending upon the number of imported goods; it is generally lower for a certain quota of imports and rises with an increase in imports to protect the nat ional industry

- **Regulatory Restrictions:**
  - **Licensing**: Regulations require businesses producing or importing a good or service to obtain a license certifying their ability to do so
  - **Domestic Content and/or Mixing Requirements**: Requirements that foreign producers maintain a certain level of production within the nation
  - **Sanitary and Phytosanitary Standards**: Regulation concerning sanitation during production and transportation, can be applied to imports, requiring importing producers to comply with the same rules as internal producers
  - **Safety and Industrial Standards Regulations**: Safety regulations on production and business practices within a nation can be levied on importing producers
  - **Packaging Regulations**: Regulations controlling packaging within a nation apply to internal and importing producers
  - **Labeling Regulations**: Regulations controlling labeling within a nation apply to internal and importing producers
  - **Trademark Regulations**: Trademark regulations award trademarks to individuals and companies and are enforced on all imports as well as domestic production
  - **Advertising and Media Regulations**: Advertising and media regulations restrict the actions that can be taken by national and importing producers to advertise their product

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Non-Tariff Barriers

- **Quantity Restrictions:**
  - **Import Quotas**: A numerical limit on the amount of a good or service that can be imported
  - **Export Limitations**: A numerical limit on the amount of a good or service that can be exported to specific nations
  - **Export Restraints**: A numerical limit on the amount of a good or service that can be exported
  - **Trade Embargoes or Bans**: Bans on trading goods (importing from and exporting to) specific countries
  - **Countertrade**: Exchanging goods and services for other goods and services (not money)

- **Investment Restrictions:**
  - **Exchange Controls**: Exchange controls encompass a variety of policies that restrict the ownership of foreign currencies by residents of a nation and restrict the ownership of the national currency by non-residents. They include specific bans on ownership and use of foreign currency within the nation, exchange restrictions, fixed exchange rates, and limits on currency export
  - **Financial Controls**: Financial controls restrict the financial actions individuals can make. They include restrictions upon making investments by certain individuals. They can be focused on foreign individuals or simply separate sectors of the economy and restrict how financial investment occurs

- **Customs Restrictions:**
  - **Advance Deposit Requirements**: Requirements that importers deposit tariff amounts before attempting to import into a nation
  - **Customs Valuation Procedures**: Procedures whereby customs officials assign a value to a good being imported and levy a tariff based upon the valuation
  - **Customs Classification Procedures**: Procedures whereby customs officials classify imports and levy a tariff based upon the classification
  - **Customs Clearance Procedures**: Procedures whereby imports and importers clear customs after paying import taxation

- **Direct Government Intervention:**
  - **Subsidies**: Government policies that pay domestic producers of certain goods and services a specific amount for their production, allowing these producers to price their goods and services lower than they could normally

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Non-Tariff Barriers

- **Direct Government Intervention (continued):**
  - **Aid**: Policies that provide monetary aid to supporting industries, independent of production, in contrast to subsidies
  - **Industrial Policy**: Governmental policy whereby industrial stimulus is provided to domestic producers
  - **Regional Development Measures**: Government policy undertaken to stimulate development of regions
  - **Government Financed Research**: Government policies finance domestic research
  - **Technology Policies**: Government policies concerning technology, including research, limitations on export, and subsidies
  - **National Taxes and Social Insurance**: Government policy to support the well-being of its residents through social insurance, and policies that tax the nation to provide services
  - **Competition Policies**: Government policies that create monopolies or restrict them
  - **Immigration Policies**: Government policies that restrict or allow the movement of people across its borders
  - **Government Procurement Policies**: Government Policies that determine how the government purchases goods and services, often contain restrictions limiting them to domestic producers
  - **State Trading**: Government activity in trading
  - **Government Monopolies**: Enterprises owned by the government or part of the government that have a mandated ownership of a market that cannot be breached by domestic or foreign producers
  - **Government Exclusive Franchises**: Similar to government monopolies, these are areas where the government has the sole right to operate in a market

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Velocity of Money: Methodology

$$\text{Method 1:} \quad V_t = \frac{nT}{M}$$

$$nT = P \times T$$

$$\text{Method 2:} \quad V = \frac{nQ}{M}$$

- **V_t** = velocity of money for all transactions
- **nT** = nominal value of all transactions contributing towards GDP
- **M** = money supply
- **P** = price level
- **T** = real aggregate value of transactions
- **V** = velocity of money for GDP
- **nQ** = nominal GDP

- The first and third equations show the two different methods for calculating Velocity of Money, either by using transactions or by using GDP

- The second equation shows a method for determining the nominal value of transactions using the price level and the aggregate value of transactions

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology; http://www.econbrowser.com/archives/2010/12/velocity_of_mon.htmly

Business Freedom: Sourcing

- The following sources were used to determine Business Freedom (in order of priority):
  - World Bank, *Doing Business 2012*
  - Economist Intelligence Unit, *Country Report* 2008-2011
  - Economist Intelligence Unit, *Country Commerce* 2008-2011
  - U.S. Department of Commerce: *Country Commercial Guide* 2008-2011
  - Government publications of individual countries

- For 176 out of the 184 countries in The Index, the only data used was the World Bank's *Doing Business 2012* report.

- The other eight countries (Barbados, Burma, Cuba, North Korea, Libya, Macau, Malta, and Turkmenistan) required the use of the other sources to determine their score. The Index used this additional data to create scores for these countries in line with the scores that the *Doing Business 2012* report gave out

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Labor Freedom: Sourcing

- Sources for the data for Labor Freedom (in order of priority):
  - World Bank, *Doing Business 2012*
  - Economist Intelligence Unit, *Country Report* 2008-2011
  - Economist Intelligence Unit, *Country Commerce* 2008-2011
  - U.S. Department of Commerce, *Country Commercial Guide* 2008-2011
  - Official Government Publications

- The primary source of information was the World Bank's *Doing Business 2012* report. The other sources were used when there was insufficient data from the World Bank

Labor Freedom: World Bank's *Doing Business 2012* Report

- Since 2009, The World Bank Group has temporarily stopped including Employing Workers as a factor in the aggregate ranking of an economy's ease of doing business
- The World Bank Group is working with a consultative group to research the Employing Workers methodology in hopes of deriving an improved model for measuring regulations of employment in the future
- Data regarding the rigidity of employment based on a detailed survey of employment regulations, completed by local lawyers and public officials, was still included in an annex report, just not as a factor in the ease of doing business rankings, therefore the Heritage Foundation was able to obtain the data and calculate the factor as usual
- The minimum wage ratio calculations were modified to ensure that no country could receive a high score from the lack of a minimum wage, a regulatory mechanism for minimum wage instead of a stated rate, a customary minimum wage not stated in the law, or a minimum wage that exists but is not enforced in practice
- A threshold was installed for paid annual lead and a ceiling for working days allowed per week to ensure that no country is rewarded in excess in either of these areas
- The calculations of redundancy cost and annual leave period were changed to calculate the average value of each for a worker with one, five, and ten years of tenure, rather than simply 20 years

Source: "Employing Workers Methodology" in *Doing Business 2012* by The World Bank

Monetary Freedom: Sourcing

- Sources for the data for Monetary Freedom include:
  - International Monetary Fund, *International Financial Statistics Online*
  - *International Monetary Fund, World Economic Outlook, April 2011*
  - *Economist Intelligence Unit, Country Report, 2006–2011*
  - *Other official government publications of each country*

Sources: Price Controls in The Concise Encyclopedia of Economics and *Heritage Foundation's 2012 Index of Economic Freedom Methodology*

Trade Freedom: Sourcing

- The following sources were used to determine trade data (in order of priority):
  - World Bank, *World Development Indicators 2011*
  - World Trade Organization, *Trade Policy Review* 1995-2011
  - Office of the U.S. Trade Representative, *2011 National Trade Estimate Report on Foreign Trade Barriers*
  - World Bank, *Doing Business* 2011 and 2012
  - U.S. Department of Commerce, *Country Commercial Guide* 2008-2011
  - Economist Intelligence Unit, *Country Report* 2008-2011
  - Economist Intelligence Unit, *Country Commerce* 2008-2011
  - World Bank, *Data on Trade and Import Barriers: Trends in Average Applied Tariff Rates in Developing and Industrial Countries* 1981-2009
  - Official government Publications

- Tariff data is more difficult to obtain than most other data. For this section, if the trade-weighted average was not available then The Index used the average applied tariff rate or the simple average of most favored nation tariff rates. Additionally, if no data on duties or customs revenues were available, then The Index used international trade taxes or estimated effective tariff rates. Most data came from the World Bank, but when circumstances like those mentioned here dictated it, The Index used data from the other sources in the list

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Investment Freedom: Sourcing

- The following sources were used to determine Investment Freedom (in order of priority):
  - Official Government Publications
  - Economist Intelligence Unit, *Country Commerce* 2008-2011
  - Economist Intelligence Unit, *Country Report* 2008-2011
  - Office of the U.S. Trade Representative, *2011 National Trade Estimate Report on Foreign Trade Barriers*
  - U.S. Department of Commerce, *Country Commercial Guide* 2008-2011

Source: Heritage Foundation's 2012 Index of Economic Freedom, Methodology

Financial Freedom: Sourcing

- The following sources were used to determine Financial Freedom data (in order of priority):
  - Economist Intelligence Unit, *Country Commerce* 2008-2011
  - Economist Intelligence Unit, *Country Finance* 2008-2011
  - Economist Intelligence Unit, *Country Report* 2008-2011
  - International Monetary Fund, *Staff Country Report* "Selected Issues" 2008-2011
  - International Monetary Fund, *Staff Country Report* "Article IV Consultation" 2008-2011
  - Organisation for Economic Co-operation and Development, *Economic Survey*
  - Official government publications
  - U.S. Department of Commerce, *Country Commercial Guide* 2008-2011
  - Office of the U.S. Trade Representative, *2011 National Trade Estimate Report on Foreign Trade Barriers*
  - U.S. Department of State, *Investment Climate Statements* 2008-2011
  - World Bank, *World Development Indicators 2011*
  - Various news stories on banking and finance
  - Various magazine articles on banking and finance

Data Collection Phase Appendix

Data Excluded

- The eight countries excluded from Transparency International's CPI data collection are Belize, Burma, The Bahamas, Fiji, Micronesia, North Korea, Saint Lucia, Saint Vincent and the Grenadines, and Suriname

- The eight countries excluded from The World Bank Group's *Doing Business 2012* report data collection are Barbados, Burma, Cuba, North Korea, Libya, Macau, Malta, and Turkmenistan

- The six countries excluded from the IMF database are Cuba, North Korea, Lichtenstein, Macau, Micronesia, and Somalia

- The following countries were excluded due to missing Index factor data over the period 1995-2012:

1. Afghanistan
2. Armenia
3. Azerbaijan
4. Barbados
5. Belgium
6. Benin
7. Bhutan
8. Bosnia and Herzegovina
9. Burkina Faso
10. Burma
11. Burundi
12. Cambodia
13. Cape Verde
14. Central African Republic
15. Chad
16. Comoros
17. Croatia
18. Cyprus
19. Denmark
20. Djibouti
21. Dominica
22. Equatorial Guinea
23. Eritrea
24. Finland
25. Georgia
26. Guinea-Bissau
27. Iceland
28. Iran
29. Iraq
30. Kazakhstan
31. Kiribati
32. Kuwait
33. Kyrgyz Republic
34. Laos
35. Latvia
36. Lebanon
37. Lesotho
38. Liberia
39. Libya
40. Liechtenstein
41. Lithuania
42. Luxembourg
43. Macau
44. Macedonia
45. Maldives
46. Mauritania
47. Mauritius
48. Micronesia
49. Montenegro
50. Namibia
51. Nepal
52. New Zealand
53. Niger
54. Norway
55. Papua New Guinea
56. Qatar
57. Republic of Congo
58. Rwanda
59. Saint Lucia
60. Saint Vincent and the Grenadines
61. Samoa
62. San Tome and Principe
63. Saudi Arabia
64. Senegal
65. Serbia
66. Seychelles
67. Slovenia
68. Solomon Islands
69. Suriname
70. Switzerland
71. Syria
72. Tajikistan
73. The Gambia
74. The Netherlands
75. Timor-Leste
76. Togo
77. Tonga
78. Trinidad and Tobago
79. Turkmenistan
80. United Arab Emirates
81. Uzbekistan
82. Vanuatu

Classifying Countries: The World Bank

- We based our Country Classifications on The World Bank data
- The World Bank's main criterion for classifying a country's economy is gross national income (GNI) per capita
- Every economy is classified as low income, lower middle income, upper middle income, or high income based on their GNI per capita
  - These income categories are based on the Bank's operational lending categories (civil works preferences, IDA eligibility, etc.). These were established due to a need for the establishment of comparative estimates of economic capacity that would give poorer countries better conditions from the Bank
- GNI is considered to be the best single indicator of economic capacity and progress, but it is recognized that GNI alone does not determine the welfare or success of a country's people or economic development
- The per capita income thresholds were originally established by the Bank by identifying a stable relationship between a summary measure of well-being such as poverty incidence and economic variables such as GNI per capita, but are altered annually in order to remain consistent over time by accounting for factors such as inflation
  - Income classifications are set annually on July 1
- Groups based on geographical region are also used but only for those countries classified as "developing economies," i.e. low and middle income economies

Sources: http://data.worldbank.org/about/country-classifications/a-short-history and http://data.worldbank.org/about/country-classifications

Country Classification Groups

- The World Bank groups the countries based on income and geography for operational and analytical purposes:
  1. Income Group (per capita)
     - Low income: $1,005 or less (35)
     - Lower middle income: $1,006 - $3,975 (56)
     - Upper middle income: $3,976 - $12,275 (54)
     - High income: $12,276 or more (70)
  2. Geographic Region (developing only)
     - East Asia and Pacific (24)
     - Europe and Central Asia (23)
     - Latin America and the Caribbean (30)
     - Middle East and North Africa (13)
     - South Asia (8)
     - Sub-Saharan Africa (48)

- Since the World Bank's Geographic Regions classification only includes developing nations, we altered the groupings and added in the developed nations in different ways to achieve three groupings
  1. We combined the East Asia, South Asia, and Central Asia of the World Bank classifications into Asia & The Pacific. We added the developed nations into the groups based upon location to achieve **Geographic Classification**
  2. We added the OECD nations in their own category, developed. We changed the East Asia, South Asia, and Central Asia classifications of The World Bank into Central Asia & Eastern Europe and East Asia & The Pacific to achieve **Semi-Geographic Classification**
  3. We divided the nations by their primary colonizer, focusing on influence of law. England's colonies are divided into categories to reflect the different colonization strategies in each area. Group (1) follows the extractive patterns typical of colonization while Group (2) colonies developed more inclusive institutions

Sources: http://data.worldbank.org/about/country-classifications/a-short-history and http://data.worldbank.org/about/country-classifications

Income Classification

Income Classifications			
Low Income	Lower Middle Income	Upper Middle Income	Upper Income
12	25	28	26
Bangladesh	Bolivia	Albania	Australia
Ethiopia	Cameroon	Algeria	Austria
Guinea	Ivory Coast	Argentina	Bahrain
Haiti	Egypt	Belarus	Canada
Kenya	El Salvador	Botswana	Czech Republic
Madagascar	Ghana	Brazil	Estonia
Malawi	Guatemala	Bulgaria	France
Mali	Guyana	Chile	Germany
Mozambique	Honduras	China	Greece
Tanzania	India	Colombia	Hong Kong
Uganda	Indonesia	Costa Rica	Hungary
Zimbabwe	Moldova	Dominican Republic	Ireland
	Mongolia	Ecuador	Israel
	Morocco	Gabon	Italy
	Nicaragua	Jamaica	Japan
	Nigeria	Jordan	South Korea
	Pakistan	Malaysia	Oman
	Paraguay	Mexico	Poland
	The Philippines	Panama	Portugal
	Sri Lanka	Peru	Singapore
	Swaziland	Romania	Slovakia
	Ukraine	Russia	Spain
	Vietnam	South Africa	Sweden
	Yemen	Thailand	Taiwan
	Zambia	Tunisia	United Kingdom
		Turkey	United States
		Uruguay	
		Venezuela	

Sources: http://data.worldbank.org/about/country-classifications/country-and-lending-groups

Geographic Classification

Geographic Classifications				
Asia & The Pacific	Europe	Americas	Middle East and North Africa	Sub-Saharan Africa
17	21	23	11	19
Australia	Albania	Argentina	Algeria	Botswana
Bangladesh	Austria	Bolivia	Bahrain	Cameroon
China	Belarus	Brazil	Egypt	Ivory Coast
Hong Kong	Bulgaria	Canada	Israel	Ethiopia
India	Czech Republic	Chile	Jordan	Gabon
Indonesia	Estonia	Colombia	Morocco	Ghana
Japan	France	Costa Rica	Oman	Guinea
Malaysia	Germany	Dominican Republic	Pakistan	Kenya
Mongolia	Greece	Ecuador	Turkey	Madagascar
The Philippines	Hungary	El Salvador	Tunisia	Malawi
Russia	Ireland	Guatemala	Yemen	Mali
Singapore	Italy	Guyana		Mozambique
South Korea	Moldova	Haiti		Nigeria
Sri Lanka	Poland	Honduras		South Africa
Taiwan	Portugal	Jamaica		Swaziland
Thailand	Romania	Mexico		Tanzania
Vietnam	Slovakia	Nicaragua		Uganda
	Spain	Panama		Zambia
	Sweden	Paraguay		Zimbabwe
	Ukraine	Peru		
	United Kingdom	United States		
		Uruguay		
		Venezuela		

