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Grounded Labels from the Behavioral International Economic Development Growth Path Model on Economic Development Patterns from 2002-2012

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ABSTRACT

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by

Kenneth Thomas Davis

M.P.A., Oklahoma University, 2006
B.S., Western Michigan University, 1996

Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
Public Policy and Public Administration

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Abstract

Economic models generally fail to adequately measure positive and negative growth paths in development through agrarian, industry, and service economies. The purpose of this grounded theory study was to design a new model that could accommodate both directions of growth and better measure development paths with particular attention to labors contributions. The theoretical foundation for this study was Walt Whitman Rostow's 5 economic stages of growth classifications. This Study attempted to find the most common economic growth path. While most development models use three to five classifications, this study used nine new classifications giving it a unique and specific look at international development. The two model indicators used were gross domestic product composition by sector (the economic success of the system) and labor force occupation by sector (labors activity to help define behavior of the system). The sample included data from 279 nations from the CIA World Factbook. A systematic method of analysis was used in the open, axial, and selective theoretical coding phases. The key findings reveal 9 distinct growth phases, 15 identified growth paths, and 4 distinct path clusters which helps measure and define development behavior. This analysis resulted in building upon Rostow's original observations. The implications for social change show that policy makers can benefit from using this new model, named the behavioral international economic development growth path model, to provide improved decision making measurements related to agrarian, service, and industry sectors of the economy. In addition, public administrators in developing nations may benefit from a better understanding of more specific development paths, probabilities of path movement, and comparison of policies from same classification nations.

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Dedication

In a man's life, he will wear many hats. It is the balance of these responsibilities that make the man. As I read, learn, teach, write, lead, fight, travel, follow, live, and mature, it is my family's support that is the true reason I am able to succeed. I am a firm believer that a man should not be judged by what he knows, but let him be evaluated on what he does with that knowledge, for this is the true measurement of a man. I have been tested academically and look forward, with great enthusiasm, to the test this life will bring.

Robert Frost (1915) wrote in the poem, "Black Cottage," "Most of the change we think we see in life is due to truths being in and out of favor" (p. 137). I first heard this quote from Robert Solow during his Nobel Prize speech in 1987. I find it reflective of development economics, growth economics, behavior economics, and the research here.

Any inquiries on this dissertation or research can be made to Kenneth T. Davis at Chairman@biedsociety.com. Thank you for your interest in my research.

Acknowledgments

I would like to thank my loving wife, Alicia, for her positive and endless encouragement. This world is what we make it and I draw energy from your tireless outlook on the good nature of the world we live. Thank you for sharing your life with me, for joining me in Afghanistan, and for being a sounding board for my endless ideas.

To my mother and father, for all you have done for me over the years, I am grateful. The notion of working smarter was not lost on me. Thank you for pointing me in the right direction and for letting me fail often. If not for my failures, I would have missed the most valuable lessons in life.

To my brother, sister, and grandmother, thank you for all the support you have given freely and without expectations. Not all families have support and I appreciate all that you have done over the years. To my in-laws, you are simply the best, I could not hope for more positive and compassionate support. To Holly, Katie, Richie, Irina, Anthony, Aaron, Gabby, Aaliyah, Bonnie, Diane, Janie, Rick, Julie, Joanne, Harry, Lenora, Todd, Vicky, Danielle, Stephanie, Melanie, Sharon, Ron, Karen, and countless others, thank you for your involvement in my life. My experience is richer because of the time we share.

To Dr. Kevin Fandl and Dr. Anne Hacker, I appreciate your professionalism, respect, and guidance while completing this research. Thank you for the feedback and direction. I look forward to many years of contact ahead.

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Chapter 1: Introduction to the Study

Background of the BIED GPM Study

During the December 8, 2001 Nobel Prize lecture titled "Information and the Change in the Paradigm in Economics," Nobel Laureate Stiglitz (2001) stated, "When I began the study of economics some forty one years ago, I was struck by the incongruity between the models that I was taught and the world that I had seen growing up"(para. 4) Nobel Laureate Ostrom (2009) announced on the same day 8 years later in her Nobel Prize lecture titled "Beyond Markets and States: Polycentric Governance of Complex Economic Systems" that "we need to develop a better theoretical understanding of human behavior as well as of the impact of the diverse contexts that humans face"(para. 91). Ostrom went on to say, "We should continue to use simple models where they capture enough of the core underlying structure and incentives that they usefully predict outcomes" (para. 91).

Stiglitz and Ostrom are reputed as two of the brightest minds in the world of economics. They defined and prescribed two specific problems and call for new solutions. The first problem is one of applicable and efficient economic models. There is a need for as simple a model as possible that may help shape the understanding of events seen today and be used as a tool to promote an understanding of tomorrow's economic events (Stiglitz, 2001). Ostrom, the first woman to receive the Nobel Prize in Economics, identified the second problem, which is the need to include behavior in modern development research (Ostrom, 2009).

