



GDP Growth and the Index of Economic Freedom Analysis

Project Plan



- We observe that macro economic 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



- **Activities**

- ▶ 1.1: Gain a deep understanding of The Index, its importance, and the changes that have been made to it throughout its history
- ▶ 1.2: For each factor in The Index, understand the inputs and how the factor is calculated
- ▶ **1.3: Determine key milestones along the continuum, from repressed to free, for each factor and how these milestones are correlated to economic development and growth**
- ▶ 1.4: Determine and research other economic indicators that could be used to augment The Index

- **End Products**

- ▶ Deck providing detailed research of each indicator, which will serve as a reference for the rest of the project
- ▶ List of Milestones and estimated cutoffs on the continuum from green to yellow to red
- ▶ List of questions and hypotheses to guide the data collection



- **Activities**

- ▶ 2.1: Collect GDP data by country, both actual and predicted, including:
 - Growth
 - Level
 - Per capita
- ▶ 2.2: Collect Index data by year, total factor, and component factor
- ▶ 2.3: Collect data for other economic indicators and scale it appropriately for The Index
- ▶ 2.4: Combine data into a usable format

- **End Products**

- ▶ Spreadsheet with all the data needed
- ▶ List of countries to be included
- ▶ List of years to be included
- ▶ List of regional breakdowns
- ▶ Deck detailing the process and reasoning for the compilation of the lists described above



● Activities

- ▶ 3.1: Compute basic statistics on GDP data including means, medians, and correlations by: Years, Countries, Regions
- ▶ 3.2: Compute basic statistics on The Index factors and other indicators including means, medians, and correlations by: Years, Countries, Regions, and Growth Rates
- ▶ 3.3: Compute correlations between GDP growth and The Index, index factors, other indicators, and their growth rates
- ▶ 3.4: Synthesize the statistical data
- ▶ 3.5: Complete regression analysis
 - GDP growth on The Index
 - GDP growth on the factors in The Index
 - GDP growth on the modified index
- ▶ 3.6: Analyze results
- ▶ 3.7: Combine data and analysis into a usable format

● End Products

- ▶ Spreadsheet that is ready for developing the model
- ▶ Deck including the results of the analysis, predictions, and hypotheses for the model



- **Activities**

- ▶ 4.1: Data Envelopment Analysis
- ▶ 4.2: Neural Networks Analysis
- ▶ 4.4: Iterate based on results

- **End Products**

- ▶ A model that answers the questions and is easy to update and modify
- ▶ Deck detailing the process of creating the model and the steps that led to a final product