Sources: http://data.worldbank.org/about/country-classifications/country-and-lending-groups

Semi-Geographic Classification

Semi-Geographic Classification					
Developed	Sub-Saharan Africa	East Asia & The Pacific	Middle East	Eastern Europe & Central Asia	Americas
23	20	9	10	8	21
Australia	Botswana	Bangladesh	Algeria	Albania	Argentina
Austria	Cameroon	China	Bahrain	Belarus	Bolivia
Canada	Ivory Coast	India	Egypt	Bulgaria	Brazil
Czech Republic	Ethiopia	Indonesia	Israel	Moldova	Chile
Estonia	Gabon	Japan	Jordan	Mongolia	Colombia
France	Ghana	Sri Lanka	Morocco	Romania	Costa Rica
Germany	Guinea	Thailand	Oman	Russia	Dominican Republic
Greece	Kenya	The Philippines	Pakistan	Ukraine	Ecuador
Hong Kong	Madagascar	Vietnam	Turkey		El Salvador
Hungary	Malawi		Yemen		Guatemala
Ireland	Mali				Guyana
Italy	Mozambique				Haiti
Malaysia	Nigeria				Honduras
Poland	South Africa				Jamaica
Portugal	Swaziland				Mexico
Singapore	Tanzania				Nicaragua
Slovakia	Tunisia				Panama
South Korea	Uganda				Paraguay
Spain	Zambia				Peru
Sweden	Zimbabwe				Uruguay
Taiwan					Venezuela
United Kingdom					
United States					

Sources: http://data.worldbank.org/about/country-classifications/country-and-lending-groups

Colonization Classification

Most Recent Colonial Ruler (if Applicable)							
United Kingdom	United Kingdom (2)	Spain	France	Portugal	Russia (Former U.S.S.R.)	Netherlands	N/A (Primarily Self-Ruling)
20	8	18	11	2	4	1	27
Bahrain	Australia	Argentina	Algeria	Brazil	Belarus	Indonesia	Albania
Bangladesh	Botswana	Bolivia	Cameroon	Mozambique	Estonia		Austria
Egypt	Canada	Chile	Gabon		Moldova		Bulgaria
Ghana	Hong Kong	Colombia	Guinea		Ukraine		China
Guyana	Ireland	Costa Rica	Haiti				Czech Republic
India	Singapore	Dominican Republic	Ivory Coast				Ethiopia
Jamaica	South Africa	Ecuador	Madagascar				France
Jordan	United States	El Salvador	Mali				Germany
Kenya		Guatemala	Morocco				Greece
Malawi		Honduras	Tunisia				Hungary
Malaysia		Mexico	Vietnam				Israel
Nigeria		Nicaragua					Italy
Oman		Panama					Japan
Pakistan		Paraguay					Mongolia
Sri Lanka		Peru					Poland
Swaziland		The Philippines					Portugal
Tanzania		Uruguay					Romania
Uganda		Venezuela					Russia
Zambia							Slovakia
Zimbabwe							South Korea
							Spain
							Sweden
							Taiwan
							Thailand
							Turkey
							United Kingdom
							Yemen

Data Analysis Phase Appendix

Upper Income Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.745	1.000										
Trade Freedom	0.502	0.371	1.000									
Fiscal Freedom	0.510	0.323	0.194	1.000								
Government Spending	0.684	0.421	0.236	0.750	1.000							
Monetary Freedom	0.367	0.163	0.259	0.005	0.156	1.000						
Investment Freedom	0.461	0.336	0.381	(0.032)	0.079	(0.116)	1.000					
Financial Freedom	0.605	0.362	0.244	0.146	0.170	0.107	0.404	1.000				
Property Rights	0.645	0.518	0.210	(0.163)	0.182	0.339	0.406	0.405	1.000			
Freedom from Corruption	0.592	0.509	0.289	(0.090)	0.028	0.423	0.204	0.336	0.678	1.000		
GDP Growth	0.070	0.012	(0.186)	0.190	0.201	(0.067)	(0.010)	0.026	(0.063)	(0.076)	1.000	
Real GDP per Capita	0.379	0.348	0.334	(0.389)	(0.115)	0.469	0.212	0.335	0.605	0.631	(0.230)	1.000

Positive correlation greater than 0.7=
Negative correlation greater than 0.7=

Upper-Middle Income Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.607	1.000										
Trade Freedom	0.290	0.082	1.000									
Fiscal Freedom	0.367	0.047	0.247	1.000								
Government Spending	0.394	0.033	(0.016)	0.313	1.000							
Monetary Freedom	0.624	0.305	(0.002)	0.324	0.400	1.000						
Investment Freedom	0.603	0.375	0.073	0.038	0.060	0.115	1.000					
Financial Freedom	0.584	0.356	0.042	0.021	0.060	0.186	0.537	1.000				
Property Rights	0.669	0.501	0.133	(0.040)	0.032	0.108	0.445	0.376	1.000			
Freedom from Corruption	0.653	0.358	0.067	0.039	0.068	0.396	0.267	0.235	0.593	1.000		
GDP Growth	(0.116)	(0.162)	(0.054)	0.097	0.022	0.098	(0.231)	(0.168)	(0.174)	0.003	1.000	
Real GDP per Capita	0.237	0.159	0.331	0.057	0.062	0.083	(0.001)	0.027	0.247	0.283	(0.088)	1.000

Positive correlation greater than 0.7=
Negative correlation greater than 0.7=

Lower-Middle Income Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.471	1.000										
Trade Freedom	0.467	0.149	1.000									
Fiscal Freedom	0.472	0.078	0.453	1.000								
Government Spending	0.377	(0.030)	(0.032)	0.181	1.000							
Monetary Freedom	0.426	0.005	0.054	0.128	0.291	1.000						
Investment Freedom	0.555	0.309	(0.024)	0.144	0.086	0.051	1.000					
Financial Freedom	0.717	0.216	0.380	0.221	0.178	0.241	0.416	1.000				
Property Rights	0.448	0.366	(0.074)	(0.053)	(0.110)	(0.061)	0.364	0.241	1.000			
Freedom from Corruption	0.432	0.309	0.107	(0.072)	(0.118)	0.015	0.144	0.290	0.465	1.000		
GDP Growth	(0.117)	(0.096)	(0.144)	0.078	0.067	0.198	(0.223)	(0.215)	(0.137)	(0.076)	1.000	
Real GDP per Capita	0.508	0.322	0.337	0.230	0.222	0.284	0.213	0.328	0.132	0.223	(0.147)	1.000

Positive correlation greater than 0.7=
Negative correlation greater than 0.7=

Lower Income Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.548	1.000										
Trade Freedom	0.340	(0.147)	1.000									
Fiscal Freedom	0.306	(0.064)	0.160	1.000								
Government Spending	(0.076)	(0.091)	(0.204)	0.220	1.000							
Monetary Freedom	0.479	0.307	(0.077)	0.011	0.040	1.000						
Investment Freedom	0.713	0.375	0.137	0.044	(0.241)	0.352	1.000					
Financial Freedom	0.675	0.160	0.148	0.126	(0.140)	0.257	0.474	1.000				
Property Rights	0.627	0.664	(0.106)	(0.068)	(0.301)	0.180	0.574	0.338	1.000			
Freedom from Corruption	0.356	0.183	0.045	0.065	(0.344)	0.023	0.151	0.198	0.356	1.000		
GDP Growth	0.055	0.094	0.034	0.061	(0.205)	0.041	0.129	(0.022)	0.065	(0.006)	1.000	
Real GDP per Capita	0.069	(0.195)	0.213	0.323	0.260	0.075	(0.047)	0.072	(0.269)	(0.256)	(0.188)	1.000

Positive correlation greater than 0.7=
Negative correlation greater than 0.7=

Geographic: Asia and the Pacific Correlations

	overall score	business freedom	trade freedom	fiscal freedom	government spending	monetary freedom	investment freedom	financial freedom	property rights	freedom from corruption	GDP Growth	Real GDP Per Capita
overall score	1											
business freedom	0.899170269	1										
trade freedom	0.727877462	0.62979148	1									
fiscal freedom	0.341149221	0.30322474	0.24884522	1								
government spending	0.057981972	-0.0675518	-0.1546097	0.44825112	1							
monetary freedom	0.559646016	0.37553102	0.37773973	0.1079863	0.22829838	1						
investment freedom	0.810733027	0.70413026	0.46071523	0.25320205	0.01059787	0.27064113	1					
financial freedom	0.793472523	0.67780802	0.55882339	0.07028426	-0.1440871	0.26895796	0.73132116	1				
property rights	0.87709494	0.81456132	0.53764129	0.10231844	-0.1172997	0.41433426	0.74334702	0.70637138	1			
freedom from corruption	0.894922871	0.83761997	0.65161253	0.09317697	-0.1855648	0.49166714	0.67033214	0.70302645	0.82551164	1		
GDP Growth	-0.225822404	-0.2418893	-0.240625	-0.0064241	0.14240289	0.04304478	-0.2385463	-0.2454892	-0.2871995	-0.1686501	1	
Real GDP Per Capita	0.780006782	0.7171433	0.56155313	-0.0302603	-0.2516998	0.49510871	0.6370899	0.64520361	0.75155737	0.84500361	-0.2544919	1

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Geographic: Europe Correlations

	overall score	business freedom	trade freedom	fiscal freedom	government spending	monetary freedom	investment freedom	financial freedom	property rights	freedom from corruption	GDP Growth	Real GDP Per Capita
overall score	1											
business freedom	0.75579334	1										
trade freedom	0.63865603	0.44807926	1									
fiscal freedom	0.00400349	-0.1675487	-0.0068291	1								
government spending	-0.0378652	-0.2196104	-0.0969796	0.66231372	1							
monetary freedom	0.73587763	0.4582011	0.5592788	-0.0576705	-0.2100121	1						
investment freedom	0.74493978	0.61151053	0.32633183	-0.1647435	-0.129053	0.38134547	1					
financial freedom	0.7915965	0.57125457	0.45050676	-0.064511	-0.1291937	0.45983564	0.62703523	1				
property rights	0.77039157	0.70697759	0.42500282	-0.4847302	-0.4394307	0.5114718	0.67270595	0.62037579	1			
freedom from corruption	0.74769073	0.64018942	0.48511173	-0.4827188	-0.4999914	0.57823761	0.56661787	0.56254957	0.85777972	1		
GDP Growth	-0.0172571	-0.102029	-0.1342891	0.20205612	0.15221635	0.06623174	-0.1149765	-0.0262461	-0.1390577	-0.119262	1	
Real GDP Per Capita	0.6795433	0.66775191	0.45874987	-0.6031585	-0.4670681	0.5723365	0.54283826	0.52989182	0.81779307	0.861609	-0.2230732	1

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Geographic: Americas Correlations

	overall score	business freedom	trade freedom	fiscal freedom	government spending	monetary freedom	investment freedom	financial freedom	property rights	freedom from corruption	GDP Growth	Real GDP Per Capita
overall score	1											
business freedom	0.76748686	1										
trade freedom	0.46231976	0.2997613	1									
fiscal freedom	-0.0185619	-0.2413508	-0.0410308	1								
government spending	-0.025219	-0.2974929	-0.0926854	0.58222907	1							
monetary freedom	0.55286635	0.35548659	0.28897298	-0.118566	-0.1653767	1						
investment freedom	0.70291546	0.47181533	0.13983166	0.13489485	0.03217217	0.26512296	1					
financial freedom	0.70551503	0.53300186	0.24129535	-0.0452966	-0.0975515	0.4826237	0.47683857	1				
property rights	0.79996796	0.73553387	0.31330836	-0.3347843	-0.3570254	0.29063042	0.48074472	0.43978917	1			
freedom from corruption	0.76914938	0.68465948	0.39710288	-0.3666251	-0.338649	0.39007747	0.31425964	0.40933625	0.83355625	1		
GDP Growth	-0.1060274	-0.0776594	-0.0345755	0.05761636	0.0518082	0.00095271	-0.1379453	-0.1340027	-0.1047878	-0.0012203	1	
Real GDP Per Capita	0.58698175	0.65069678	0.42324079	-0.4396795	-0.3654664	0.30710773	0.1629265	0.39588894	0.68040945	0.7698955	-0.0603432	1

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Geographic: Middle East and North Africa Correlations

	overall score	business freedom	trade freedom	fiscal freedom	government spending	monetary freedom	investment freedom	financial freedom	property rights	freedom from corruption	GDP Growth	Real GDP Per Capita
overall score	1											
business freedom	0.63318748	1										
trade freedom	0.47676741	0.27484125	1									
fiscal freedom	0.4248122	0.12564577	0.26180888	1								
government spending	-0.0744717	-0.0207943	-0.3617286	0.28761358	1							
monetary freedom	0.44765291	0.27346109	-0.0418981	0.25306533	-0.0618684	1						
investment freedom	0.26101398	0.16503762	-0.0025583	-0.4558819	-0.3489428	-0.0378459	1					
financial freedom	0.70849895	0.35154766	0.18324837	0.15042411	0.00398167	0.07914896	0.36072058	1				
property rights	0.63959945	0.36364316	0.3570323	-0.1579266	-0.4000783	0.05224109	0.4148231	0.58215878	1			
freedom from corruption	0.77882722	0.48800379	0.34401932	0.23971366	-0.3456719	0.5295463	0.1258762	0.38737819	0.55283928	1		
GDP Growth	-0.0044455	-0.0469262	-0.0194142	0.07568588	0.00083256	0.01400803	-0.034174	0.1114222	-0.0736988	-0.0523123	1	
Real GDP Per Capita	0.6656134	0.45842606	0.66655208	0.15716812	-0.5647185	0.24643373	0.28328734	0.38217193	0.59766182	0.68234847	-0.0006361	1

Positive correlation greater than 0.7
Negative correlation greater than 0.7

Geographic: Sub-Saharan Africa Correlations

	overall score	business freedom	trade freedom	fiscal freedom	government spending	monetary freedom	investment freedom	financial freedom	property rights	freedom from corruption	GDP Growth	Real GDP Per Capita
overall score	1											
business freedom	0.5670174	1										
trade freedom	0.41952347	-0.0584697	1									
fiscal freedom	0.27536251	-0.0496804	0.33293242	1								
government spending	-0.0918401	-0.2084447	-0.1133373	-0.1430093	1							
monetary freedom	0.27462357	0.16419755	-0.0338051	-0.149719	0.23868319	1						
investment freedom	0.60291223	0.40519174	0.09961631	0.024067	-0.212836	0.01711491	1					
financial freedom	0.6222926	0.12602785	0.13705188	0.03038656	-0.0467638	0.1009085	0.33252665	1				
property rights	0.62748671	0.60949083	0.00848417	0.07405273	-0.3903384	-0.0813553	0.49707529	0.29596517	1			
freedom from corruption	0.49943539	0.37289469	-0.00213	-0.0418338	-0.452732	-0.0926756	0.3029286	0.33419545	0.52534081	1		
GDP Growth	-0.1122184	-0.0818624	0.08464735	0.29129745	-0.0727751	-0.044412	-0.0897687	-0.1759436	-0.1335558	-0.1892833	1	
Real GDP Per Capita	0.42922141	0.44938352	-0.0618538	-0.295401	-0.2788947	0.23106249	0.27623702	0.28073329	0.43781137	0.61222448	-0.2070396	1