The limit to economic models and the absence of human behavior indicators has been identified. This gap is addressed in this study. This research focuses on the more specific sub discipline of economic growth known as development economics. Specifically, their research addressed the question of whether the same problem exists in development economics. Kooros and Badeaux (2007) further address this gap in the literature when they identify in their research the absence of extensive economic development models in the broader academic spectrum. The repeated acknowledgement that there is a gap in the literature both in economics and in the sub discipline of development economics suggests that a new model may be needed to further contribute to the understanding of such complex economic and development issues. Human behavior should be included as a new indicator in this developing model to depict the contribution of labor in economic growth. This new model with a behavioral indicator adds to the growing body of research known as behavioral economics.

Problem Statement

A problem in economics has been identified: Stiglitz (2001) encouraged new models in economics as a discipline, Ostrom (2009) encourages the addition of behavior indicators in new models, and Kooros and Badeaux (2007) encourage new models specifically in development economics. If economics can benefit from a tighter relationship between development economics and behavior economics, then creation of a new model, one that uses behavioral indicators, can help strengthen this relationship. In this research, I built a new data analysis model and generated new theory to address this problem.

In December 2010, the 8th Conference Agence Francaise de Developpement (French Development Agency) and European Development Research Network (EUDN, 2010) was held on the topic of how the international community should measure development. The notion of trying to build an aggregate indicator was discussed. The conclusion was that economic growth is not necessarily development (EUDN, 2010, para. 2). The public's attention and use of gross domestic product (GDP) as a sole statistic indicator was also seen as a problem with modern economic models.

The dominant use of GDP in economic growth models is more of a measurement concern. GDP is a "universal" indicator and is readily available by most active governments. It is the easy accessibility of this indicator that makes it so dominant in international studies. GDP alone has a limited capacity to provide meaningful insight into the health of a nation. The problem is not the ability of a nation to increase its revenue divided by population excluding expenses. The problem is one of perspective. The 8th Conference explored, how should we look at the information we currently collect? Perhaps the goal should not be to identify revenue or income growth at all, but rather to look at the path taken and probability of this movement. Looking at information in a unique way may help. By creating new classifications focused on the dominant behavior a society (what the majority occupation by sector is in a country) and an indicator that captures the success of financial growth (GDP by occupation sector), a new perspective is possible. While GDP can be used in each classification to identify growth of the new groups, it is the behavior of these new groups that promotes a stronger

understanding, from a public administration management point of view. These groupings have behavior and it is the behavior of these groups that were studied here.

Because GDP is the outcome measurement of actual labor activity, behavior is the primary driving factor. By creating new groups, an attempt to observe the behavior of these groups in more detail to better understanding what contributes to GDP success or failure is possible. In 1960, Rostow identified stages of growth, which were observations of actual behavior. This model became known as the Rostovian take-off model (Rostow, 1960). While it had mixed reviews, it included grouping behavior into five categories to enhance an understanding of the "nation level" activity. By using five distinct classifications, Rostow created labels of actual behavior. Rostow proposed criteria that were needed in order to mature, but most of these criteria were weak and highly criticized. This model also only allows for growth in a positive and linear direction. While Rostow made some assumptions that today seem unfounded, Rostow's use of behavior classifications is a concept that can be built up and further developed. It is the labeling of behavior that is important, not the attempt to predict future events.

Individuals and nations can be classified into categories that may help provide insight into economic development. Most economic growth models focus on trying to predict growth rates with limited success, if any. Thus, it is worthwhile to identify stages of growth and look at the path those nations take along the way. Furthermore, probability statements can contribute to the understanding of such "stages of development" analysis. As discussed in the 8th Conference (EUDN, 2010), the entire international development community is currently looking for new ways to measure and analyze development

indicators. This problem helps emphasize the need for a new way of approaching economic development and a new theory-generating study to contribute a better understanding of behavior.

Development economics has been struggling with the availability of international data and pertinent models for decades. At the international level, only specific data sets exist in kind for "all or most" nation-states, which in turn limits the type of studies possible at the international level. Also, the current paradigm of economic growth models does not account for negative growth, as was seen when the Union of Soviet Socialist Republics (U.S.S.R.) dissolved. The repeated use of GDP as a model indicator is probably due to the availability of such data across most international countries. An attempt to add behavior to an economic growth model that specifically focuses on path rather than actual economic growth helps generate new theory and insight in both development economics and behavior economics, bringing them closer to one another.

Purpose of the Study

The purpose of this study was to contribute to a better understanding of development economics, behavioral economics, and to build a new data analysis model or tool, in an effort to better understand behavior of occupation sectors, specifically the agriculture sector, industry sector, and services sector. By using grounded theory, new classifications were identified, labeled, and observed. The behavior of these new classifications was observed and documented. Any probability statements that can be generated from this study may help public administrators and decision makers better manage public affairs.

Public administrators and decision makers can benefit from having a better understanding of what might happen next. Predicting growth rates is one thing, but it is more important to have insight as to what typically happens in a nation state when, for example, a manufacturing dominated work force that brings most of its revenues through farming changes to a manufacturing dominated revenue economy. By clearly identifying classifications of behavior, the behavior can be studied in more depth.