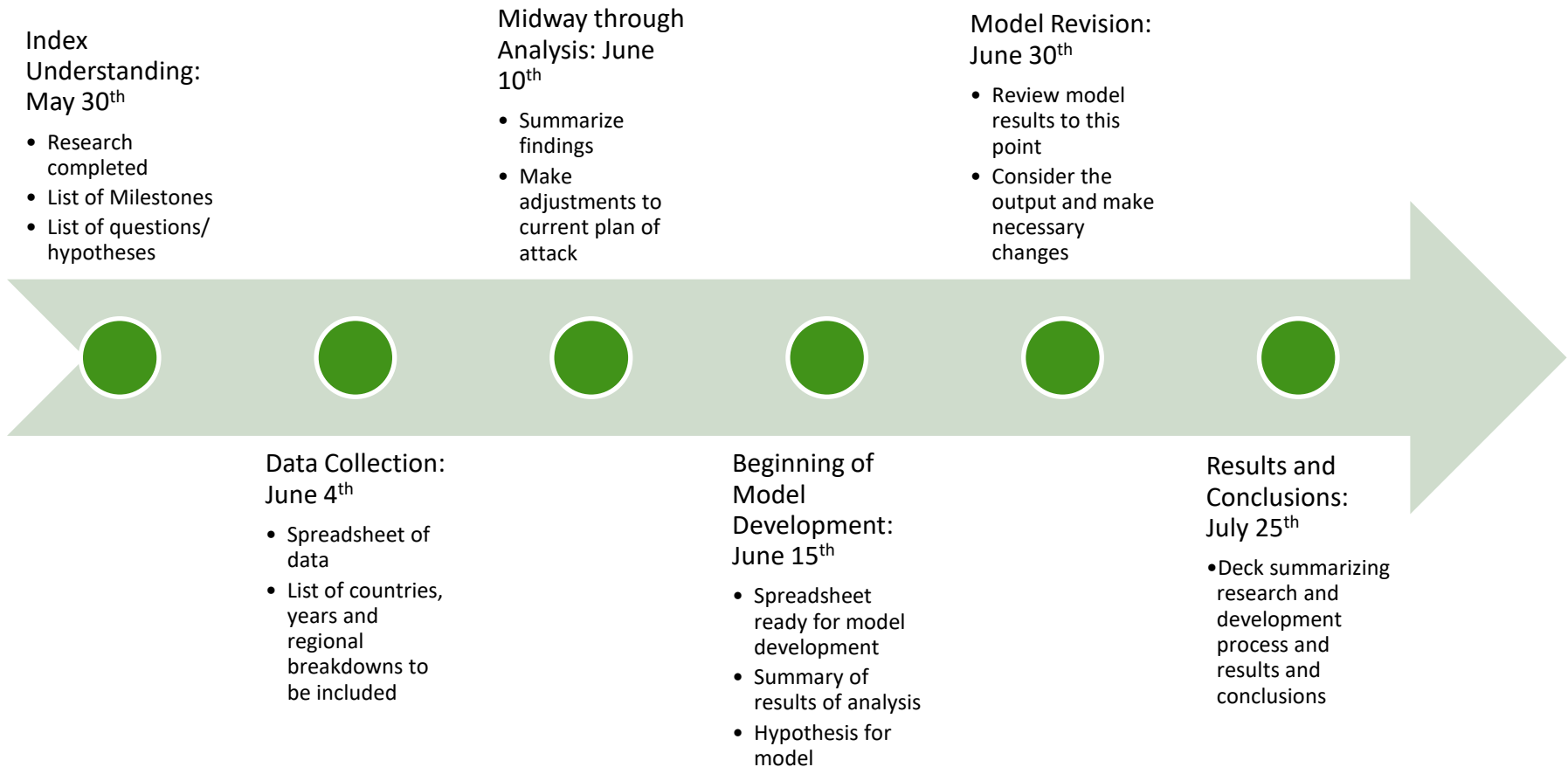


- **Activities**

- ▶ 5.1: Synthesize the results of the model in conjunction with the understanding of each of the factors that are included
- ▶ 5.2: Create a final product that incorporates all aspects of the project, including the model and deck

- **End Products**

- ▶ A complete deck that outlines the whole project, its results, and conclusions



Detailed Check Points: Understanding the Index



Tasks	Duration	Start	End	5/14/2012							5/21/2012							5/28/2012						
				M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
Understanding the Index	16	5/14/2012	5/30/2012	[Gantt bar from 5/14 to 5/30]																				
Understanding of the Index of Economic Freedom and what it measures	2	5/14/2012	5/16/2012	[Gantt bar from 5/14 to 5/16]																				
Rule of Law	12	5/16/2012	5/28/2012	[Gantt bar from 5/16 to 5/28]																				
Property rights				[Gantt bar from 5/16 to 5/28]																				
Freedom from corruption Index				[Gantt bar from 5/16 to 5/28]																				
Limited Government	12	5/16/2012	5/28/2012	[Gantt bar from 5/16 to 5/28]																				
Fiscal freedom				[Gantt bar from 5/16 to 5/28]																				
Government spending				[Gantt bar from 5/16 to 5/28]																				
Regulatory Efficiency	12	5/16/2012	5/28/2012	[Gantt bar from 5/16 to 5/28]																				
Business freedom				[Gantt bar from 5/16 to 5/28]																				
Labor freedom				[Gantt bar from 5/16 to 5/28]																				
Monetary freedom				[Gantt bar from 5/16 to 5/28]																				
Open Markets	12	5/16/2012	5/28/2012	[Gantt bar from 5/16 to 5/28]																				
Trade freedom				[Gantt bar from 5/16 to 5/28]																				
Investment freedom				[Gantt bar from 5/16 to 5/28]																				
Financial freedom				[Gantt bar from 5/16 to 5/28]																				
Other Data to Consider	12	5/16/2012	5/28/2012	[Gantt bar from 5/16 to 5/28]																				
Debt to GDP Ratio				[Gantt bar from 5/16 to 5/28]																				
Percent of Population paying income taxes				[Gantt bar from 5/16 to 5/28]																				
CDS Spread				[Gantt bar from 5/16 to 5/28]																				
Credit Growth				[Gantt bar from 5/16 to 5/28]																				
Velocity of Money				[Gantt bar from 5/16 to 5/28]																				
GDP Forecasting Methodology	12	5/16/2012	5/28/2012	[Gantt bar from 5/16 to 5/28]																				
Methodological Issues	12	5/16/2012	5/28/2012	[Gantt bar from 5/16 to 5/28]																				
Deliverables	2	5/28/2012	5/30/2012	[Gantt bar from 5/28 to 5/30]																				

Detailed Checkpoints: Collecting and Analyzing Data



Tasks	Duration	Start	End	5/14/2012		5/21/2012		5/28/2012		6/4/2012		6/11/2012							
				M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T
Collecting Data	6	5/30/2012	6/5/2012																
GDP		5/30/2012	6/4/2012																
Index of Economic Freedom		5/30/2012	6/4/2012																
Other Data to Consider																			
Deliverables	1	6/4/2012	6/5/2012																
Analyzing Data	10	6/5/2012	6/15/2012																
GDP																			
Predictions vs. Actual - Growth/Level/Per Capita																			
Mean																			
Standard Deviation																			
Index of Economic Freedom and Other Data																			
Growth/Changes by Factor/statistic																			
Correlations																			
Between each factor/statistic																			
Between each factor/statistic and GDP growth																			
Between each factor/statistic and GDP per capita																			
Deliverables	3	6/12/2012	6/15/2012																

Detailed Checkpoints: Developing the Model and Conclusions



Tasks	Duration	Start	End	6/11/2012							6/18/2012							6/25/2012							7/2/2012							7/9/2012							7/16/2012							7/23/2012									
				M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W
Developing the Model	28	6/15/2012	7/13/2012	[Gantt bar for Developing the Model]																																																			
Synthesize Correlation data																																																							
Regression																																																							
Single Variable - Index																																																							
Multi-variable - Each factor																																																							
Iterate until comfortable with model																																																							
Developing Conclusions	12	7/13/2012	7/25/2012	[Gantt bar for Developing Conclusions]																																																			
Clean up Model so that it is in an easily updateable form	5	7/13/2012	7/18/2012	[Gantt bar for Clean up Model]																																																			
Summarize results and conclusions in powerpoint	7	7/18/2012	7/25/2012	[Gantt bar for Summarize results]																																																			