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Semi-Geographic: Developed Nations Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.772	1.000										
Trade Freedom	0.551	0.444	1.000									
Fiscal Freedom	0.616	0.433	0.380	1.000								
Government Spending	0.705	0.426	0.302	0.782	1.000							
Monetary Freedom	0.401	0.175	0.339	(0.006)	0.173	1.000						
Investment Freedom	0.581	0.431	0.391	0.322	0.264	(0.009)	1.000					
Financial Freedom	0.630	0.411	0.313	0.232	0.201	0.192	0.437	1.000				
Property Rights	0.735	0.601	0.208	0.112	0.339	0.388	0.386	0.436	1.000			
Freedom from Corruption	0.624	0.585	0.328	(0.052)	0.072	0.422	0.289	0.388	0.739	1.000		
GDP Growth	0.085	0.021	(0.179)	0.155	0.213	(0.026)	(0.012)	(0.007)	0.006	(0.037)	1.000	
Real GDP per Capita	0.411	0.410	0.332	(0.294)	(0.064)	0.499	0.186	0.388	0.558	0.663	(0.179)	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Semi-Geographic: Sub-Saharan Africa Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.574	1.000										
Trade Freedom	0.364	(0.122)	1.000									
Fiscal Freedom	0.270	(0.036)	0.322	1.000								
Government Spending	(0.115)	(0.233)	(0.070)	(0.137)	1.000							
Monetary Freedom	0.294	0.225	(0.088)	(0.143)	0.197	1.000						
Investment Freedom	0.589	0.355	0.054	0.005	(0.233)	0.026	1.000					
Financial Freedom	0.604	0.097	0.111	0.016	(0.061)	0.085	0.376	1.000				
Property Rights	0.630	0.599	(0.017)	0.076	(0.397)	(0.052)	0.467	0.277	1.000			
Freedom from Corruption	0.513	0.438	(0.073)	(0.036)	(0.466)	(0.013)	0.285	0.294	0.532	1.000		
GDP Growth	(0.108)	(0.074)	0.081	0.289	(0.075)	(0.042)	(0.084)	(0.162)	(0.132)	(0.177)	1.000	
Real GDP per Capita	0.428	0.464	(0.097)	(0.281)	(0.262)	0.258	0.252	0.239	0.437	0.599	(0.193)	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Semi-Geographic: East Asia Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.843	1.000										
Trade Freedom	0.670	0.477	1.000									
Fiscal Freedom	0.149	0.009	0.114	1.000								
Government Spending	(0.434)	(0.554)	(0.337)	0.276	1.000							
Monetary Freedom	0.606	0.473	0.353	(0.178)	(0.454)	1.000						
Investment Freedom	0.558	0.323	0.115	0.077	(0.148)	0.292	1.000					
Financial Freedom	0.702	0.564	0.420	0.009	(0.175)	0.293	0.439	1.000				
Property Rights	0.850	0.741	0.327	0.023	(0.437)	0.509	0.585	0.532	1.000			
Freedom from Corruption	0.778	0.757	0.499	(0.203)	(0.712)	0.640	0.257	0.432	0.683	1.000		
GDP Growth	(0.536)	(0.455)	(0.362)	(0.033)	0.275	(0.274)	(0.444)	(0.352)	(0.516)	(0.358)	1.000	
Real GDP per Capita	0.619	0.630	0.419	(0.295)	(0.786)	0.652	0.293	0.251	0.591	0.810	(0.432)	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Semi-Geographic: Middle East Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.656	1.000										
Trade Freedom	0.537	0.410	1.000									
Fiscal Freedom	0.430	0.137	0.270	1.000								
Government Spending	(0.067)	(0.051)	(0.380)	0.291	1.000							
Monetary Freedom	0.462	0.256	0.046	0.267	(0.081)	1.000						
Investment Freedom	0.251	0.215	0.007	(0.481)	(0.330)	(0.031)	1.000					
Financial Freedom	0.719	0.391	0.223	0.166	0.041	0.095	0.300	1.000				
Property Rights	0.643	0.381	0.400	(0.158)	(0.405)	0.054	0.450	0.606	1.000			
Freedom from Corruption	0.788	0.491	0.444	0.248	(0.361)	0.521	0.138	0.408	0.557	1.000		
GDP Growth	(0.007)	(0.055)	(0.016)	0.079	0.004	0.009	(0.037)	0.105	(0.075)	(0.057)	1.000	
Real GDP per Capita	0.679	0.523	0.687	0.153	(0.564)	0.285	0.303	0.396	0.605	0.714	0.003	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Semi-Geographic: Eastern Europe and Central Asia Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.395	1.000										
Trade Freedom	0.503	0.100	1.000									
Fiscal Freedom	0.588	0.119	0.183	1.000								
Government Spending	0.498	0.062	0.007	0.406	1.000							
Monetary Freedom	0.778	0.074	0.420	0.632	0.416	1.000						
Investment Freedom	0.384	0.346	(0.090)	(0.077)	0.175	(0.017)	1.000					
Financial Freedom	0.582	0.246	0.315	0.065	0.145	0.184	0.433	1.000				
Property Rights	0.010	0.214	(0.133)	(0.362)	(0.199)	(0.318)	0.197	0.255	1.000			
Freedom from Corruption	0.300	(0.120)	0.332	(0.053)	(0.173)	0.136	0.029	0.200	0.190	1.000		
GDP Growth	0.134	(0.099)	0.016	0.250	0.107	0.304	(0.148)	(0.068)	(0.182)	(0.010)	1.000	
Real GDP per Capita	0.030	(0.062)	(0.131)	0.342	0.161	0.130	(0.089)	(0.138)	(0.529)	(0.040)	0.091	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Semi-Geographic: Americas Correlations

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.687	1.000										
Trade Freedom	0.328	0.092	1.000									
Fiscal Freedom	0.265	0.017	0.169	1.000								
Government Spending	0.243	(0.055)	0.104	0.466	1.000							
Monetary Freedom	0.508	0.255	0.209	0.044	(0.031)	1.000						
Investment Freedom	0.761	0.521	0.107	0.189	0.044	0.266	1.000					
Financial Freedom	0.652	0.437	0.113	0.159	0.068	0.433	0.479	1.000				
Property Rights	0.737	0.608	0.105	(0.064)	(0.107)	0.155	0.554	0.305	1.000			
Freedom from Corruption	0.720	0.508	0.194	(0.018)	0.019	0.280	0.399	0.258	0.730	1.000		
GDP Growth	(0.074)	(0.040)	0.004	0.067	0.033	0.018	(0.126)	(0.112)	(0.083)	0.059	1.000	
Real GDP per Capita	0.383	0.523	0.152	(0.104)	0.045	0.017	0.164	0.003	0.493	0.573	0.084	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Colonization: UK (1)

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.740	1.000										
Trade Freedom	0.573	0.433	1.000									
Fiscal Freedom	0.576	0.367	0.387	1.000								
Government Spending	0.229	0.068	(0.159)	0.226	1.000							
Monetary Freedom	0.652	0.426	0.181	0.355	0.194	1.000						
Investment Freedom	0.539	0.255	0.100	0.065	0.051	0.315	1.000					
Financial Freedom	0.697	0.388	0.353	0.228	0.017	0.349	0.515	1.000				
Property Rights	0.689	0.553	0.201	0.122	(0.015)	0.434	0.514	0.464	1.000			
Freedom from Corruption	0.637	0.576	0.460	0.423	(0.187)	0.234	0.095	0.377	0.521	1.000		
GDP Growth	0.181	(0.036)	(0.047)	0.229	0.234	0.385	0.081	0.081	0.058	(0.064)	1.000	
Real GDP per Capita	0.635	0.610	0.451	0.640	(0.103)	0.360	0.075	0.360	0.400	0.731	0.013	1.000

Positive correlation greater than 0.7
Negative correlation greater than 0.7

Colonization: UK (2)

Colonization: Spain

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.626	1.000										
Trade Freedom	0.317	0.091	1.000									
Fiscal Freedom	0.132	(0.124)	0.116	1.000								
Government Spending	0.216	(0.049)	(0.024)	0.053	1.000							
Monetary Freedom	0.553	0.260	0.214	0.107	0.127	1.000						
Investment Freedom	0.727	0.392	0.079	0.206	0.085	0.234	1.000					
Financial Freedom	0.601	0.350	0.126	0.161	0.106	0.495	0.394	1.000				
Property Rights	0.753	0.522	0.108	(0.077)	0.044	0.160	0.483	0.189	1.000			
Freedom from Corruption	0.711	0.444	0.225	(0.093)	0.018	0.307	0.346	0.159	0.678	1.000		
GDP Growth	(0.144)	(0.084)	(0.032)	0.024	(0.025)	0.017	(0.165)	(0.175)	(0.126)	0.033	1.000	
Real GDP per Capita	0.273	0.465	0.149	(0.312)	(0.101)	(0.031)	0.068	(0.104)	0.401	0.532	0.023	1.000

Positive correlation greater than 0.7
Negative correlation greater than 0.7

Colonization: France

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.667	1.000										
Trade Freedom	0.074	(0.289)	1.000									
Fiscal Freedom	0.112	(0.042)	0.360	1.000								
Government Spending	(0.372)	(0.622)	0.223	0.176	1.000							
Monetary Freedom	0.550	0.365	(0.139)	(0.116)	(0.321)	1.000						
Investment Freedom	0.698	0.552	(0.204)	(0.285)	(0.448)	0.488	1.000					
Financial Freedom	0.570	0.195	(0.182)	(0.269)	(0.058)	0.316	0.464	1.000				
Property Rights	0.776	0.702	(0.279)	(0.165)	(0.391)	0.359	0.622	0.419	1.000			
Freedom from Corruption	0.580	0.577	(0.315)	(0.100)	(0.675)	0.318	0.414	0.239	0.546	1.000		
GDP Growth	(0.129)	0.051	0.001	(0.046)	(0.185)	(0.007)	(0.023)	(0.207)	(0.067)	(0.036)	1.000	
Real GDP per Capita	0.286	0.355	(0.281)	(0.253)	(0.428)	0.235	0.249	0.101	0.382	0.595	(0.113)	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Colonization: Portugal

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.674	1.000										
Trade Freedom	(0.011)	(0.139)	1.000									
Fiscal Freedom	0.718	0.741	(0.294)	1.000								
Government Spending	(0.208)	(0.113)	(0.206)	0.232	1.000							
Monetary Freedom	0.604	(0.006)	0.226	0.132	(0.187)	1.000						
Investment Freedom	0.579	0.287	(0.158)	0.477	(0.216)	0.218	1.000					
Financial Freedom	0.450	0.152	(0.496)	0.434	(0.012)	0.165	0.707	1.000				
Property Rights	0.460	0.665	(0.149)	0.310	(0.485)	(0.140)	0.044	0.000	1.000			
Freedom from Corruption	0.729	0.648	(0.049)	0.527	(0.395)	0.145	0.378	0.254	0.758	1.000		
GDP Growth	(0.378)	(0.535)	0.071	(0.220)	0.256	0.086	(0.175)	(0.164)	(0.659)	(0.461)	1.000	
Real GDP per Capita	0.466	0.621	(0.091)	0.253	(0.562)	(0.082)	0.050	(0.008)	0.992	0.756	(0.630)	1.000

Positive correlation greater than 0.7
Negative correlation greater than 0.7

Colonization: USSR

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.737	1.000										
Trade Freedom	0.704	0.318	1.000									
Fiscal	0.588	0.126	0.575	1.000								
Government Spending	0.416	0.141	0.177	0.326	1.000							
Monetary Freedom	0.696	0.276	0.590	0.680	0.375	1.000						
Investment Freedom	0.808	0.786	0.396	0.162	0.162	0.245	1.000					
Financial Freedom	0.840	0.698	0.629	0.267	0.232	0.387	0.819	1.000				
Property Rights	0.834	0.815	0.462	0.196	0.276	0.292	0.873	0.858	1.000			
Freedom from Corruption	0.807	0.565	0.519	0.471	0.116	0.406	0.798	0.658	0.735	1.000		
GDP Growth	0.133	(0.015)	0.154	0.195	0.052	0.280	(0.049)	0.033	(0.066)	0.098	1.000	
Real GDP per Capita	0.722	0.602	0.417	0.410	(0.002)	0.430	0.714	0.622	0.659	0.788	0.146	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Colonization: Netherlands

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.455	1.000										
Trade Freedom	0.032	(0.271)	1.000									
Fiscal Freedom	0.436	0.258	0.573	1.000								
Government Spending	0.535	0.072	0.134	0.019	1.000							
Monetary Freedom	0.211	(0.204)	0.268	(0.242)	0.732	1.000						
Investment Freedom	0.839	0.637	(0.244)	0.409	0.134	(0.235)	1.000					
Financial Freedom	0.561	0.014	(0.295)	(0.076)	0.395	0.246	0.319	1.000				
Property Rights	0.791	0.475	(0.454)	0.098	0.149	(0.149)	0.866	0.545	1.000			
Freedom from Corruption	0.132	(0.301)	0.566	0.420	0.242	0.088	(0.130)	(0.188)	(0.174)	1.000		
GDP Growth	(0.547)	(0.199)	(0.157)	(0.340)	(0.354)	(0.032)	(0.413)	(0.164)	(0.320)	(0.537)	1.000	
Real GDP per Capita	(0.428)	(0.704)	0.418	(0.027)	(0.015)	0.263	(0.728)	0.105	(0.588)	0.294	0.408	1.000

Positive correlation greater than 0.7

Negative correlation greater than 0.7

Colonization: Self-Ruling

	Overall Score	Business Freedom	Trade Freedom	Fiscal Freedom	Government Spending	Monetary Freedom	Investment Freedom	Financial Freedom	Property Rights	Freedom from Corruption	GDP Growth	Real GDP per Capita
Overall Score	1.000											
Business Freedom	0.717	1.000										
Trade Freedom	0.659	0.514	1.000									
Fiscal Freedom	(0.130)	(0.271)	(0.224)	1.000								
Government Spending	(0.176)	(0.338)	(0.405)	0.661	1.000							
Monetary Freedom	0.626	0.317	0.404	(0.104)	(0.148)	1.000						
Investment Freedom	0.548	0.480	0.457	(0.339)	(0.493)	0.096	1.000					
Financial Freedom	0.653	0.471	0.440	(0.260)	(0.403)	0.223	0.532	1.000				
Property Rights	0.785	0.669	0.510	(0.518)	(0.450)	0.383	0.567	0.538	1.000			
Freedom from Corruption	0.728	0.591	0.537	(0.582)	(0.558)	0.510	0.448	0.480	0.793	1.000		
GDP Growth	(0.248)	(0.298)	(0.346)	0.233	0.282	(0.023)	(0.278)	(0.239)	(0.315)	(0.285)	1.000	
Real GDP per Capita	0.671	0.619	0.566	(0.594)	(0.575)	0.523	0.485	0.454	0.747	0.842	(0.336)	1.000

Positive correlation greater than 0.7
Negative correlation greater than 0.7

Model Creation Phase Appendix

Data Envelopment Analysis

- Data Envelopment Analysis (DEA) is commonly used to determine the efficiency of Decision Making Units (DMUs)

- DEA is an extreme point method that compares each DMU with the "best" DMUs
  - A fundamental assumption behind an extreme point method is that if a given DMU, A, is capable of producing Y(A) units of output with X(A) inputs, then other DMUs should be able to do the same if they were to operate efficiently
  - All DMUs can then be combined to form a composite DMU with composite inputs and composite outputs, sometimes called a virtual DMU since it does not necessarily exist

- The goal of DEA is to find the "best" virtual DMU for each real DMU. If the virtual DMU is better than the original, by either making more output with the same input or making the same output with less input, then the original DMU is *inefficient*

- The procedure of finding the best virtual producer can be formulated as a linear program:

$$Y\lambda \geq Y_0$$
$$\theta X_0 - X\lambda \geq 0$$
$$\lambda \geq 0$$

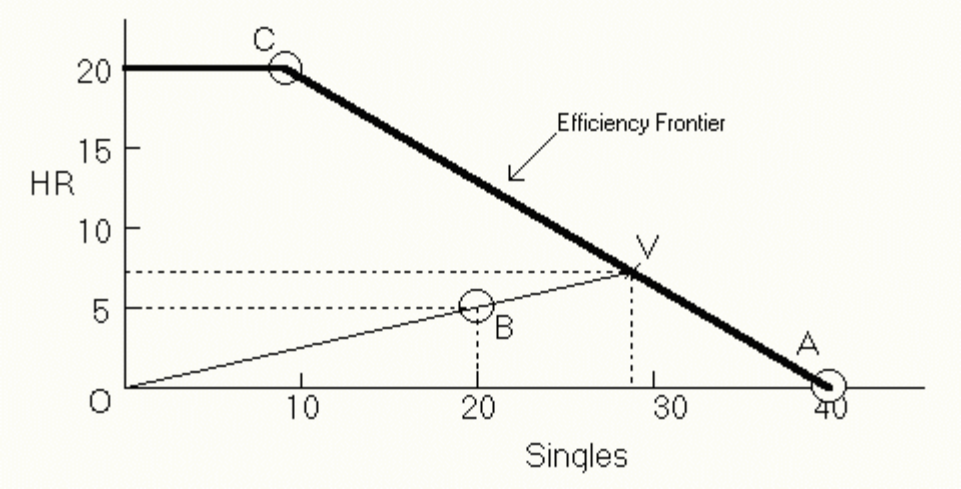
  - $\boldsymbol{\lambda}$= a vector describing the percentages of other DMUs used to construct the virtual DMU
  - $\boldsymbol{X}$ and $\boldsymbol{Y}$ describe the virtual inputs and outputs respectively
  - $\boldsymbol{X\lambda}$ and $\boldsymbol{Y\lambda} =$ the input and output vectors for the analyzed DMU
  - $\boldsymbol{\theta} =$ DMU efficiency

Sources: http://www.emp.pdx.edu/dea/homedea.html#Advantages

Data Envelopment Analysis: Efficiency Frontier

- The efficiency frontier defines the maximum combinations of outputs that can be produced for a given set of inputs

- The convex combination of DMUs are allowed and can be plotted on a graph, with the line equaling the efficiency frontier:



- The line segment connecting DMUs A and C shows the possibilities of virtual outputs that can be formed from these two DMUs (similar segments can be drawn between A/B and B/C)
  - Since the segment AC lies beyond the segments AB and BC, this means that a convex combination of A and C will create the most outputs for a given set of inputs

- This model assumes Constant Returns to Scale (CRS), meaning that the producers are able to linearly scale the inputs and outputs without increasing or decreasing efficiency

Sources: http://www.emp.pdx.edu/dea/homedea.html#Advantages

Data Envelopment Analysis: Strengths and Weaknesses

- As the earlier list of applications suggests, DEA can be a powerful tool when used wisely for the following reasons:
  - DEA can handle multiple input and multiple output models
  - It does not require an assumption of a functional form relating inputs to outputs
  - DMUs are directly compared against a peer or combination of peers
  - Inputs and outputs can have very different units. For example, X1 could be in units of lives saved and X2 could be in units of dollars without requiring an a priori tradeoff between the two

- The same characteristics that make DEA a powerful tool can also create problems. An analyst should keep these limitations in mind when choosing whether or not to use DEA:
  - Since DEA is an extreme point technique, noise (even symmetrical noise with zero mean) such as measurement error can cause significant problems
  - DEA is good at estimating "relative" efficiency of a DMU but it converges very slowly to "absolute" efficiency. In other words, it can tell you how well you are doing compared to your peers, but not compared to a "theoretical maximum"
  - Since DEA is a nonparametric technique, statistical hypothesis tests are difficult and are the focus of ongoing research
  - Since a standard formulation of DEA creates a separate linear program for each DMU, large problems can be computationally intensive