Path refers to movement from one classification of behavior to another. This study was designed to explore difficulties in existing economic growth and development models in an effort to generate new theory by looking at these paths more closely. By introducing a new data analysis model that incorporates behavior as well as growth in a comparison of "paths taken" instead of trying to predict actual growth, the hope was to gain insight on common economic nonlinear growth paths. The emphasis should not be on economic growth, per se, which is an outcome measurement, but on the behavior of the labor force occupation by sector activity, which is the input. This comprehensive interdisciplinary approach blended sociology theory, economic theory, and development theory in hopes of generating new theory: a behavioral approach.

Nature of the Study

Economic models typically predict the economic growth of individual nations with limited, if any, success. Having an accurate economic growth rate may provide budgeting insight for the following year; however, predicting growth should not be the focus of development economics. At times little attention is given to the costs of the system as a whole or the role of behavior on the nation-state level system. Outcome,

however, is not the desired goal of this study. A systematic look into the path of economic growth with GDP by nation-state in sectors (i.e., agrarian, manufacturing, and services), along with labor force occupation by sector (i.e., agrarian, manufacturing, and services) helps provide a behavioral approach to economic growth and economic path development. The nature of this study is theory generation through a behavioral international economic development growth path model (BIED-GPM), benefiting the public policy and public administration communities.

Most models divide up the collection of nation-states into three to five categories where only general assumptions may be made (e.g., World Bank [WB], International Monetary Fund [IMF], & United Nations [UN]). This study will divide up nation-states into nine specific and distinct categories using the classic grounded theory constant comparison research method. By classifying the available data in this way, one gets a more specific view of common paths as well as outliers, if any.

Research Questions

What is the most common economic growth path at the nation state level in the last ten years? In this research, I investigated common economic growth paths to find the most common economic growth path in the last decade. By examining the current economic paths taken, a better understanding of what is actually happening at the nation state level is possible. I developed a growth path conditional matrix to help observe these relations. Another question that will be addressed is what behavioral options are available to nation states. By creating specific behavior based classification, we can see what nations are in what stage and attempt to observe like behavior between those nations

in the same group. We are able to identify what classifications are moving and what new classification happens next. As the EUDN (2010) has identified, most economic models today address development through the sole indicator of GDP. By including behavior inputs, creating new classifications, and looking at the economic path that is taken by each of these new classifications per nation-state, new insight is gained by studying any classification change, moving from one stage to another. In short, by being very specific with a new classification system, this research focuses on national system behavior stage changes. This attention on the path of nation-state development and the behavior of the labor force that contributes to the development provides beneficial insight into modern behavioral international economic development.

Conceptual Framework

Development economics is the study of advancing nations in economic growth, human development, industry growth phases, and in both national system progress and individual system progress. There is abundant research on economic growth, but only in the last 2 decades have there been significant advances in human development measurements, like the United Nations Human Development Index (United Nations Development Programme [UNDP], 2012). The emphasis of this research adds a behavior indicator, along with GDP in an effort to identify the contribution of the labor force to economic development. Also, a new lens to view this information is presented to suggest a nonlinear, "stages of growth" approach. Most models emphasize positive growth. This model is one of the few that allows for negative growth and a means to capture its relevance. This is not an economic growth prediction model attempting to predict growth

rates, but more of a BIED-GPM that captures the movement from one behavioral classification to another, so that the path of this movement can be observed.

Definition of Terms

The following is a list of terms and corresponding definitions commonly used in the field of development economics. In some cases where the international community is not in agreement, several definitions were used to better comprehend how each major entity views the topic. Terms associated with the grounded theory (GT) constant comparison method (Strauss & Corbin, 1990) constant comparison method are also included to familiarize the common terms used in GT.

Axial coding: "A set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This is done by utilizing a coding paradigm involving conditions, context, action/interactional strategies and consequences." (Strauss & Corbin, 1990, p. 96)

Conditional matrix: (Strauss & Corbin, 1990) "An analytic aid, a diagram, useful for considering the wide range of conditions and consequences related to the phenomenon under study. The matrix enables the analyst to both distinguish and link levels of conditions and consequences. (Strauss & Corbin, p. 158)

Conditional path: "The tracking of an event, incident, or happening from action/interaction through the various conditional and consequential levels, and vice versa, in order to directly link them to a phenomenon." (Strauss & Corbin, p. 158)

Concepts: Conceptual labels placed on discrete happenings, events, and other instances of phenomena. (Strauss & Corbin, p. 61)

De-Industrialization: The name of the phase of development when labor moves to the services sector typically from the industry sector.

Endogenous growth: The use of a closed system to help identify what causes growth, or "an endogenous outcome of an economic system, not the result of forces that impinge from inside" (Romer, 1994, p. 3).

Exogenous growth: The use of an open system to help identify what causes growth, or an explanation of "the observed long–run growth in output per person . . . through technological change that continually offsets the dampening effect of diminishing returns" (Aghion & Howitt, 1997, p. 15)

Intervening conditions: "the structural conditions bearing on action/interactional strategies that pertain to a phenomenon.' (Strauss & Corbin, 1990, p.96)

Nation-states: nations and nation-states are considered the same thing for this research and can be used interchangeably as needed or desired. This label is typically seen as a political label that helps define the physical border of the political control.