Sources: http://www.emp.pdx.edu/dea/homedea.html#Advantages

Neural Networks: The Basics

- An Artificial Neural Network – usually simply called a "neural network" – is a mathematical model or computational model that is inspired by the structure and/or functional aspects of biological neural networks of the kind found in the human brain

- Neural networks are non-linear statistical data modeling tools that are used to model complex relationships between inputs and outputs or to find hidden patterns in data

- Neural networks are based on the human brain - the most powerful computer on the planet. The human brain is made up of many neurons connected by synapses which allow humans to think. Various neurons are connected to each other, and together they allow for thought and the processing of sensory inputs

- Computers, for all their uses, are still merely machines that take an input, perform some mathematical calculations—since computers see data as numbers—and get an output

- In order to make computers more efficient, computer scientists developed the concept of artificial neural networks in an attempt to replicate the brain's decentralized and yet more powerful computational process

Neural Networks: The Basics

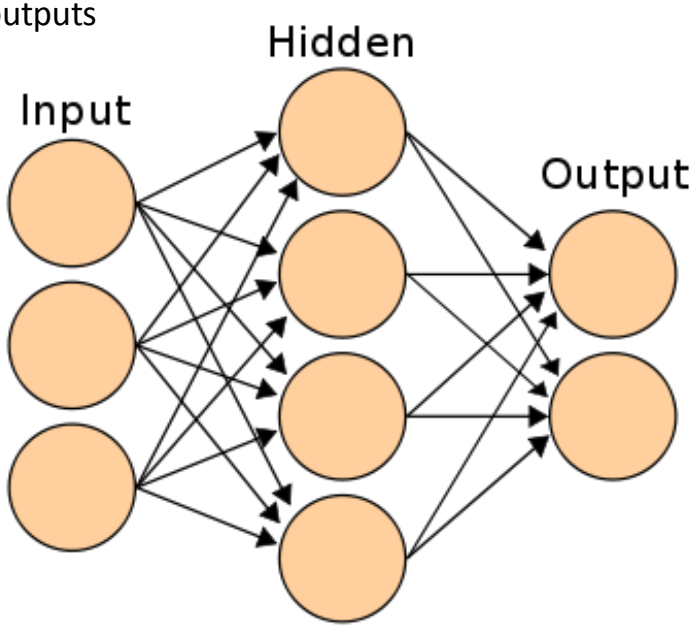
- The generalized method of artificial neural networks can be divided into three parts:
  - The inputs
  - The outputs
  - The "hidden" neurons

- The inputs and outputs are quite simply the independent and the dependent variables, respectively

- The "hidden" neurons are more difficult conceptually. In the brain, they comprise all the neurons that lead from the initial sensory input to the end result of the computation. The same is conceptually true for an artificial network. The "hidden" neurons are a collection of neurons that are connected to each other, to the inputs, and to the outputs

- When a neural network is created, the relative "weights" of connections between the inputs and the "hidden" neurons are undetermined

- When the network is subsequently "trained," the "hidden" neurons map the inputs to the outputs, determining the relative weights for each input. This is also referred to as "learning"



Graphic: http://en.wikipedia.org/wiki/Artificial_neural_network

Neural Networks Colonization Route Approach

Grouping	Real GDP per Capita w/in 0.5%	Predicted growth within 0.5%	Predicted growth error within 5%
UK 1	52.19%	49.67%	35.33%
UK 2	77.34%	76.67%	56.67%
Spain	70.44%	69.92%	76.56%
France	3.98%	4.24%	24.85%
USSR	28.13%	21.67%	30.00%

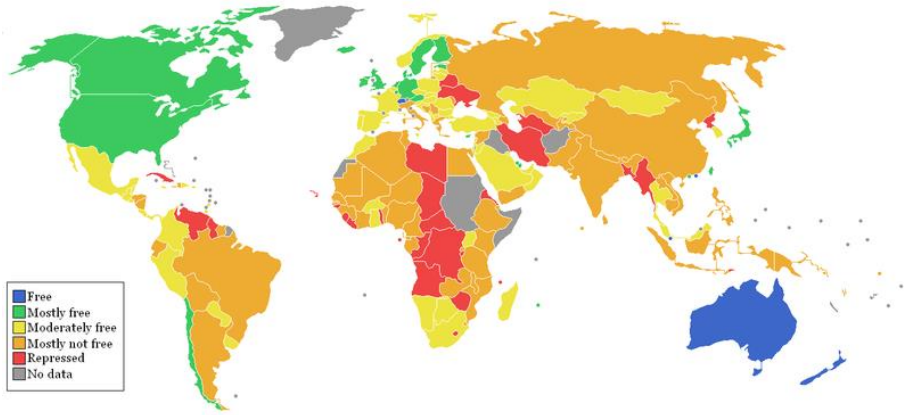
Neural Networks Semi-geographic results

Grouping	Real GDP per Capita w/in 0.5%	Predicted growth within 0.5%	Predicted growth error within 5%
Developed	82.81%	82.33%	84.00%
Sub-Saharan	77.96%	77.54%	69.47%
East Asia	23.61%	19.84%	25.40%
Middle East	3.13%	2.67%	18.00%
Eastern Europe & Central Asia	18.75%	16.67%	25.00%
Americas	4.46%	4.44%	24.76%

The Index of Economic Freedom is used to determine the level of economic autonomy and relative freedom within a country

- The Index of Economic Freedom ("Index") was created by the Heritage Foundation in 1995

- The Index was created to measure Economic Freedom and promote political change in nations with low freedom scores. The creators value Economic Freedom and consider it to be endogenous with growth



- The Economic Freedom of the World ("EFW"), produced by the Fraser Institute, is another index that measures economic freedom using the following key factors: personal choice, voluntary exchange coordinated by markets, freedom to enter and compete in markets, and protection of persons and their property from aggression by others

- We chose to use The Index over the EFW because the structure of The Index allows us to manipulate the factors better. The Index uses 10 freedom scores and the EFW only uses five

- The Index measures Economic Freedom through ten factors grouped into four broad categories:

Rule of Law	Limited Government	Regulatory Efficiency	Open Markets
•Property Rights •Freedom from Corruption	•Fiscal Freedom •Government Spending	•Business Freedom •Labor Freedom •Monetary Freedom	•Trade Freedom •Investment Freedom •Financial Freedom

- Together these categories create a barometer for the ability of individuals within a country to "work, produce, consume, and invest in any way they please under a rule of law, with their freedom at once both protected and respected by the state"

Source: Heritage Foundation's 2012 Index of Economic Freedom, Executive Highlights

The Index: Freedom Factors

- The Rule of Law category measures the abilities of a nation's government to protect and respect the rights of its citizens
  1. **Property Rights** measures the presence of Property Rights and the consistency and speed of their enforcement, it also measures the ability for individuals to obtain private property and keep it without fear of expropriation
  2. **Freedom from Corruption** alleviates insecurity and uncertainty within economic relationships, improving public perception of the economy, and therefore driving up the economic freedom of the nation

- The Limited Government category measures the size of government and the resulting burden on the nation's economy
  3. **Fiscal Freedom** measures the burden governments place upon their citizens and businesses through taxation since taxation depletes citizens' income and limits their abilities to make economic decisions
  4. **Government Spending** measures the amount of spending the government engages in as a percentage of GDP

- The Regulatory Efficiency category measures the burden and efficiency of regulation on a country's economy by evaluating the amount of regulation and the resultant effects
  5. **Business Freedom** measures individuals' ability to start, operate, and close businesses
  6. **Labor Freedom** measures individuals' abilities to work when and where they want and employers' ability to hire and dismiss workers as needed
  7. **Monetary Freedom** measures price stability by assessing price controls, which distort the allocation of resources in a nation and stifles economic growth, and measures inflation

- The Open Markets category measures the degree to which a nation's markets are open to trade and investment and the ability of markets to realize, through supply and demand, the natural equilibrium of the economy
  8. **Trade Freedom** measures the degree to which a nation allows international trade through tariffs and non-tarriff barriers
  9. **Investment Freedom** measures the degree to which investment capital can flow unimpeded throughout a nation and across borders by evaluating the laws and the extent to which these laws impede investment
  10. **Financial Freedom** measures banking efficiency and the efficiency and extent of government financial regulation

Source: Heritage Foundation's 2012 Index of Economic Freedom, Executive Highlights

We reduced the universe of countries being analyzed and grouped them

- In addition to the Economic Freedom data, our analysis requires GDP data, which we collected from the International Monetary Fund ("IMF") and the Economic Research Service ("ERS")
  - GDP growth data and GDP PPP data came from the IMF, while real GDP per capita data and real GDP data came from the ERS

- After collecting all the data, we pared our country list down to 91 from 184 by removing those countries that do not have Index data for all the years (1995-2012), those that were not included in Transparency International's Corruption Perceptions Index, those that were not included in The World Bank's *Doing Business 2012* Report, those that are not included in the IMF data, and those not included in the ERS data

- We also excluded the Labor Freedom factor from our analysis because the scores begin in 2005

- In addition to preparing the data for general analysis, we divided the data into four different categories to run analysis on a smaller scale. We based our division on The World Bank's economic and geographic classifications
  1. **Income Classification**: We used The World Bank data to classify the nations as low income, lower-middle income, upper-middle income, and high income
  2. **Geographic Classification**: We divided the nations into the groups based upon location, based on The World Bank's classifications
  3. **Semi-Geographic Classification:** We classified the OECD nations and other developed nations as "developed," and classified the developing nations by geography, based on The World Banks' classifications
  4. **Colonization Classification:** We divided the nations by their primary colonizer, focusing on influence of law. Those nations that were colonizers or not colonized are grouped together, as Self-Ruling
     - England's colonies are divided into categories to reflect the different colonization strategies in each area. Group (1) follows the extractive patterns typical of colonization while Group (2) colonies developed more inclusive institutions

Correlations Results

- Income
  - For income divisions, no factors correlated highly with real GDP per capita
- Geographic
  - Asia and the Pacific: Overall Score, Business Freedom, Property Rights, and Freedom from Corruption all correlated with real GDP per capita
  - Europe: Property Rights and Freedom from Corruption correlated with real GDP per capita
  - Americas: Freedom from Corruption correlated with real GDP per capita
  - Middle East and North Africa + Sub-Saharan Africa: No correlations with real GDP per capita
- Semi-Geographic
  - Developed, Sub-Saharan Africa, Eastern Europe and Central Asia, and the Americas : No correlations with real GDP per capita
  - East Asia: Freedom from Corruption correlated with real GDP per capita and Government Spending correlated negatively with real GDP per capita
  - Middle East: Freedom from Corruption correlated with real GDP per capita
- Colonial
  - UK (1): Freedom from Corruption correlated with real GDP per capita
  - UK (2): Property Rights correlated with real GDP per capita
  - Spain and France: No correlations with real GDP per capita
  - Portugal: Property Rights and Freedom from Corruption correlated with real GDP per capita
  - USSR: Overall Score, Investment Freedom, and Freedom from Corruption correlate with real GDP per capita
  - Netherlands: Business Freedom and Investment Freedom correlate negatively with real GDP per capita
  - Self Ruling: Property Rights and Freedom from Corruption correlate negatively with real GDP per capita

Regressions Results (part 1)

- Income Divisions
  - Upper Income: R^2 of 0.9613 with Business Freedom, Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Investment Freedom, Property Rights, and Freedom from Corruption being significant
  - Upper Middle Income: R^2 of 0.9174 with Trade Freedom, Fiscal Freedom, Monetary Freedom, Investment Freedom, Property Rights, and Freedom from Corruption being significant
  - Lower Middle Income: R^2 of 0.9590 with Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Investment Freedom, Property Rights, and Freedom from Corruption being significant
  - Lower Income: R^2 of 0.5697 with Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Investment Freedom, Property Rights, and Freedom from Corruption being significant

- Geographic Divisions
  - Asia and the Pacific: R^2 of 0.82 with Freedom from Corruption, Fiscal Freedom, Investment Freedom, Property Rights, Monetary Freedom, and Government Spending being significant
  - Europe: R^2 of 0.83 with Fiscal Freedom, Freedom from Corruption, Monetary Freedom, Business Freedom, Government Spending, and Property Rights being significant
  - Americas: R^2 of 0.69 Freedom from Corruption, Business Freedom, Trade Freedom, Fiscal Freedom, Investment Freedom, Monetary Freedom, Government Spending, and Financial Freedom being significant
  - Middle East and North Africa: R^2 of 0.79 with Trade Freedom, Government Spending, Freedom from Corruption, Business Freedom, Investment Freedom, Fiscal Freedom, and Property Rights being significant

Regressions Results (part 2)

- Semi-Geographic Divisions
  - Developed nations: R^2 of 0.66 with Property Rights, Fiscal Freedom, Government Spending, Business Freedom, Monetary Freedom, Trade Freedom, Investment Freedom, and Financial Freedom being significant
  - Sub-Saharan Africa: R^2 of 0.57 with Business Freedom, Trade Freedom, Fiscal Freedom, Investment Freedom, and Property Rights being significant
  - Middle East: R^2 of 0.99 with Business Freedom, Trade Freedom, Fiscal Freedom, Financial Freedom, and Property Rights being significant
  - East Asia: R^2 of 0.99 with Fiscal Freedom, Financial Freedom, and Property Rights being significant
  - Eastern Europe and Central Asia: R^2 of 0.93 with Business Freedom, Fiscal Freedom, Monetary Freedom, Investment Freedom, Property Rights, and Freedom from Corruption being significant
  - Americas: R^2 of 0.97 with Trade Freedom and Financial Freedom being significant

- Colonial Divisions
  - UK (1): R^2 of 0.9996 with Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Financial Freedom, Property Rights, Freedom from Corruption, and Labor Freedom being significant
  - UK (2): R^2 of 0.9975 with Trade Freedom, Government Spending, Financial Freedom, Labor Freedom, and Freedom from Corruption being significant
  - Spain: R^2 of 0.9577 with Fiscal Freedom being significant
  - France: R^2 of 0.9774 with Property Rights, Labor Freedom, and Investment Freedom being significant
  - USSR: R^2 of 0.9932 with Fiscal Freedom, Monetary Freedom, Investment Freedom, Labor Freedom, and Property Rights being significant
  - Self-Ruling: R^2 of 0.9906 with no factors being significant
  - Portugal and the Netherlands do not have enough nations (1 and 2) to obtain good data

There is strong predictive value for real GDP per capita, but this does not translate into good predictive value of GDP growth

- We used neural networks analysis to predict real GDP per capita for each country over the period from 1995 to 2012
- Using this analysis, the real GDP per capita predictions are within 5% of the actual value 84.5% of the time and within 2.5% 71.4% of the time
- While you can back GDP growth out of the predictions of real GDP per capita, the predictions have much greater error
  - If GDP only grows by 2.0% and your error is 2.5%, your prediction could be off by over 100% of the actual growth
- When we used the groupings, some of the results for the "backed out" growth were fairly good
  - For example, in the developed nations grouping, the neural networks predicted growth within 5% error 84% of the time

Regression Tree Results

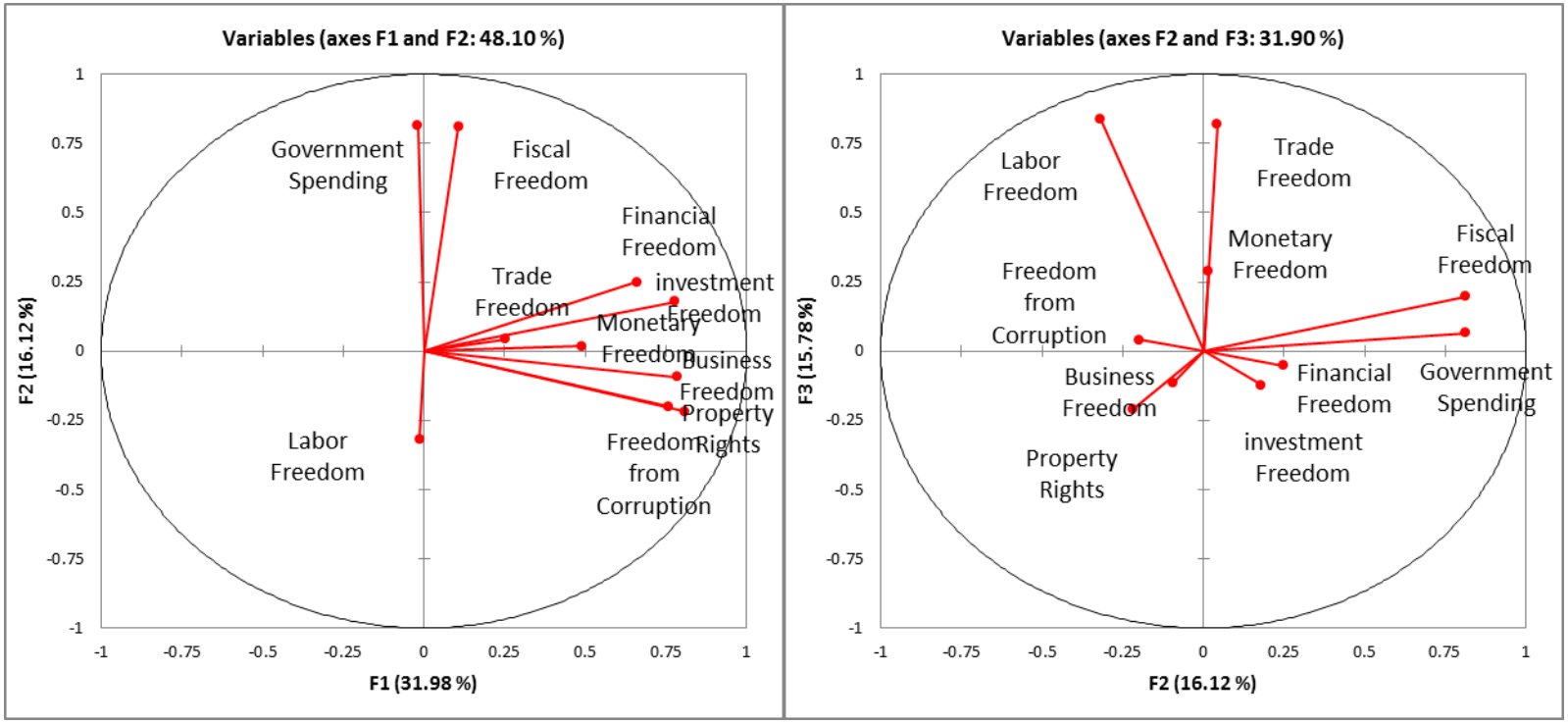
- The optimal regression tree for the target **Total PPP Adjusted Value Added** had an R2 of .776 with four terminal nodes
  - The most significant input variables in this tree were Country, Business Freedom, Property Rights, GDP lag, and Labor Freedom (in regressing order)
  - The first split separated countries into two groups: China & the US and all remaining countries
  - The second split for all remaining countries removed Brazil, France, Germany, India, Japan, Mexico, Russia, South Korea, and the UK from all remaining countries
  - The second split for China and the US was based on Business Freedom
  - The reason that China and the US were most likely separated from the other countries is that their Total PPP Adjusted Value Added is significantly higher due to their large population sizes and the fact that this GDP is not adjusted per capita

- The optimal regression tree for the target **Total GDP per Capita Valued Added** had an R2 of 0.7 with 16 terminal nodes
  - The most significant input variables in this tree were Country, Year, Corruption, Semi-Geographical grouping, Property Rights, Trade Freedom, GDP lag, and Government Spending (in regressing order)
  - The first split basically separates about half of the main OECD countries from the remaining countries
  - The second split in the OECD countries looks at whether it was before or after 2007
  - Other interesting splits look at the year 2009, countries such as Ireland and Spain, GDP lag, and Corruption in the less free countries

- The optimal regression tree for the target **PPP Adjusted Value Added** had an R2 of 0.76 with 15 terminal nodes
  - The most significant input variables in this tree were Country, Semi-Geographic, Income, Property Rights, Freedom from Corruption, Colonization, Year, and Government Spending (in regressing order)
  - The initial split once again separates out many of the OECD countries, but this time includes much more than half
  - Other interesting splits in the "OECD" country branch look at the year 2000, the level of government spending, the year 2008, lagged GDP, and Monetary Freedom
  - Another interesting splits in the "non-OECD" country branch also looks at the year 2008

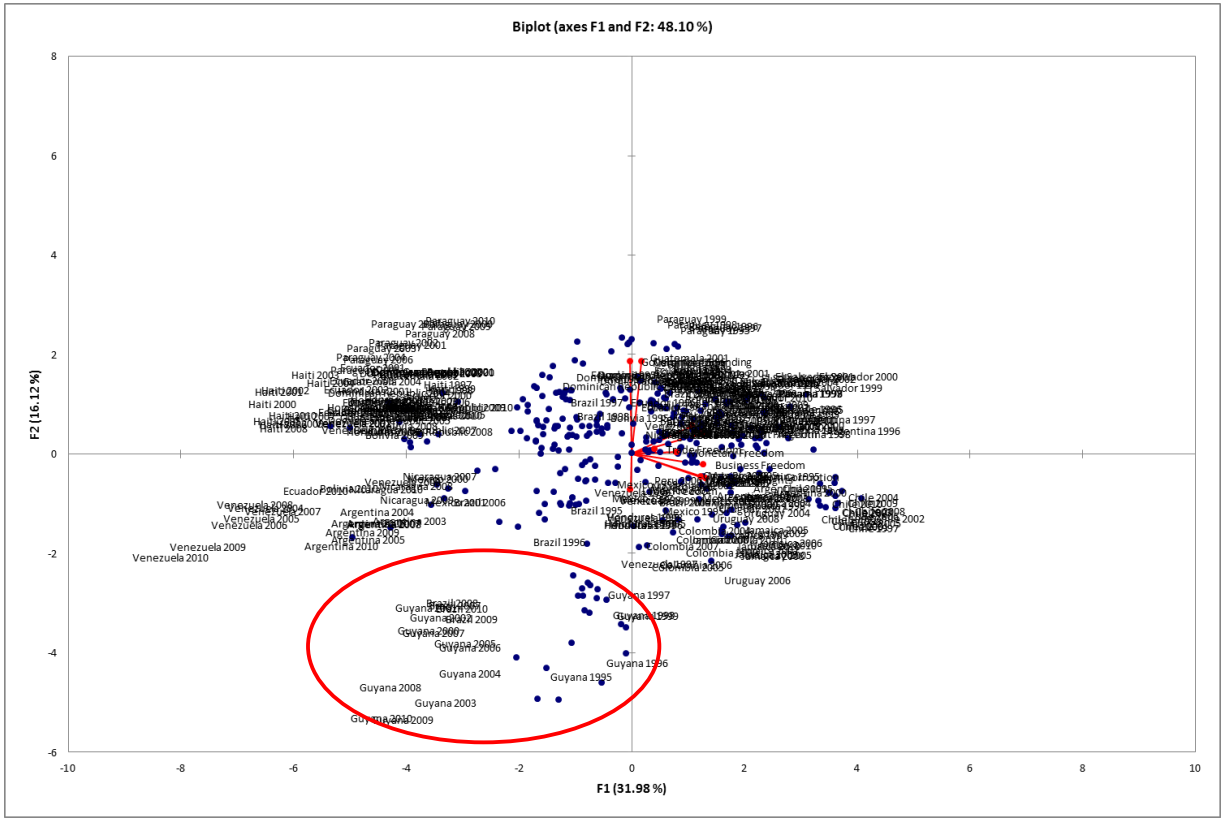
Principal Component Analysis – Significant Variables

- The correlation matrix shows a high correlation (>.7) between Freedom from Corruption and Property Rights
  - Otherwise, the eigenvectors appear to be descriptive and non-zero meaning the Factor Scores are all descriptive of the variation in the data



Principal Component Analysis - Outliers

- The bi-plots show the distribution of the observations along the newly created Factors (F1 and F2 below):
  - This plot can be used to identify major outliers
  - Outliers will cause a poor fit and the variables will only be able to determine whether the predictors describe the set of outliers or the rest of the data set.



Regression Analysis | Neural Networks | Regression Tree Analysis | Principal Component Analysis | Nearest Neighbor Analysis | Dislocation Analysis

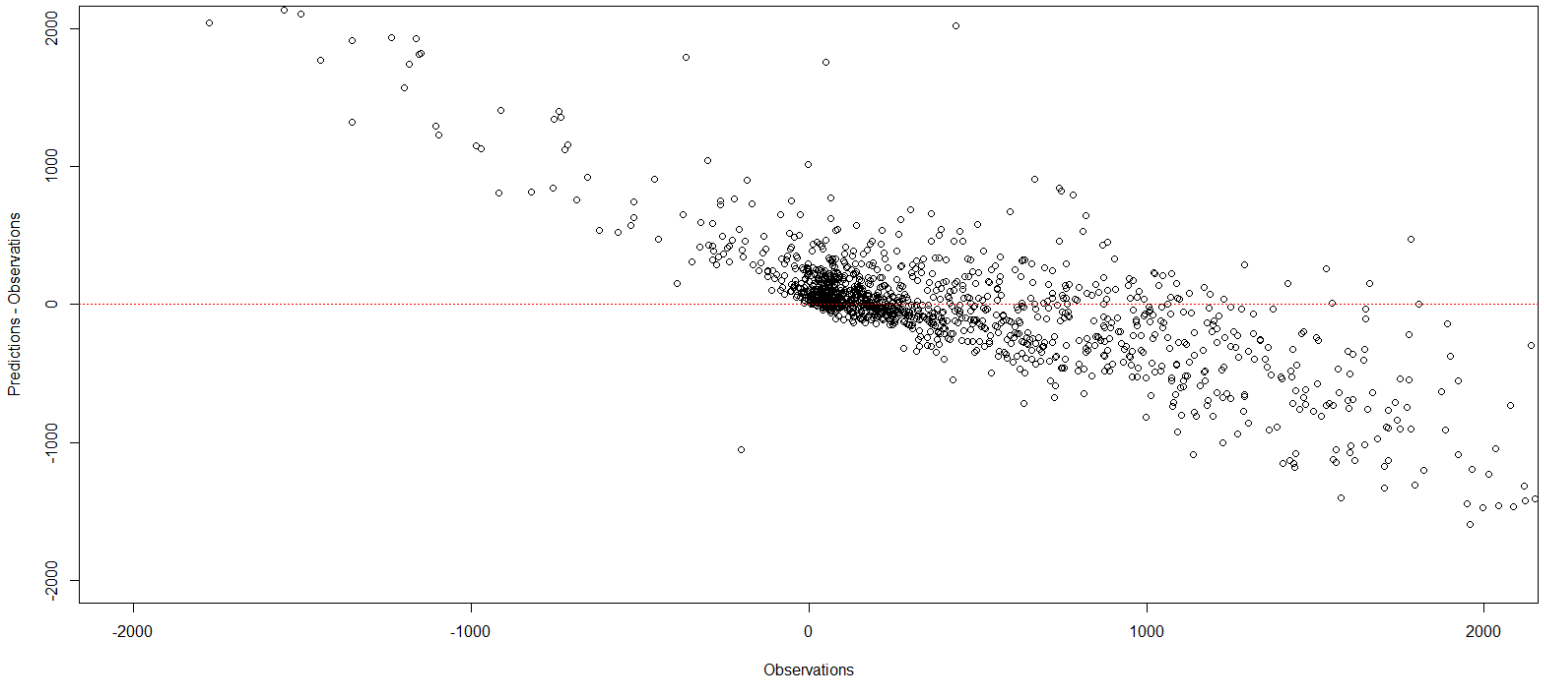
k-NN Nearest Neighbor Analysis

- Using a k-NN model on entire data set, the algorithm can only correctly predict the direction of GDP 43% of the time (551/1260)
  - This model uses all changes in scores as well as total number of positive and negative changes

	Predicted as >1% Below Average	Predicted as Between +/-1% of Average	Predicted as >1% Above Average
>1% Below Average	113	193	77
Between +/-1% of Average	81	299	83
>1% Above Average	89	186	139

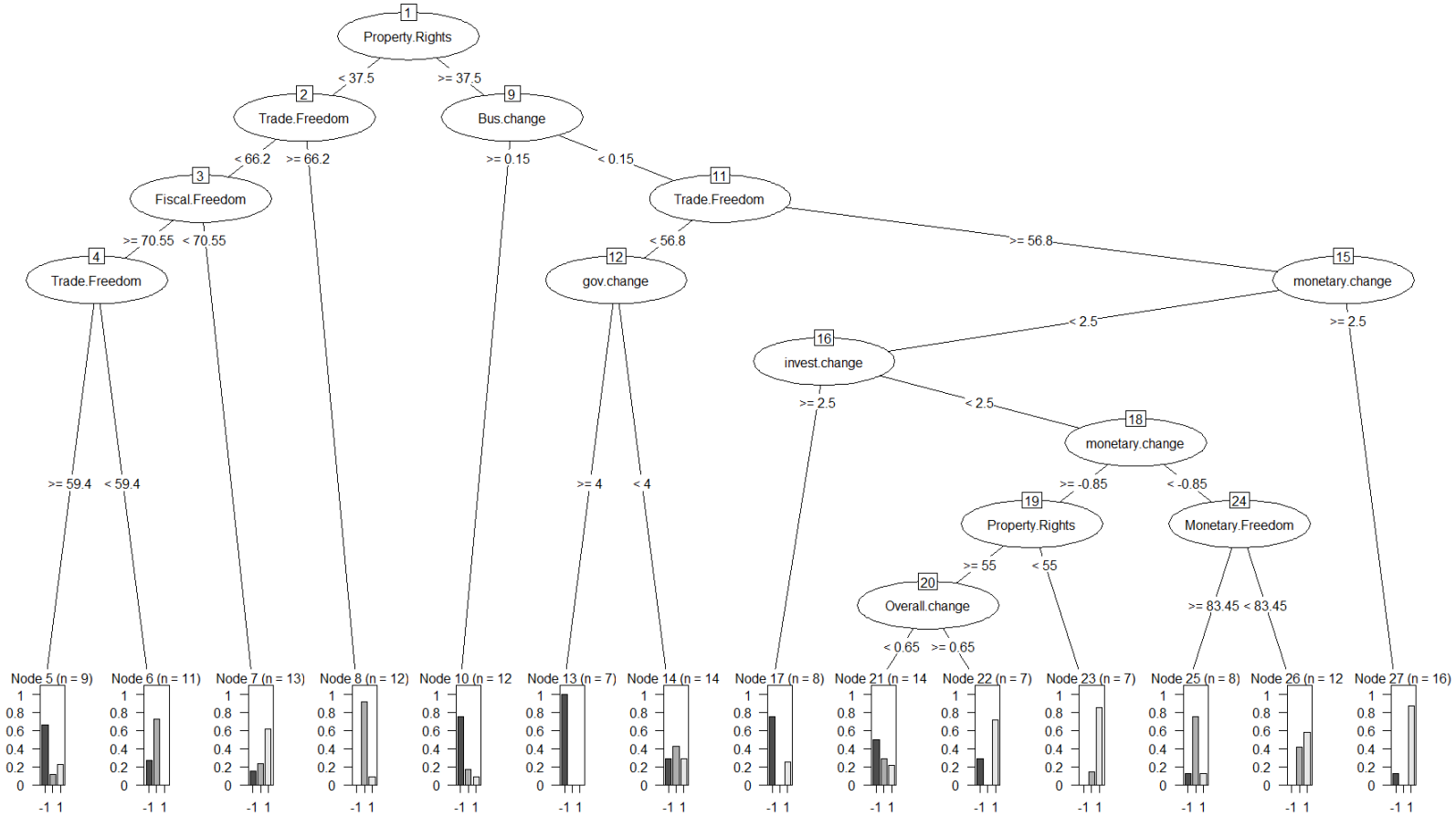
K-NN Nearest Neighbor Regression

- Using the package k-NN, we attempt to predict the PPP Adjusted Value Add per Capita:
  - Plotting the Difference between the Predictions and Observations
    - All points should lay on the horizontal line
    - The model poorly predicts the value of PPP Adjusted Value Add per Capita



Dislocation Analysis – Classification Tree Example

- A classification tree can aid in explaining dislocations in GDP based on a country's current factor scores and changes in those scores



Regression Analysis | Neural Networks | Regression Tree Analysis | Principal Component Analysis | Nearest Neighbor Analysis | Dislocation Analysis

Overall Score Analysis

- **For Countries with higher levels of economic development and Overall Freedom, differences can be more subtle and how Freedom impacts GDP growth, more complex**
  - Take Economies like Hong Kong that started in 1995 with a score of 100 in Business Freedom.
    - In 2010, Business Freedom was at 98.7 but, baring the Financial Crisis, growth has remained strong throughout the period
  - Countries that already benefit from high levels of Freedom do not always see a direct impact from small changes in individual Freedom Factor scores or even small changes in Overall Freedom
- **There are many examples of Developing Countries showing improving growth rates as a number of Freedom Factors improve**
  - Countries that have extremely low levels of Freedom from Corruption and see that score improve typically see improvements in GDP growth
  - Conversely, those countries that do not see improvements in Freedom from Corruption typically undergo major political and civil turmoil over the period
- **Looking at three similar countries in Eastern Europe, Belarus, Moldova and Ukraine we see three very different outcomes over the 15 years:**
  - All three countries had similar increases in Freedom Factor scores but wildly different growth rates
  - Lukashenko has been the president of Belarus since 1994 and described as an authoritarian and western countries describe it as a dictatorship. Belarus also has a very close relationship with Russia, and preferential access to Russian markets
  - All these countries have their own issues, Belarus has recently gone into a decline due to outdated infrastructure and manufacturing base which was fueling its growth over the previous 15 years, Moldova slipped back into a soviet era communist party government and suffered continuous political/civil unrest and Ukraine has had serious issues with government corruption which has passed power of large industry to powerful oligarchs that control much of the country's production
- **Venezuela has had one of the most significant reductions in Freedom out of all the countries sampled**
  - When you look at the PPP Adjusted GDP per Capita, it has been one of the slowest growing countries
  - It is the only country to finish 2010 below an Overall Freedom score of 40 at 37.1 and the same year that Trade Freedoms fell and the two years following a drop in Business Freedom, GDP was strongly negative
  - During the 1980s, oil companies were nationalized and that trend has continued under Chavez who was elected in 1998.
  - The country has the lowest Investment and Property rights scores of any country in the sample and incredible volatility over the years in inflation and GDP growth

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores < 40**
  - Filtered the list of Countries for those that, at any time during the 15 year period, had an Overall score below 40.
    - Belarus, Moldova, Ukraine, Venezuela, Vietnam and Zimbabwe were the only 5 out of 91 countries

- **Former USSR Countries with at least one year of <40 Overall Score**
  - **Belarus:** Grew from 3,382 PPP Adj. PCGDP to 13,898 over the 15 year period (a 4.11x increase)
    - Belarus saw significant improvement in their Freedom Index Scores:
      - Overall has increased by 8.3 points since 1995 and in 2010 was at a 15 year high
      - Business Freedom has fluctuated over that period and now at a 15 year high while Fiscal and Monetary Freedom have increased significantly
      - During the best years of growth (2004-2008) , Belarus saw significant improvements in their Monetary Freedom Score while Fiscal Freedom has increased over the 15 year period.
      - Since 1995, a year after adoption of a national constitution, there has only been one year with sub 4% Per Capita GDP growth. Real GDP Growth has been slightly lower due to a decreasing population in the country
      - There have been significant decreases in Investment Freedom, Property Rights and Financial Freedom.
  - **Moldova:** Grew from a 1,470 to 3,104 PPP Adj. PCGDP over the 15 year period (Over 2x PCGDP, <2x 1995 GDP due to shrinking Pop.)
      - Moldova only had one year in the 15 year period below a score of 40 (1995) which was likely due to low Financial, Trade and Monetary Freedom scores which all increased significantly in subsequent years. Trade freedom went from 17.6 to 75 from 1995 to 1996 and never dropped below 75 after that year.
      - Moldova first introduced a market economy in 1992 which resulted in rapid inflation.
      - Have had major political turmoil and was the first post-Soviet state where a non-reformed Communist Party returned to power(1)
      - The President of Moldova is elected by the parliament, a change that occurred in 2001.