Selective coding: "the process of selecting the core category, systematically relating it to other categories, validating those relationships, and filling in categories that need refinement and development." (Strauss & Corbin, 1990, p. 116)

Theoretical sensitivity: "The attribute of having insight, the ability to give meaning to data, the capacity to understand, and capability to separate the pertinent from that which isn't." (Strauss & Corbin, 1990, p. 42)

A more complete list of BIED-GPM indicator definitions is found in Appendix A.

Assumptions

There are several assumptions that were made in relation to this research. Economic growth can be both positive and negative. Therefore, any model on economic growth should accommodate both directions of growth.

Firstly, GDP is an outcome of behavior inputs, meaning that GDP is only a measurement (outcome) and it relies on the human behavior (input) to generate it. GDP is one of the most common and available indicators in international economic comparisons; it is, however, a byproduct of labor activity. One indicator is a system output and the other an individual output. Labor occupation was used by sector (CIA, 2002, 2011) output in this study in comparison to GDP, which is a sub system. In this case, the sub system does not make decisions collaboratively, but rather is a collection of individual outputs.

Moreover, a secondary study promotes savings in time, specifically in data collection, and cost for such a macro international inclusive study covering over 150 nations. New theory can is generated from reorganizing and reclassifying previously collected data sets (Glaser & Strauss, 1967, 1990). Secondary studies are a useful tool to increase observations from a common data base.

While the topic of behavioral international economic development can be broken down into several primary groups—cross border systems (typically informal/non-political), nation-states (political systems), labor occupation by sector (sub system, non-organized), and individuals—I did not focus on cross border concerns here. It should be noted that cross border issues certainly do exist and should be studied in depth in future

research, but to keep this behavioral international economic development research focused, it is not considered in this study.

Limitations

International secondary data has limitations in accuracy and collection standards and is currently a concern. Lee (2003) identifies some of these limitations when he wrote, "Economists do not have measures of some of the key state variables in growth models, such as technology level, the stock of human capital, the stock of physical capital, or the quality of products" (p. 3). As standards improve, hopefully a more accurate assessment will soon be possible. Like most secondary studies, this one is limited to the data that are currently available. For this BIED-GPM study, the *CIA World Factbook* was selected as the best data source for its vast coverage area, the number of nation-states included, and the separation between agrarian, manufacturing, and service sectors in both the GDP and Labor Force by Occupation indicators (Central Intelligence Agency [CIA], 2011) (CIA, 2002)

Many studies on economic growth are criticized for having a Western perspective. This can be seen as a first world classification or those who industrialized first. A limitation might be forgetting that the West did develop quickly when looking through a modern economic lens in comparison. While it certainly is not the only example of development, ignoring how modern economic growth actually happened can be a limitation. There are numerous nation-states that have developed over history, but over time have lost influence. The modern economic example of the last 150 years or so is the only lens that will be considered for this research which covers modern industrialization

and the recent shift to the services sector. Historical analysis is important and should be studied; however, the time frame for this study was the 10 year period from 2002 to 2012. This time period was selected because the data that is collected on an international level only includes a comparison of 10 to 13 years.

Significance of the Study

While numerous studies have been done on economic growth, development economics, and economic sociology, the trend of a growing service sector is sweeping the developing world. This study provides insight to the paths available and those most commonly used. This insight helps public administrators make better decisions by having a greater understanding of group behavior. By clarifying new behavior classification groups I observed and studied traits and movement of these new groups in greater detail. By using nine classifications when most studies use three, I got a more specific look into what is happening.

This study in particular attempted to focus on economic growth, labor occupation, and the path through these newly categorized non-linear development stages. Many studies in the past have focused on growth itself and not the behavior that contributes to growth. A new lens was developed to view the complex world of economic growth. This lens provides insight on many different levels and to numerous academic disciplines, like economics, sociology, and development.

The goal for this new model is that it is simple enough to be used by non-mathematicians, but insightful enough to provide significant feedback to policy decision makers. This does not and should not replace economic math-centric quantitative

models, but augments how we collectively perceive human development, the services sector, and gender contributions in the first part of the 21st century.

Summary and Transition

Chapter 1 identified a gap in the development economics literature. There was a need for a model that was geared for policy administrators, a model that was simple enough to apply and easy to continually monitor by non-economist professionals. By reclassifying internationally collected data, I attempted to fill this identified literature gap with new research using grounded theory to generate new perspective, insight, and/or theory.

Chapter 2 is an in-depth analysis of peer-reviewed journals and international organization research on economic growth models, development economic models, specifically the 10 most dominant models in the last 100 years. Particular attention was placed on their weaknesses, criticisms, and strengths. The goal was to construct a model that minimized some of the problems of previous growth models. Specific attention was given to policy implications and how key decision makers can benefit from a new model and lens from which to view development economics. This study forged links between the related fields of economic sociology, development economics, and behavior economics.