(1) Horia C. Matei, "State lumii. Enciclopedie de istorie." Meronia, Bucureşti, 2006, p. 292-294

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores < 40**

  - **Ukraine:** Grew from 3,123 to 6,698 PPP Adj. PCGDP over 15 years (Just over 2x but also less than 2x 1995 GDP because of shrinking Pop.)
    - Ukraine saw modest improvements in Freedom Scores:
      - Increases in Trade Freedom, Monetary Freedom and Fiscal Freedom have been offset by
      - Decreases in Government Spending, Investment Freedom, and Business Freedom
      - Corruption of Government by oligarchs who control major corporations, gas shortages stemming from conflicts with Russia over prices likely led to a more severe recession in 2009 than similar and neighbor countries.
      - Ukraine had one of the lowest Business Freedom scores in 2010 out of all the years for the <40 Overall Score group and the lowest Overall Score of the three countries that were formerly part of Soviet Russia.
      - Ukraine's worst year (2009 saw -13.51% PCGDP growth) was after three years of declines in Overall Freedom
      - Property Rights has remained at a low of 30 and Investment Freedom and Business Freedom has decreased over the period
      - Fiscal Freedom hit a high in 2006, while the country enjoyed its best years of growth but has since declined.

- **Countries in Other Regions with an Overall Score under 40 in at least one year:**

  - **Venezuela:** Grew from 8,375 to 12,048 PPP Adj. PCGDP over the 15 year Period (Less than 50% increase in PCGDP and GDP <2x 1995)
    - Venezuela was the second worst performing country in the <40 Overall Score group with also the second worst Overall Freedom Score at the end of 2010.
      - Overall Score went from 59.8 to 37.1, one of the largest changes positive or negative for countries in this group.
      - Significant decreases occurred in Business, Trade, Investment, and Property (a score of 0 in 2010) Freedom
      - Oil makes up 80% of the country's exports and has led to underdevelopment of agricultural exports in coffee and cocoa. Because of this underdevelopment of agriculture, Venezuela imports approximately 2/3rds of its food.
      - Political turmoil (national strikes) especially in 2002-2003 correlate with major drops in GDP where. the 2003 PCGDP level was actually below the 1995 level
      - Venezuela has performed poorly during the economic crisis with two consecutive years of negative per capita GDP growth in 2009 and 2010 a net loss of approximately 9% of PCGDP PPP Adjusted.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores < 40**

  - **Vietnam:** Grew from 1,009 to 3,143 PPP Adj. PCGDP over the 15 year Period (Tripling PCGDP and 3.8x 1995 GDP)
    - Vietnam is now near its highest level of Overall Freedom:
      - 1997 was the one year Vietnam registered an Overall Freedom Score below 40 and that proceeded its two worst years of GDP growth 1998 and 1999
      - 1997 saw a significant drop in Fiscal Freedom which recovered in the year 2000 where the next 7 years saw growth north of 7%
      - Changes in Fiscal Freedom appears most correlated with changes in GDP growth rates
      - Since the early 2000s, Vietnam has applied sequenced trade liberalization although it is not immediately apparent from the Trade Freedom Scores. Between land reform and trade liberalization, Vietnam has become a major exporter of agricultural products.

  - **Zimbabwe:** Shrunk from 10.4 (bn) to 5.487 (bn) PPP Adj. GDP over the 15 year Period (Nearly cutting GDP in half)
    - Political Turmoil and forced land redistribution has plagued the country
      - Overall Freedom dropped from 48.5 to 36.7 and in 2010, reached an all-time recorded low of 21.4.
      - During the decline in Freedom Zimbabwe recorded its worst declines in GDP growth with a staggering -16.95% GDP growth rate in 2003 where Financial, Property, and Investment Freedom were at historical lows of 10.

- **Overall Scores > 40, <50**

  - **Albania:** Grew from 2,727 to 7468 PPP Adj. PCGDP over the 15 year Period (Nearly Tripling PCGDP and 2.8x 1995 GDP)
    - Albania saw significant improvements in its Overall Freedom Score:
      - Overall Freedom was at an all time high of 66, up from 49.7 in 1995.
      - The only year of negative growth was in 1997 at the failure of a number of Ponzi schemes and peaking with an armed rebellion leading to mass emigration.
      - Growth rates have been volatile but high single digits to double digits each year and Albania did not post a negative growth rate in either 2009 or 2010 during the tail end of the global financial crisis.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 40, <50**

  - **Bangladesh:** Grew from 685 to 1,584.5 PPP Adj. PCGDP (3x 1995 GDP and 2.4x PCGDP)
    - Bangladesh saw a 10 point increase in its Overall Freedom Score, quickly jumping from 40.9 to 51.1 between '95 and '96 and then fluctuating throughout the rest of the 15 year period.
      - Business Freedom has increased while Investment, Financial and Property freedom have seen decreasing over the period
      - Bangladesh had not a single year of negative growth and, since 2003 has not had a single year of sub 5% PCGDP growth.

  - **Bolivia:** Grew from 2,748 to 4,549 PPP Adj. PCGDP (2.12x 1995 GDP and 1.75x PCGDP)
    - Bolivia went from a increase in Overall Freedom in the early 2000s to ultimately having a lower Overall Freedom Score in 2010 compared to 1995
      - Property Freedom, after reaching a high in 1998 of 70, steadily decreased followed by 1999 being the only year of negative GDP growth (PPP Adj.)
      - In general, there is a large amount of volatility in Investment and Property Rights Freedom Scores
      - Regional economic issues and political turmoil are typically blamed for sluggish growth in the country
      - The country was often hit by frequent and sometimes violent protests

  - **Brazil:** Grew from 6,469 to 11,314 PPP Adj. PCGDP over the 15 year Period (Only 1.75x 1995 PCGDP and 2.12x 1995 GDP)
    - Brazil saw a quick 9 point increase in its Overall Freedom score in 1999 and by 2010 saw Overall Freedom slip back to 55.6 from a high of 63.4 in 2003.
      - Brazil's highest growth rates occurred in 2004 through 2007 while previous year's Overall Freedom score was North of 60.
      - Biggest decreases came from drops in Business Freedom in 2006 and Fiscal Freedom in 2007
      - Brazil has the largest population of Uncontacted peoples and is the World's 7th largest economy my Purchasing Power Parity

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 40, <50**

  - **Bulgaria:** Grew from 5,828 to 12,965 PPP Adj. PCGDP over the 15 year Period (2.22x 1995 PCGDP and 2.01x 1995 GDP)
    - Bulgaria saw steady improvements in Overall Freedom during the 21st century after slightly dipping from 1995 to 2000.
      - Big improvements in Fiscal Freedom and Business Freedom lead to a rise in the Overall Freedom score.
      - Starting in 2000, when Trade Freedom began to improve again, Bulgaria enjoyed high single digit to double digit growth up until 2009-2010
      - Bulgaria has a decreasing and relatively low Property Freedom score (30 as of 2010).

  - **Cameroon:** Grew from 1,444 to 2,176 PPP Adj. PCGDP over the 15 year Period (Only 1.5x 1995 PCGDP and 2.3x 1995 GDP)
    - Cameroon saw only a 1 point increase in Overall Freedom over the period
      - Growth was relatively stable although at an extremely low level for a small country.
      - Investment Freedom only declined recently and Trade freedom had the largest positive move since 1995.
      - Business Freedom declined as well from 55 to 37.2
      - Corruption is rife and literacy rates are around 67.9% with one of the highest school attendance rates in Africa.

  - **Ecuador:** Grew from 4,418 to 7,828 PPP Adj. PCGDP over the 15 year Period (Only 1.77x 1995 PCGDP and 2.21x 1995 GDP)
    - Overall Freedom remained in mid 50s until 2010 where it dropped to 49.3
      - Investment Freedom and Property Rights have decreased over the period
      - Trade Freedom has increased by 10 points while other Freedom scores have remained relatively level
      - Average PCGDP growth has been in low single digit for much of the period

  - **Egypt:** Grew from 2,996 to 6,417 PPP Adj. PCGDP over the 15 year Period (2.14x 1995 PCGDP and 2.93x 1995 GDP)
    - Overall Freedom in 2010 was at a high of 59
      - High single digit growth from 2006 to 2008 was accompanied by a change in Business Freedom from 39.8 to 60.2 over the period.
      - Fiscal Freedom and Trade Freedom grew significantly over the period.
      - Freedom from Corruption scores were low from 50 down to 28 and Financial Freedom was volatile ranging from 30 to 70.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 40, <50**

  - **Ethiopia:** Grew from 398 to 1,019 PPP Adj. PCGDP over the 15 year Period (2.56x 1995 PCGDP and 3.81x 1995 GDP)
    - Ethiopia saw an increase from an Overall Freedom score of 42.6 to 51.2
      - Investment Freedom went from 10 in 1995 to a high of 50 in 2004 when the country's PCGDP grew at 13.96% and continued double digit grow rates through 2008.
      - Trade Freedom went from a low of 27 and is now in the 60s.
      - Grow rates have been volatile with two negative years but high single digits in 2009 and 2010
      - During 1998 (when Ethiopia experienced negative growth) they were at war with Eritrea which lasted until 2000.
      - There were only modest decreases in economic freedom scores during the poor growth in 2002 and 2003.

  - **Guyana:** Grew from 3,432 to 7,035 PPP Adj. PCGDP over the 15 year Period (2.05x 1995 PCGDP and 2.04x 1995 GDP)
    - Guyana saw little net change in Overall Freedom scores although it did reach a level 11 points higher than 1995 in 2006.
      - The two years following Guyana's highest freedom scores, it put inn impressive growth of 8.22% and 9.87% vs an average of around 5% for the entire period. These scores also coincided with highest levels for most of the individual Factor scores

  - **Haiti:** Grew from 948 to 1,163 PPP Adj. PCGDP over the 15 year Period (1.23x 1995 PCGDP and 1.54x 1995 GDP)
    - Haiti saw an 7.8 point increase in Overall Freedom:
      - Haiti saw modest declines in Business Freedom which was already at a low level in 1995 (40) and levels
      - Property Freedom remains at 10 and Investment as well as Financial Freedom are at 30.

  - **India:** Grew from 1,150 to 3,419 PPP Adj. PCGDP over the 15 year Period (2.97x 1995 PCGDP and 3.79x 1995 GDP)
    - India's Overall Freedom grew from 45.1 to 53.8 over the period rather consistently
      - Most significant improvement was from trade freedom of 0 to 67.9
      - Although a great deal of volatility in GDP, India reported strong numbers in 2009 and 2010 (7.86% and 9.29%) while Trade Free dom continued to increase
      - Liberalization of trade has been occurring in the country since 1991.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 40, <50**

  - **Ivory Coast:** Grew from 1,440 to 1,683 PPP Adj. PCGDP over the 15 year Period (1.17x 1995 PCGDP and 1.74x 1995 GDP)
    - There was little net change in Overall Freedom in the country started at 53.4 to 54.1
      - Business Freedom was at 70 in 1995 and decreased to 43.7 in 2010
      - While most Freedom Scores are high, the country has gone through a number of coups starting in 1999. 180 people died in 2000 prior to an election during a public uprising.
      - In 2002, Ivory Coast had its first Civil War and a peace accord was not signed until 2007
      - The elections that were delayed until 2010 were accused of rampant fraud and in 2011 the country was in its Second Civil war after becoming independent from France in 1958.
      - The country was one of the most prosperous in the region with annual growth rates nearly 10% for 20 years, impressive for non-oil-exporting countries.

  - **Mongolia:** Grew from 1,753 to 4,020 PPP Adj. PCGDP over the 15 year Period (2.29x 1995 PCGDP and 2.83x 1995 GDP)
    - Overall Freedom grew from 47.8 to 60 in 2010.
      - Trade Freedom, Fiscal Freedom and Monetary Freedom increased significantly over the period
      - A boom in the mining sector in 2007-2008 led to a few years of high growth although 2003-2007 saw high single to low double digit growth.

  - **Mozambique:** Grew from 311 to 1,011 PPP Adj. PCGDP over the 15 year Period (3.25x 1995 PCGDP and 4.43x 1995 GDP)
    - Overall Freedom grew from 45.5 to 56
      - Overall Freedom reached a high in 2001 of 59.2 and growth that year was 11.43%
      - The years following the first increases in Financial Freedom, Monetary Freedom and Investment Freedom saw increases in the average GDP growth rate.
      - Devastating floods in 2000 had incredibly short term effects, in spite of the floods, GDP growth went from 2.1% in 2000 to 14.8% in 2001

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 40, <50**

  - **Nicaragua:** Grew from 1,489 to 3,037 PPP Adj. PCGDP over the 15 year Period (2.04x 1995 PCGDP and 2.28x 1995 GDP)
    - Overall Freedom improved from 42.5 to 58.3 over the period
      - Trade freedom went from 54.4 to 82.8 and Monetary Freedom went from zero to 64.1
      - There are large gaps in information prior to 2004; information may be inaccurate.

  - **Nigeria:** Grew from 1,015 to 2,420 PPP Adj. PCGDP over the 15 year Period (2.38x 1995 PCGDP and 3.58x 1995 GDP)
    - Overall Freedom increased from 47.3 to 56.8
      - Trade Freedom increased in 2005 which followed two years of 9.89% growth and 10.93% growth in PCGDP
      - The following years saw increased growth compared to the previous 10 years.
      - Investment Freedom, Property Rights and Financial Freedom all decreased over the period
      - The Democratic Era began in 1999 after 33 years of military rule. Growth that year and the following years was substantially higher than previously.

  - **Romania:** Grew from 5,814 to 11,904 PPP Adj. PCGDP over the 15 year Period (2.05x 1995 PCGDP and 1.92x 1995 GDP)
    - Overall Freedom increased from 42.9 to 64.2
      - Business Freedom has only recently increased while early on Trade Freedom decreased only to reach new highs in 2010 of 87.5 after reaching a low of 57.6
      - Fiscal Freedom has increased over the period significantly and its largest jumps have coincided with the largest PCGDP growth rates in 2000, 2004 and 2006.
      - Romania instituted a flat tax in 2005 and it wasn't until the year 2000 that the country was able to replace its obsolete industrial base and lack of structural reforms from Communist rule which ended in 1989.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 40, <50**

  - **Russia:** Grew from 6,422 to 15,657 PPP Adj. PCGDP over the 15 year Period (2.44x 1995 PCGDP and 2.35x 1995 GDP)
    - Overall Freedom decreased by 0.8 points over the period
      - Trade, Fiscal and Monetary Freedom saw the only increases while Investment, Property, Business saw major declines.
      - GDP growth can be characterized as volatile going from high single digits to negative with little correlation between any of the freedom score and GDP growth rates.
      - A natural resource rich country, since 2000 has grown precipitously. Russia has had a flat tax of 13% since 2001.
      - Political stability is noted as one of the reasons for high economic growth.

  - **Yemen:** Grew from 1,701 to 2,598 PPP Adj. PCGDP over the 15 year Period (1.53x 1995 PCGDP and 2.44x 1995 GDP)
    - Overall Freedom has increased from 49.8 to 54.4 and steady 3-4% GDP growth
      - Financial, Property, and Freedom from Corruption scores all remain very low.
      - Yemen is one of the poorest Middle East countries with a growing young population and dwindling natural resources
      - 46% of the population is under 15 years old with a fertility rate of 4.45 children per woman.

- **Overall Scores > 50, <60**

  - **Algeria:** Grew from 3,872 to 7,112 PPP Adj. PCGDP over the 15 year Period (1.83x 1995 PCGDP and 2.32x 1995 GDP)
    - Overall Freedom has increased from 55.7 to 56.9 and is well off a high of 61 reached in 2002
      - PCGDP growth improved around the same time there were improvements in Fiscal Freedom and Monetary Freedom
      - Algeria was engaged in a Civil war between 1992 and 2002
      - Excluding 2005, after 2002, PC GDP (PPP Adj.) growth rates remained in the high single digits

  - **Argentina:** Grew from 7,878 to 15,901 PPP Adj. PCGDP over the 15 year Period (2.02x 1995 PCGDP and 2.35x 1995 GDP)
    - Overall Freedom has decreased from 68 to 51.2 and hit a high of 74.7 back in 1996
      - Four years of negative GDP growth occurred a few years after Overall Freedom reached a high and began to decline.
      - The worst year for growth was the same year Trade freedom hit a low
      - Issues cited in Transparency International's Corruption Perceptions Index include government corruption, lack of judicial independence, huge taxes and tariffs, and regulatory interference that undermines efficiency and productivity growth
      - Many changes and high corruption level may explain volatility in growth rate albeit high on average.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Botswana:** Grew from 6,176 to 15,179 PPP Adj. PCGDP over the 15 year Period (2.46x 1995 PCGDP and 3.06x 1995 GDP)
    - Overall Freedom increased steadily from 56.8 to 70.3
      - Growth has been slower in recent years many freedom scores were relatively high already in 1995.
      - 2009 GDP growth was significantly negative but rebounded strongly in 2010 from -4.93 to +7.2
      - In 2002, Investment Freedom increased from 50 to 70 and GDP growth rose to 8.96% from 3.5%
      - The following years were relatively volatile
      - Botswana went from one of the poorest countries in 1966 to one of the fastest-growing economies in the World and has a strong tradition as a representative democracy

  - **China:** Grew from 1,513 to 7,550 PPP Adj. PCGDP over the 15 year Period (4.99x 1995 PCGDP and 5.52x 1995 GDP)
    - Overall Freedom went down by 1 point
      - Since the introduction market-based economic reforms in 1978, China has become the world's fastest-growing major economy.
      - In Roll and Talbott's 2001 paper, Deng Xiaoping's market-oriented reforms are considered a democratic event
      - Trade Freedom has increased throughout the period and GDP growth rates have remained high between 8-12 percent on average

  - **Colombia:** Grew from 5,528 to 9,585 PPP Adj. PCGDP over the 15 year Period (1.73x 1995 PCGDP and 2.1x 1995 GDP)
    - Overall Freedom was up by 1 point in 2010 compared to 1995 and fluctuated only slightly throughout the period
      - Freedom from Corruption score was at a intermediate low in 1999 when GDP growth was negative
      - Freedom from Corruption has recently improved, Business Freedom is moving back towards the high reached in 1995 and GDP growth is in mid single digits over last few years
      - Other scores have not changed significantly
      - GDP growth rates have increased from 2003 onward, despite armed conflicts
      - Investment as a portion of GDP has also soared from 15% in 2002 to 26% in 2008
      - Number of homicides in the country have decreased during the 21st century.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Dominican Republic:** Grew from 3,871 to 8,860 PPP Adj. PCGDP over the 15 year Period (2.29x 1995 PCGDP and 2.99x 1995 GDP)
    - Overall Freedom increased from 55.8 to 60.3 in 2010
      - Trade Freedom dropped from 60.8 to 44.4 and GDP growth dropped to -.25 and 1.31 in 2003 and 2004 respectively and then climbed to an all time high in 2010 of 80.4 while GDP growth was in high single digits.
      - The Business Freedom and Trade Freedom began increasing around the time GDP growth accelerated from a low single digit average growth rate to high single digits. (from average 4% to 7%)
      - Despite an antiquated power grid, the country has had solid economic growth

  - **France:** Grew from 21,315 to 33,997 PPP Adj. PCGDP over the 15 year Period (1.59x 1995 PCGDP and 1.73x 1995 GDP)
    - Overall Freedom Decreased by 0.2 points
      - Business Freedom dropped from 85 to 70 during a time of slow economic growth (Sub 2% average growth)
      - Trade Freedom has increased slightly over the period while Fiscal, has decreased
      - Property Rights have remained high while Financial Freedom has increased
      - Government Spending scores have been extremely low over the entire 15 year period
      - France's public debt is 86.5% of annual GDP which is close to the threshold set by Reinhart and Rogoff (2012) where it becomes a drag on GDP

  - **Gabon:** Grew from 12,436 to 15,197 PPP Adj. PCGDP over the 15 year Period (1.22x 1995 PCGDP and 1.72x 1995 GDP)
    - Overall Freedom Decreased by 2.1 points
      - Over the period there were significant declines in Business Freedom, Investment, Financial, Freedom from Corruption and a slight decrease in Property Rights
      - The average growth rate was significantly worse in 1999 onward when Overall Freedom reached a high and started to decline.
      - The country has had very volatile growth going back to the 1980s
      - Throughout the 1995-2010 period there has been significant political and civil unrest.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Ghana:** Grew from 1,194 to 2,725 PPP Adj. PCGDP over the 15 year Period (2.28x 1995 PCGDP and 3.33x 1995 GDP)
    - Overall Freedom increased from 55.6 to 60.2 in 2010
      - The average growth rate has increased in recent years as Business Freedom and Trade Freedom have increased
      - Growth has been relatively stable particularly for an African country and Investment Financial, and Property Freedom scores have remained at a moderately high level over the entire period.
      - Jerry John Rawlings ruled the country for 20 years and significantly increased the public debt, since then there have been many fiscal and economic reforms including re-denomination of the currency in 2007 improving stability

  - **Greece:** Grew from 14,964 to 27,668 PPP Adj. PCGDP over the 15 year Period (1.85x 1995 PCGDP and 1.94x 1995 GDP)
    - Overall Freedom increased from 61.2 to 62.7 in 2010
      - Overall Freedom throughout the period has remained flat
      - Business Freedom, Financial Freedom and Monetary Freedom have increased while Government Spending, Investment Freedom, Freedom from Corruption and Property Freedom have Decreased
      - GDP has shrunk over the past few years while public debt-to-GDP stood at 165% in 2011 well over the Threshold set by Reinhart & Rogoff (2012)

  - **Guatemala:** Grew from 3,471 to 4,902 PPP Adj. PCGDP over the 15 year Period (1.41x 1995 PCGDP and 2.17x 1995 GDP)
    - Overall Freedom decreased from 62 to 61 in 2010
      - Guatemala has had a low growth rate throughout the entire period with one year of > 5 percent growth in 2007 when Trade Freedom Increased to an all time high of 80.2 and Financial Freedom increased to 60
      - Overall Freedom hit a high in 1999 of 66.2 and has decreased until 2010 where it had a slight increase from 59.4 to 61
      - Guatemala suffered a 36 year civil war that did not end until 1996.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Guinea:** Grew from 718 to 1,049 PPP Adj. PCGDP over the 15 year Period (1.46x 1995 PCGDP and 2.02x 1995 GDP)
    - Overall Freedom decreased from 59.4 to 51.8 in 2010
      - GDP growth slowed significantly around the time Trade Freedom dropped from 70.2 to 19 in a two year period.
      - Property Freedom has Decreased from 50 to 20, Financial Freedom has dropped from 70 to 40
      - Lowest years of growth coincide with lowest Property Freedom Scores and Trade Freedom Scores
      - The country may have as much as half the world's supply of Bauxite
      - Has maintained a very low score for Freedom from Corruption

  - **Honduras:** Grew from 2,686 to 4,192 PPP Adj. PCGDP over the 15 year Period (1.56x 1995 PCGDP and 2.23x 1995 GDP)
    - Overall Freedom increased from 57 to 58.3 in 2010
      - Freedom from Corruption scores never reached above 30
      - Fiscal Freedom, Financial Freedom, Trade Freedom and Business Freedom increased, while Freedom from Corruption and Property Freedom decreased
      - Overall Freedom peaked a few years before growth reached a peak
      - Financial Freedom did not increase until a year after the first of a few years of 6%+ GDP growth.
      - Despite massive damage fro Hurricane Mitch in 1998, the country managed to get back to accelerating growth as Overall Freedom hit a high in 2003 of 60.4

  - **Hungary:** Grew from 9,451 to 18,809 PPP Adj. PCGDP over the 15 year Period (1.99x 1995 PCGDP and 1.93x 1995 GDP)
    - Overall Freedom increased from 55.2 to 66.1 in 2010
      - Trade, Fiscal, Monetary, and Investment Freedom all increased while Business Freedom decreased in 1996 and never regained its high
      - The one year Financial Freedom dropped (2007) GDP growth went from averaging around 4% to the next two years sub 1% and 2009 GDP growth was -6.8%
      - Many state owned enterprises have not been privatized and regulations are not applied consistently.
      - Experienced market liberalization in early 1990s

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Indonesia:** Grew from 2,297 to 4,353 PPP Adj. PCGDP over the 15 year Period (1.46x 1995 PCGDP and 2.02x 1995 GDP)
    - Overall Freedom increased from 54.9 to 55.5 in 2010
      - Business Freedom slightly decreased while Trade Freedom increased significantly
      - Investment and Property Freedom both decreased from 50 to 30.
      - The worst GDP growth year was 1998 at the peak of Overall Freedom ad had a solid 2009 of 4.63% growth
      - President Suharto resigned in 1998 and Indonesia then proceeded with major political and governmental structural reforms
      - Country hardest hit by the Asian financial crisis
      - Many business borrowed in dollars which was a net advantage as the currency strengthened

  - **Italy:** Grew from 20,674 to 29,841 PPP Adj. PCGDP over the 15 year Period (1.44x 1995 PCGDP and 1.53x 1995 GDP)
    - Overall Freedom increased from 61.2 to 62.7 in 2010
      - GDP growth has been poor throughout the entire period.
      - Freedom from Corruption started at 70 in 1995 and is currently at 48
      - There has been large government expenditures in the country leading to 116% public debt to GDP in 2010

  - **Kenya:** Grew from 1,128 to 1,676 PPP Adj. PCGDP over the 15 year Period (1.48x 1995 PCGDP and 2.14x 1995 GDP)
    - Overall Freedom increased from 54.5 to 57.5 in 2010
      - Freedom from Corruption went from 50 to 21 over the period
      - Monetary Freedom increased over the period from 50.4 to 72.7
      - Monetary Freedom hit a high of 82.9 in 2004, the same year growth rates started to accelerate.
      - Next four years of growth of 4.62, 5.98, 6.33 and 6.99
      - The country has gone through political and civil unrest including protests in 2007 that escalated into violence resulting in nearly 1000 deaths and 600,000 people displaced.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Madagascar:** Grew from 676 to 933 PPP Adj. PCGDP over the 15 year Period (1.38x 1995 PCGDP and 2.10x 1995 GDP)
    - Overall Freedom increased from 51.6 to 63.2 in 2010
      - The country has seen dramatic population growth
      - Trade Freedom has increased significantly and annual GDP growth has been strong averaging north of 5% when excluding 2002
      - Economic reforms were implemented in 1996 with only gradual progress
      - In 2001 the contested presidential elections led to a 7-month standoff which had devastating impacts on the economy.

  - **Malawi:** Grew from 470 to 821 PPP Adj. PCGDP over the 15 year Period (1.75x 1995 PCGDP and 2.57x 1995 GDP)
    - Overall Freedom decreased from 54.7 to 54.1 in 2010
      - Freedom from Corruption was below 30 from 2004 onward
      - Monetary, Trade, and Fiscal Freedom increased over the period
      - Malawi's political environment is described as "challenging" and government corruption is still a serious issue

  - **Malaysia:** Grew from 7,523 to 14,744 PPP Adj. PCGDP over the 15 year Period (1.96x 1995 PCGDP and 2.68x 1995 GDP)
    - Overall Freedom decreased from 71.9 to 64.8 in 2010
      - Trade Freedom and Fiscal Freedom increased
      - Highest growth rates were in 1995 and 1996, which coincide with the two highest Overall Freedom Scores
      - Malaysia is a relatively open state-oriented economy. The state has a significant but declining role in guiding economic activity

  - **Mali:** Grew from 556 to 1,109 PPP Adj. PCGDP over the 15 year Period (1.96x 1995 PCGDP and 3.02x 1995 GDP)
    - Overall Freedom increased from 52.4 to 55.6 in 2010
      - Became a constitutional democracy in 1992 and since 2002, has moved to an increasingly pragmatic and pro-Western country
      - While Freedom From Corruption and Fiscal Freedom has improved, Business, Property, and Monetary Freedom have decreased

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Mexico:** Grew from 8,247 to 13,932 PPP Adj. PCGDP over the 15 year Period (1.69x 1995 PCGDP and 2.08x 1995 GDP)
    - Overall Freedom increased from 63.1 to 68.3 in 2010
      - Business, Trade, Fiscal, Monetary, Financial Freedom all increased significantly
      - Growth rates are volatile and Freedom from Corruption score is low
      - Mexico has an extremely high crime rate and has been in a drug war since 2006 although influence and impact of the drug trade in Mexico has persisted for much longer.
      - Freedom scores have been increasing since the 21st century while GDP growth has been poor thus far

  - **Morocco:** Grew from 2,193 to 4,794 PPP Adj. PCGDP over the 15 year Period (2.19x 1995 PCGDP and 2.64x 1995 GDP)
    - Overall Freedom decreased from 62.8 to 59.2 in 2010
      - Growth was highest at 12.22% in 1996 when Overall Freedom was at its peak and growth was also high in 2006 (7.76% when Freedom was at its low.
      - Trade Freedom has been very volatile and has increased significantly in recent years
      - Freedom from Corruption has decreased significantly as well as Property Freedom
      - Political reforms in the 90s resulted in a bicameral legislature being established in 1997.

  - **Pakistan:** Grew from 1,507 to 2,720 PPP Adj. PCGDP over the 15 year Period (1.80x 1995 PCGDP and 2.52x 1995 GDP)
    - Overall Freedom decreased from 57.6 to 55.2 in 2010
      - The highest growth year was the same year Overall Freedom was at a low (2005)
      - Has not had a negative GDP growth year for the entire period
      - Freedom from Corruption score has improved although still very low
      - Business, Trade and Fiscal Freedom Scores have improved significantly
      - Investment, Financial and Property Freedom have decreased significantly
      - The country underwent extensive economic reforms from 2001 to 2008
      - Pakistan has been democratic since 1985

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Paraguay:** Grew from 3,443 to 5,208 PPP Adj. PCGDP over the 15 year Period (1.51x 1995 PCGDP and 2.02x 1995 GDP)
    - Overall Freedom decreased from 65.9 to 61.3 in 2010
      - The worst years were during the decline in Overall Freedom
      - Property Freedom declined form 50 to 30 the year prior to two consecutive years of negative GDP Growth
      - Freedom from Corruption score is extremely low but has improved since 1995 from 10 to 24
      - Investment Freedom and Property Freedom have declined significantly
      - Constitution in 1992 dramatically improved fundamental rights
      - Sluggish period between 1998 to 2002 appears to be a direct result of political and civil instability

  - **Peru:** Grew from 4,453 to 9,358 PPP Adj. PCGDP over the 15 year Period (2.10x 1995 PCGDP and 2.66x 1995 GDP)
    - Overall Freedom increased from 56.9 to 67.6 in 2010
      - The best growth has come recently while Overall Freedom has been improving
      - Business, Trade and Property Freedom all improved around the time growth starting averaging 7%
      - The country accumulated a large external debt during the 1980s which was reduced from 1990-2000
      - Reforms and economic liberalization occurred during the 1990s
      - The Asian financial crisis apparently contributed to a short term slump in GDP growth

  - **Poland:** Grew from 7260 to 18,951 PPP Adj. PCGDP over the 15 year Period (2.61x 1995 PCGDP and 2.58x 1995 GDP)
    - Overall Freedom increased from 50.7 to 63.2 in 2010
      - GDP growth was strong in 1995 to 1997 where Overall Freedom increased by 6.1 points.
      - Investment, Business, and Financial Freedom have decreased in recent years
      - Poland stands as one of the best examples of a centrally planned to a market-based economy
      - Since the fall of communism, Poland has pursued a policy of liberalizing the economy
      - Poland continues to privatize and restructure sensitive portions of the economy

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Slovakia:** Grew from 8,801 to 22,122 PPP Adj. PCGDP over the 15 year Period (2.51x 1995 PCGDP and 2.55x 1995 GDP)
    - Overall Freedom increased from 60.4 to 69.7 in 2010
      - Business, Fiscal, Monetary, and Financial all increased significantly at around the same time GDP growth rates began to accelerate
      - All freedom scores are at or near highs excluding Labor Freedom and Financial Freedom. Financial Freedom is still at 70 though
      - Slovakia became an independent state in 1993 in a peaceful dissolution of Czechoslovakia

  - **Spain:** Grew from 17,191 to 29,881 PPP Adj. PCGDP over the 15 year Period (1.74x 1995 PCGDP and 2.03x 1995 GDP)
    - Overall Freedom increased from 62.8 to 69.6 in 2010
      - GDP growth has been rather steady throughout the entire period
      - Freedom Scores have been stable with Fiscal /Freedom and Government Spending having the greatest amount of change
      - A real estate bubble busting is credited with causing the negative growth in 2009 and 2010 during the financial crisis

  - **Sri Lanka:** Grew from 2,132 to 5,169 PPP Adj. PCGDP over the 15 year Period (2.42x 1995 PCGDP and 2.86x 1995 GDP)
    - Overall Freedom decreased from 60.6 to 54.6 in 2010
      - Business, Trade, and Fiscal Freedom improved while Investment, Financial, Property and Freedom from Corruption declined
      - GDP growth has been strong throughout the 15 year period baring 2001

  - **Swaziland:** Grew from 3,042 to 5,156 PPP Adj. PCGDP over the 15 year Period (1.69x 1995 PCGDP and 1.98x 1995 GDP)
    - Overall Freedom decreased from 63.3 to 57.4 in 2010
      - GDP growth was relatively low throughout the entire period
      - Investment, Business, Property and Freedom from Corruption declined
      - Trade and Monetary Freedom improved
      - ~50% of GDP is government services and a constitution was recently put into place in 2005 and still hotly contested.