The literature review includes important contributions to economic models. Specific emphasis was placed on contributions from Nobel Prize winners in economics, especially those known for creating models. Less emphasis was given to those known for theory development. While some theories were addressed to tie things together, the

models remained the focus. This review drew from several of the Nobel Prize recipients' own words to capture their exact interpretations of how their contributions fit into the discipline. Included in this literature review are the titles of the Nobel Lectures given by the recipient to their peers. Because of the oratory nature of these presentations, they are often overlooked in literature reviews. It can, however, be a significant contribution, as Nobel Prizes are usually given decades after the recipient's original publication. This provides a unique perspective on how the author perceives his or her model after having lived through its impact. These Nobel Laureates have important insight on the other dominant models in their field and their work will be highlighted in this section.
Chapter 3 employs the grounded theory method to address a behavior model of international growth paths. In order to determine the most common economic growth path in the last ten years, I looked at nation-state GDP by sector as well as the labor force occupation by sectors. By dividing up the normal classification of three categories and putting them into nine distinct categories, a more thorough understanding of nation-state economic growth paths was possible. I used the Constant Comparative Method, which is a classic grounded theory method. Glaser and Strauss (1967) promoted using a structured set of systematic procedures. The BIED-GPM is considered a data analysis model. This will help create new classifications and set up the structured procedures encouraged by Glaser and Strauss.

The first stage of coding in grounded theory is Open Coding. I looked at GDP-per sector in the agriculture sector, industry sector, and services sector. I also added a good behavior indicator in labor per sector in the agriculture sector, industry sector, and

services sector. This gave the BIED-GPM six indicators to put each nation state into one of nine different classification categories. This first coding stage is seen as quantitative as the data used will be secondary data from the *CIA World Factbook*. This Factbook dataset was used because it has the six categories already isolated in the format needed for this study. Unlike the UN, IMF, or World Bank, the CIA World Factbook has the best meta-analysis data set for this study.

The second phase of grounded theory is axial coding. This is where I looked at the trend from 2002 and 2012 from the nine new classifications. This was where the path was considered and identified. The path is the behavior of these new classifications. This stage of coding is qualitative in nature.

Finally, the last coding phase in grounded theory's constant comparison method is the selective coding phase. This phase was left undefined initially, but was developed after the first two classical grounded theory phases were completed, so they could build off of each other. All three of these coding stages are keys to this study.

Chapter 4 reports the results of the BIED-GPM secondary study. A look at identified patterns, paths, probabilities, and potential was meticulously detailed and further defined. With the goal of being objective, tight parameters were used to guide this research.

Finally, Chapter 5 was used to analyze the uncovered data sets and patterns so as to generate new insight and theory that promotes new insight for public administrators.

Chapter 2: Literature Review

Original Observations

In an attempt to investigate an observation of China's recent economic growth path, the need for a new economic model was identified. The observation originally being considered was that China is using female labor earlier in its industrialization than those nations that industrialized before China. Upon review, it became clear, however, that many of the economic models used in the last century are simply inadequate to address such a concern. This observation was not studied here, but the need to build a model that could help public administrators better understand international economic development was.

In this chapter, I review concepts including the basic building blocks of economic models (key elements), academic disciplines, economic classifications, economic system identifications, model measurement and model assumption problems, and the dominant 10 models in economic development and growth. This literature review identifies a need for a new approach to looking at data, one that combines the fields of economic development and behavior economics. Specifically, focusing on behavior economics will allow for a better understanding of economic growth paths, which may be useful when comparing national growth at an international level. The approach used to differentiate the new model from traditional mathematic economic models was to use grounded theory, which should illuminate a new perspective on economic growth models. This is a significantly different approach from what is currently used in the economic growth

community. Understanding the behavior better might also help those who use growth prediction models.

Arrow, who won the Nobel Prize in 1972, commented on the efficiency of the economic system while giving his Nobel Memorial Lecture. In a speech titled "General Economic Equilibrium: Purpose, Analytic Techniques, Collective Choice," Arrow identified, "The balancing of supply and demand is far from perfect" (p. 109). Arrow continues:

> One recurrent theme of economic analysis has been the remarkable degree of coherence among the vast numbers of individual and seemingly separate decisions about the buying and selling of commodities. In everyday, normal experience, there is something of a balance between the amounts of goods and services that some individuals want to supply and the amounts that other, different individuals want to sell. Would-be buyers ordinarily count correctly on being able to carry out their intentions, and would-be sellers do not ordinarily find themselves producing great amounts of goods that they cannot sell. This experience of balance is indeed so widespread that it raises no intellectual disquiet among laymen; they take it so much for granted that they are not disposed to understand the mechanism by which it occurs. The paradoxical result is that they have no idea of the system's strength and are unwilling to trust it in any considerable departure from normal conditions. This reaction is most conspicuous in wartime situations with radical shifts in demand. It is taken for granted that these can be met only by price control, rationing, and direct allocation of resources. Yet, there

> is no reason to believe that the same forces that work in peacetime would not produce a working system in time of war or other considerable shifts in demand. (There are undesirable consequences of a free market system, but sheer unworkability is not one of them). (Arrow, 1972, p. 109)

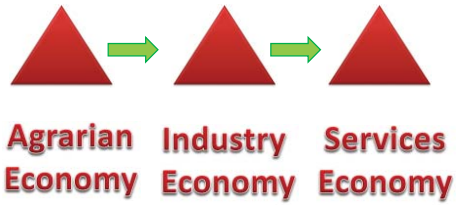


Figure 1. Traditional linear growth model.