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Tanzania:** Grew from 626 to 1,418 PPP Adj. PCGDP over the 15 year Period (2.27x 1995 PCGDP and 3.16x 1995 GDP)
    - Overall Freedom increased from 57.3 to 58.3 in 2010
      - Trade, Fiscal, Monetary and Investment Freedom improved while Business Freedom declined
      - GDP growth improved in the later years but remained relatively stable throughout the period as well as all Freedom scores remained relatively stable

  - **The Philippines:** Grew from 2,116 to 3,920 PPP Adj. PCGDP over the 15 year Period (1.85x 1995 PCGDP and 2.55x 1995 GDP)
    - Overall Freedom increased from 55 to 56.3 in 2010
      - Business, Fiscal, Investment and Property Freedom declined over the period while Trade Freedom improved significantly
      - Overall Freedom was at a high the one year (1998) the country experienced negative GDP growth
      - The country's economic reforms first implemented in '92 were impacted by both the Asian financial crisis in '97 and charges of corruption

  - **Tunisia:** Grew from 3,994 to 9,454 PPP Adj. PCGDP over the 15 year Period (2.37x 1995 PCGDP and 2.82x 1995 GDP)
    - Overall Freedom declined from 63.4 to 58.9 in 2010
      - Tunisia's worst year of GDP growth in 2002 is after years of declining Overall Freedom and coincides with a large drop in Trade Freedom
      - Investment and Financial Freedom has declined substantially

  - **Turkey:** Grew from 6,709 to 13,275 PPP Adj. PCGDP over the 15 year Period (1.98x 1995 PCGDP and 2.51x 1995 GDP)
    - Overall Freedom increased from 58.4 to 63.8 in 2010
      - Growth rates have been volatile as well as Overall Freedom ranging from a high of 63.4 to a low of 50.6
      - Business, Property, and Financial Freedom declined while Trade, Fiscal, and Monetary Freedom improved
      - 1999 and 2001 (negative growth years) occur the same years as declines in Overall Freedom
      - Freedom from Corruption has improved substantially
      - There was a major earthquake in 1999
      - The 1999 to 2001 period involved high government debt and rampant government corruption

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 50, <60**

  - **Uganda:** Grew from 542 to 1,252 PPP Adj. PCGDP over the 15 year Period (2.31x 1995 PCGDP and 3.74x 1995 GDP)
    - Overall Freedom declined from 62.9 to 62.2 in 2010
      - High growth rates occurred during times of Trade Freedom and the lowest growth rate (1998 3.81% growth) occurred during a time of very low Trade Freedom
      - The period 1990 to 2001 has been characterized as growth by economic reform and investment
      - Trade Freedom increased significantly as well as Monetary and Financial

  - **Zambia:** Grew from 824 to 1,517 PPP Adj. PCGDP over the 15 year Period (1.84x 1995 PCGDP and 2.64x 1995 GDP)
    - Overall Freedom increased from 55.1 to 58 in 2010
      - GDP growth has been stronger in the last 7 years than the previous 8.
      - Business and Trade and Monetary Freedom have improved while Investment, Financial and Property Freedom have declined
      - Foreign investment in the country's mining has been attributed to stabilization and increased economic growth
      - The country is highly dependent on copper as an export

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 60**

  - **Australia:** Grew from 21,709 to 39,090 PPP Adj. PCGDP over the 15 year Period (1.80x 1995 PCGDP and 2.22x 1995 GDP)
    - Overall Freedom increased from 74.1 to 82.6 in 2010
      - GDP growth has been steady although slowed, but never went negative, during financial crisis
      - Business, Trade and Investment Freedom have increased
      - All Freedom scores are relatively high as well as Overall Freedom

  - **Austria:** Grew from 22,866 to 39,849 PPP Adj. PCGDP over the 15 year Period (1.74x 1995 PCGDP and 1.84x 1995 GDP)
    - Overall Freedom increased from 70 to 71.6 in 2010
      - There was a decrease in Trade Freedom the two years of sub 1% growth and the year of negative growth (2009)

  - **Bahrain:** Grew from 16,895 to 27,037 PPP Adj. PCGDP over the 15 year Period (1.6x 1995 PCGDP and 3.05x 1995 GDP)
    - Overall Freedom increased from 76.2 to 76.3 in 2010
      - Business Freedom decreased while GDP growth accelerated
      - Financial Freedom increased around same time growth rate accelerated
      - All Freedom scores are relatively high regardless
      - Many Freedoms were instituted in 2001, after an uprising, including giving women the right to vote, elections for parliament and releasing political prisoners. The years following, the country saw accelerated growth
      - Personal Freedoms are not well reflected in the Freedom Index

  - **Canada:** Grew from 22,810 to 39,154 PPP Adj. PCGDP over the 15 year Period (1.72x 1995 PCGDP and 2.00x 1995 GDP)
    - Overall Freedom increased from 69.4 to 80.4 in 2010
      - GDP growth rates have been decreasing over recent years
      - Monetary Freedom has decreased while almost all other scores have increased

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 60**

  - **Chile:** Grew from 7,911 to 16,112 PPP Adj. PCGDP over the 15 year Period (2.04x 1995 PCGDP and 2.46x 1995 GDP)
    - Overall Freedom increased from 71.2 to 77.2 in 2010
      - Business Freedom has declined while most other Freedoms have increased.
      - Investment recently increased while Freedom from Corruption has increased dramatically
      - Trade freedom has also increased a great deal around the time growth rates improved after sluggish years (1998-2002)
      - Chile had a reputation in the early 1990s as a model of economic reform

  - **Costa Rica:** Grew from 19.672 to 51.718 PPP Adj. **GDP** over the 15 year Period (2.63x 1995 GDP)
    - Overall Freedom decreased from 68 to 65.9 in 2010
      - Highest Overall Freedom in 2000 was only 0.4 higher than 1995
      - GDP growth has been volatile
      - Business and Monetary Freedom have declined while Trade Freedom has increased
      - A large source of revenue is from tourism which can be impacted by many outside factors

  - **Czech Republic:** Grew from 12,906 to 26,122 PPP Adj. PCGDP over the 15 year Period (2.02x 1995 PCGDP and 2.06x 1995 GDP)
    - Overall Freedom increased from 67.8 to 69.8 in 2010
      - Has had very volatile growth and volatile Business Freedom Scores
      - Fiscal, Trade and Monetary Freedom have improved
      - Lowest Business Freedom score coincides with highest GDP growth year over the period (2006)
      - Most of the economy has been privatized after 1993 when the country went through economic reforms with the intention of creating a capitalist economy

  - **El Salvador:** Grew from 4,294 to 7,340 PPP Adj. PCGDP over the 15 year Period (1.71x 1995 PCGDP and 1.90x 1995 GDP)
    - Overall Freedom increased from 69.1 to 69.9 in 2010
      - Had a high growth rate from 1990-1995 but since, average growth has been 2.3%
      - Business Freedom has declined
      - There was a period where Freedom Scores (Overall and Individual) improved but GDP growth was poor (2000-2004)
      - Economic reforms in early 90s brought major benefits, however crime still remains a problem for the investment climate

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 60**

  - **Estonia:** Grew from 6,240 to 18,539 PPP Adj. PCGDP over the 15 year Period (2.97x 1995 PCGDP and 2.75x 1995 GDP)
    - Overall Freedom increased from 65.2 to 74.7 in 2010
      - Trade, Monetary Financial, Property and Freedom from Corruption improved significantly
      - Business Freedom has declined in recent years
      - GDP growth has been somewhat volatile but high on average and average growth has increased as Overall Freedom has increased
      - 1999 was impacted by the Russian financial crisis of 1998
      - Estonia ranked 1st in the State of World Liberty Index
      - Balanced budget, almost non-existent public debt, flat-rate income tax, free trade, competitive commercial banking and innovative e-services are all hallmarks of Estonia's market economy

  - **Germany:** Grew from 22,027 to 36,013 PPP Adj. PCGDP over the 15 year Period (1.63x 1995 PCGDP and 1.64x 1995 GDP)
    - Overall Freedom increased from 69.8 to 71.1 in 2010
      - GDP growth has been poor throughout the entire period
      - Growth did reach north of 3% for two consecutive years after Business Freedom moved up from 70 to 89.1
      - Fiscal Freedom has improved significantly while Government Spending has been improving from a low level

  - **Hong Kong:** Grew from 22,633 to 46,128 PPP Adj. PCGDP over the 15 year Period (2.03x 1995 PCGDP and 2.3x 1995 GDP)
    - Overall Freedom increased from 88.6 to 89.7 in 2010
      - GDP growth has been volatile hitting -6.03% when Overall Freedom was its lowest in 1998 (Asian financial crisis, H5N1 and just months after transfer of sovereignty from the United Kingdom to the PRC)
      - When Overall Freedom hit 90 in 2004 growth was at a high of 8.47% for the 15 year period but when it reached 90 again in 2009, growth was negative (during the financial crisis)

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 60**

  - **Ireland:** Grew from18,600 to 39,492 PPP Adj. PCGDP over the 15 year Period (2.12x 1995 PCGDP and 2.64x 1995 GDP)
    - Overall Freedom increased from 68.5 to 81.3 in 2010
      - Trade, Fiscal, Investment, Financial Freedom and Freedom from Corruption all improved
      - GDP growth has slowed since the late 1990s although throughout the period the largest changes have come only from Government Spending and Fiscal Freedom
      - Most other Freedom scores were extremely high at the start of the period

  - **Israel:** Grew from 17,253 to 29,602 PPP Adj. PCGDP over the 15 year Period (1.72x 1995 PCGDP and 2.37x 1995 GDP)
    - Overall Freedom increased from 61.5 to 67.7 in 2010
      - Growth has been volatile with highest growth rates occurring in 1995 and 2000 when Overall Freedom was at short term lows
      - Investment and Business Freedom has declined over the period
      - Trade, Fiscal and Monetary Freedom have increased over the period

  - **Jamaica:** Grew from 6,620 to 8,743 PPP Adj. PCGDP over the 15 year Period (1.32x 1995 PCGDP and 1.46x 1995 GDP)
    - Overall Freedom increased from 64.4 to 65.5 in 2010
      - GDP growth has been poor throughout the entire period
      - All Freedom scores are relatively high and were stable
      - Largest decline was in Freedom from Corruption which is at a 15 year low in 2010

  - **Japan:** Grew from 22,897 to 34,330 PPP Adj. PCGDP over the 15 year Period (1.50x 1995 PCGDP and 1.53x 1995 GDP)
    - Overall Freedom decreased from 75 to 72.9 in 2010
      - The years of negative growth do not correlate with any significant change in Overall Freedom or Freedom Factors
      - Japan's public debt as of 2011 is 208.2% of GDP

  - **Jordan:** Grew from 2,886 to 5,767 PPP Adj. PCGDP over the 15 year Period (2.00x 1995 PCGDP and 2.86x 1995 GDP)
    - Overall Freedom increased from 62.7 to 66.1 in 2010
      - Highest growth rates have occurred in the 2004-2008 period which was when Business Freedom and Trade Freedom were near highs.
      - Liberal economic policies are credited for an economic boom from 1999 and conservative bank policies are credited with helping the country escape the worst of the global financial crisis of 2009

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 60**

  - **Oman:** Grew from 14,011 to 25,459 PPP Adj. PCGDP over the 15 year Period (1.82x 1995 PCGDP and 2.59x 1995 GDP)
    - Overall Freedom decreased from 70.2 to 67.7 in 2010
      - Freedom had been increasing the year the country recorded 12.86% GDP growth (2008)
      - Growth was negative in 1999 the year Business Freedom and Investment Freedom both dropped significantly
      - The country is highly dependent on oil prices

  - **Panama:** Grew from 5,217 to 12,706 PPP Adj. PCGDP over the 15 year Period (2.44x 1995 PCGDP and 3.26x 1995 GDP)
    - Overall Freedom decreased from 71.6 to 64.8 in 2010
      - Business, Trade and Fiscal Freedom improved
      - Trade Freedom seems relatively correlated to GDP growth, growth rates hit a high when Trade Freedom was at a high
      - Freedom from Corruption has been declining over recent years to levels in the 30s and Property Freedom has declined

  - **Portugal:** Grew from13,988 to 18,341 PPP Adj. PCGDP over the 15 year Period (1.66x 1995 PCGDP and 1.77x 1995 GDP)
    - Overall Freedom increased from 62.4 to 64.4 in 2010
      - GDP growth was volatile and sub 1% for a number of years
      - The worst stretch coincides with a drop in Freedom from Corruption and Government Spending scores but the best years were als o the lowest years of the Freedom from Corruption score. All scores besides Government Spending were relatively high over the entire period.
      - Portugal, in 2011, stands at 108.5% public debt to GDP
      - Corruption has been cited as an issue, yet the country scores well in Freedom from Corruption and in the Transparency International Report

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 60**

  - **Singapore:** Grew from 25,285 to 56,708 PPP Adj. PCGDP over the 15 year Period (2.24x 1995 PCGDP and 3.17x 1995 GDP)
    - Overall Freedom decreased from 86.3 to 86.1 in 2010 although it was above the 1995 level in every other year
      - Growth has been volatile but on average very high
      - A global recession is blamed for the contraction in 2001, changes were then suggested to revitalize the economy

  - **South Africa:** Grew from 5,781 to 10,541 PPP Adj. PCGDP over the 15 year Period (1.82x 1995 PCGDP and 2.22x 1995 GDP)
    - Overall Freedom increased from 60.7 to 62.8 in 2010
      - The best growth years were around the time Overall Freedom was the highest
      - Trade Freedom has improved significantly

  - **South Korea:** Grew from 12,288 to 30,042 PPP Adj. PCGDP over the 15 year Period (2.44x 1995 PCGDP and 2.65x 1995 GDP)
    - Overall Freedom decreased from 72 to 69.9 in 2010
      - Growth has been highest in the late 1990s although 1998 was a result of the Asian financial crisis
      - The 1990s was also the period where overall Freedom was the highest, the peak of which was 1998 when growth was negative
      - Has been a liberal democracy since the 1980s
      - The country is also characterized by low debt levels

  - **Sweden:** Grew from 20,597 to 38,171 PPP Adj. PCGDP over the 15 year Period (1.85x 1995 PCGDP and 1.97x 1995 GDP)
    - Overall Freedom increased from 61.4 to 72.4 in 2010
      - GDP growth has been relatively stable over the entire period
      - Fiscal Freedom is very low and Government Spending scores are very low
      - There was a big dip in Trade Freedom in 2001 where growth retracted to 1.42%
      - While they have an extremely low Government Spending score, public debt as a % of GDP is low

Overall Score Analysis
Analyzing Countries and their Factors for Freedom and Translating it into Growth…

- **Overall Scores > 60**

  - **Taiwan:** Grew from 15,075 to 35,595 PPP Adj. PCGDP over the 15 year Period (2.36x 1995 PCGDP and 2.56x 1995 GDP)
    - Overall Freedom decreased from 74.2 to 70.4 in 2010
      - Growth has been high and relatively steady baring the Asian Financial Crisis and the most recent Financial Crisis
      - Trade Freedom has improved significantly

  - **Thailand:** Grew from 4,687 to 9,222 PPP Adj. PCGDP over the 15 year Period (1.97x 1995 PCGDP and 2.11x 1995 GDP)
    - Overall Freedom decreased from 71.3 to 64.1 in 2010
      - There has been some political instability in recent years, due to a depreciation of the currency in 1997 and 1998, that led to the Asian Financial Crisis, GDP contracted significantly
      - Around the time Trade Freedom was peaking was when GDP growth was the highest
      - Freedom from Corruption scores are low and the period of 2008-2010 was marred by political and civil unrest

  - **United Kingdom:** Grew from 19,704 to 35,344 PPP Adj. PCGDP over the 15 year Period (1.79x 1995 PCGDP and 1.92x 1995 GDP)
    - Overall Freedom decreased from 77.9 to 76.5 in 2010
      - Growth has been relatively steady over the entire period baring the recent Financial Crisis
      - All Freedom scores are high besides Government Spending

  - **United States:** Grew from 27,827 to 46,900 PPP Adj. PCGDP over the 15 year Period (1.69x 1995 PCGDP and 1.96x 1995 GDP)
    - Overall Freedom increased from 76.7 to 78 in 2010
      - Freedom from Corruption scores have declined over the years while Business Freedom, Trade Freedom, Fiscal Freedom have increased
      - Overall Freedom was near its highest in 2008 and 2009 during the Financial Crisis where GDP growth was negative
      - Public debt is estimated at 67.7% of GDP but it does not include intra-governmental debt

  - **Uruguay:** Grew from 7,015 to 14,049 PPP Adj. PCGDP over the 15 year Period (2.00x 1995 PCGDP and 2.10x 1995 GDP)
    - Overall Freedom increased from 62.5 to 69.8 in 2010
      - Uruguay has had a very volatile GDP growth rate
      - Trade Freedom has been volatile but improved ,worst growth year (2002) coincides with lowest Trade Freedom score
      - Best years have occurred recently with highest Trade Freedom scores