The historical observations of economic development was linear, starting with an agrarian-dominant economy, an industrial revolution would eventually change a farming community to a manufacturing community and industrial labor force? Then, after a while, the cost of living would increase and another change would take place, moving the economy from a manufacturing or industry-dominated economy and labor force to a service-dominated economy and labor force (see Figure 1).

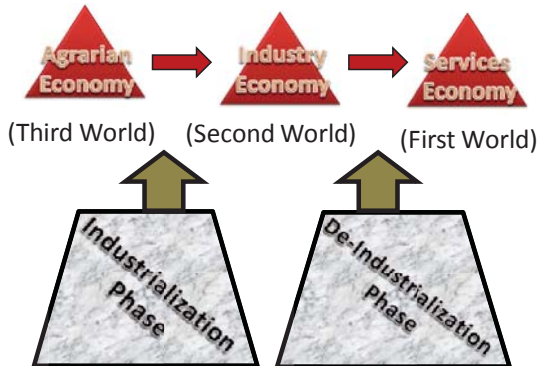


Figure 2. Industrial Growth Phases.

In effect, the first nations to industrialize are sometimes referred to as the first world. The first world has since deindustrialized and now the nations industrializing are often referred to as the second world. The third-world is a label for the poorest nations, those nations that have not industrialized and are agrarian-heavy. There is a great deal of literature on both phases of industrial growth, known as industrialization (i.e., moving from an agrarian to an industry economy) and deindustrialization (i.e., moving from an industry to a services-dominated economy).

We now know that a linear growth model is an elementary tool of seeing the world. It is, however, an easy way to explain grand observations. To economists, however, this basic model simply leaves to many unanswered questions and need for more developed models. As the understanding of economic development matures, so must the models we use. The new BIED-GPM will build off of the three-stage linear model observations.

Cleveland (2003) highlights the movement from an agrarian society to an industry society and the change in research trends when stating, “Growth theorists are abandoning a long-held hypothesis originally proposed by Kuznets. . . that growth necessarily

requires initially greater inequality, as surplus workers are drawn from an inefficient agricultural sector into a modern industrial sector" (p. 2). Cleveland continues to elaborate on land's inclusion in economic development models as *natural capita*, which is seen often in environmental economics (Cleveland, 2003, p. 2). Land is considered to be a primary element in economic models.

China	GDP Model		
	Agrarian	Industry	Services
	9.60%	**46.80%**	43.60%

vs.

China	Labor Force by Occupation Model		
	Agrarian	Industry	Services
	38.10%	27.80%	34.10%

Figure 3. China Example

An example of how indicator values change a model can be seen between GDP composition by sector and labor force by occupation (see Figure 3). The *CIA World Factbook* (CIA, 2011, p. 139) breaks down statistical information using the linear model, agrarian, industry, and services sectors. Using the indicator of GDP, China has 46.8% of its GDP-composition by sector coming from the industry sector, while only 43.6% of its GDP is coming from the services sector. Only 9.6% of China's GDP comes from the agriculture sector (CIA, 2011), since the largest percentage of China's GDP is coming from the industry sector, China may be seen as a second world nation. In contrast, when a different indicator is used, for instance, including labor force by occupation, China has 38.1% of its labor in agriculture, 27.8% of its labor force in industry, while it has 34.1% of its labor in the services sector (CIA, 2011). If we used the behavior of the labor force to depict China's measurement on the traditional linear example, The People's Republic of China would be seen as a third world economy. If we use GDP, China would be labeled a second world nation. Which of these two indicators is a better measurement?

Looking at the two, one is a byproduct of behavior, that of GDP, which is an outcome. Labor force by occupation is a description label of actual behavior, or an input. Behavior input is a stronger indicator for group analysis. However, it might be helpful to use both indicators in a supporting model, one that considers the behavior of the labor force by occupation as well as the GDP composition by sector.

In an article titled "A Classical Model of Distribution, Productivity and Growth," Cleveland (2003) highlights Adam Smith's use of the modern three-factor model and contributes Smith with the notion of high concentration of land ownership and how it negatively impacts productivity (p. 1). Cleveland (2003) discusses the importance of balance and equilibrium, but also highlights the principles of three primary elements in most economic models: land, labor, and financial capital in models as early as Smith.

Figure 4. Economy Triangle

It is possible to reclassify all of these categories into three main disciplines, to better conceptualize the moving pieces (see Figure 4). Using Smith's (1776) classical theory, all economics may be boiled down to labor capital, financial capital, and natural resource (land) capital. These three main elements are named different things over the years, but nevertheless can be identified clearly as the fundamental building blocks of

economics. Therefore, three key academic subfields in economics should be better understood: behavioral economics, financial economics, and environmental economics, the study of each core model element. When put together in a triad, these primary pillars of economics help conceptualize what can be called an economy triangle. The triangle can grow or shrink, but can be represented in a visual format as done in Figure 4. The academic discipline is represented in red (behavioral economics, financial economics, & environmental economics) and the primary economic capital resources are represented in green (labor capital, financial capital, & natural resource capital). Cleveland (2003) endorses this type of model, stating "I believe that a three-factor model build on land, labor and capital best captures the essence of the institutional view, including that of Adam Smith, and yields the most productive insights on the relationship between inequality, productivity and growth" (p. 2).

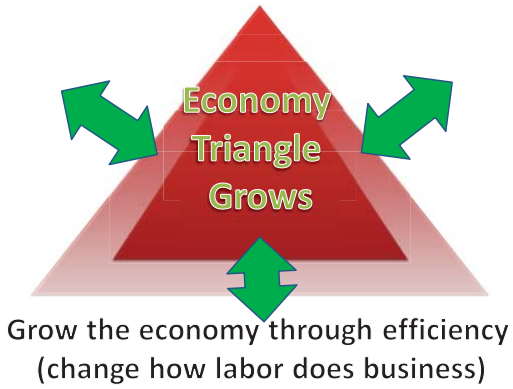


Figure 5. Economic Growth

Economic Growth Theory vs. Development Economic Theory

The study of economics is a dynamic discipline. Economic growth is the subsector of economics that highlights attention towards growth or expanding the economy (i.e., growing the triangle, see Figure 5). Development economics, however,

uses economic growth, but is really focused on moving an agrarian society to an industry society or industry to services change (i.e., linear industry growth phase movement). Recently this discipline has been focusing on what has been named sustainable growth, which is another way of saying reasonable, steady, and predictable growth with limited/no negative slides or cycles. Growth economics is focused on doing what one is currently doing better, while development economics is focused on changing what one is doing both economically and through labor trends (see Figure 6). The thought is that if a nation is able to change what it is doing to move toward a more advanced type of economy (i.e. agrarian to industry or industry to services), then it will by default increase the economic growth potential of the economy. Both have the same end state as a goal, it is the path and approach that is different.

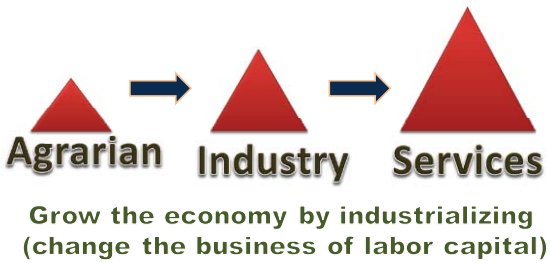


Figure 6. Economic Development.

It is understandable why such attention is given to sustainable growth. A nation-state that has steady positive growth can manage public administrative affairs easier than a nation that changes from large growth patterns followed by negative growth years. Even if the average of the positive and negative years turns out to be a reasonable growth

rate, the "management" of the society in the negative years becomes problematic. Predictability becomes important when managing a society; therefore steady and predictable economic growth is desirable to uneven or unpredictable growth.

Economic growth promotes the increase of one or more of the three primary elements: labor capital, financial capital, and natural resource capital. Labor capital, or those actually doing economically viable activities, is one of these primary elements. When the labor force increases the potential for growth in that side of the economy triangle increases. The labor force is where we will bring behavior into the model. Natural resource capital is another key component in many models. This consists of the raw materials found within the systems borders to include land. As science advancements get better, the ability to get to some of these resources increases leading to the growth of this side of the economy triangle. Financial capital is a versatile and important component because it can be used to procure needed items that nations may require but do not yet possess (e.g., labor or material) often called substituting. Financial capital is sometimes measured in savings rates or, later, as "access to capital," referring to loans, foreign direct investment, aide, etc. Ultimately it is the access to money that grows this side of the economy triangle. This is also where we start to see the cost of doing business. If the cost of doing business is too high, financial capital won't increase. These are only quantitative measurements, however. When emphasis is given to the education of the labor force or the quality of labor, a more dynamic understanding takes place. When emphasis is not on how much oil a country has, but what type of oil and where is it located. Is it easily accessible? Is it near a production facility or near a port?

Are financial capital resources new money or old money? Important research is devoted to determining what type of capital (e.g., financial, labor, or natural resources) is more valuable. The use of both quantitative and qualitative measurements can help capture a stronger understanding of such a complex topic.

Together labor, financial, and natural resources make up a nation's capital markets. An economy is made up of numerous systems that are all actively participating in the economy. Each system has organizational knowledge, political maturity, and interacts with other systems differently over time. Marx (1867) contributed to the premise of ownership benefits with what is called the "means of production" or the ownership of a system output. The means of production becomes important when studying different systems, as those who own the activity typically benefit the most.

Economic development is focused on growing the economy through changing the business of labor. Unlike economic growth, which is focused on expanding the economy through learning how to do the business better, those in economic development actually attempt to change what business you are doing (e.g., agrarian to industry or industry to service). Behavioral nuances are important. In reality both economic growth and economic development strategies attempt to increase the size of the economy, but through different means or paths.

Kooros and Badeaux (2007) contribute to the nuances between economic growth and economic development stating, "Economic development, distinguished from economic growth, results from an assessment of the economic development objectives with the available resources, core competencies, and the infusion of greater productivity,

technology and innovation" (p. 120). They continue, "As well as improvement in human capital, resources and access to large markets" (Kooros & Badeaux, 2007, p. 120). The discussion identifies that nations that pursue economic development or economic growth face the following concerns: "…foreign debt conversions into foreign direct investment, foreign debt investment (FDI) privatization of economic activities; trade regionalization; conversion of import-substitute investments into export-expansion investments; technology transfer; co-production, and many other sound economic decisions" (Kooros & Badeaux, 2007, p. 121).

The economic community is divided on how to classify theory. In the area of development economics, the best way to classify theories or schools of thought is still not agreed upon. Verspagen (1992) identified four classifications when he wrote *Endogenous Innovation in Neo-Classical Growth Models: A Survey*. This work captures the historical theoretical context primarily on technological change and economic growth. At the time, Verspagen (1992) outlines four schools of economic growth: 1) the Neo Keynesian School, 2) the post-Keynesian School, 3) the neo-classical school, and 4) the new neo-classical school. In contrast, Ricardo Contreras (1999) writes in *Transnational Law and Contemporary Problems* about four different schools: 1) structuralism, 2) the linear stages growth model, 3) the neo Marxist-dependency theory, and 4) the neo-classical revival. This is a strong example of the conflict in economics today. Five of these eight categories counter another thought. One is solely based on a model, or a tool used to identify whether a thought is strong or weak and should not be considered a theory or a school of thought. My research categorizes the main themes in this discipline

by behavior and combines Verspagen and Contreras's lists. I will attempt to identify behavior as a driving factor in the classification of literature themes and avoid labeling with words like "neo" or anti-schools.

Since this study explores existing models for strengths and weaknesses in order to build a better model, let us start by examining the literature through a model lens. Classical theory, as I see it, is about finding the simplest classification of basic building blocks of an economy. Structuralism is focused on political decisions to substitute missing capital (i.e., financial, labor, or natural resources) through import substitutions. Using the economic triangle, if a nation does not possess the building blocks within its political border, it needs to go out of the border to do business. Neo Keynesian and post-Keynesian both refer to different ways of looking at economic problems from British economist Keyes (1936). Verspagen (1992) refers to neo-classical models, mainly Solow's (1956) model, which was named the neo-classical growth model because "it assumed that technological change is exogenous to the economic process" (as cited in Verspagen, 1992, p. 631). This means that the model that spearheaded the neo-classical movement was simply reaching beyond the system to explain the long run rate of growth. Verspagen (1992) writes, "In the first neo-classical growth models, technological change was reduced to an exogenous phenomenon, basically for analytical convenience" (p. 366). The limitations of a model should not limit the theory, though in development economics, it often does. Finally, the evolution of theory after exogenous theory is endogenous growth theory, which means to look within the economic system to explain what is happening. The biggest flaw in the collection of classifications listed lies in

whether or not a nation-state grows endogenously and exogenously simultaneously. Of course, growth from external and internal events can happen together, but the academic discipline is not there yet. Some like to think that exogenous and endogenous theory refers to implications within the model or outside the model factors. If this is true, then why not build a bigger model? Therefore, instead of referring to the classifications as schools of thought, let us consider that the following three categories are more era-specific and tend to depict what the majority of research was focused on during that time frame.

There are three eras of economic growth that will be considered. They are the World War Era (1930s, 1940s, and 1950s), the Post-war Era (1960s, 1970s, and 1980s), and finally, the International Organization Era (which includes the 1990s, 2000s, and 2010s). There are several theories that are explored during these eras including classical growth theory, productivity growth theory (also known as neo-classical growth theory), exogenous growth theory, endogenous growth theory, international organization taxonomy growth theory, and behavioral growth theory. The models that are used in each era add to the body of literature and the overall understanding of economic growth and, ultimately, economic development.

Here is an example of the new way of looking at information. The dominant model in the neo-classical growth school of thought is known as the neo-classical growth model. The real behavior in the neo-classical growth school is productivity. The most useful outcome of this school is total factor productivity. It is, however, referred to as

neo-classical growth often but will be referred to as productivity growth henceforth, when labeled on behavior and not after the model name.

I have chosen three eras in which to highlight the dominant thoughts and models of that time (the World War Era, the Post War Era, & the International Organization Era). This has been done to simplify the complex body of work in both development and economic growth research. Since I am interested in economic growth as it relates to development economics, I will tie the two together, and look at examples of models in both areas, in an attempt to bring the two disciplines closer together in a mutually supportive and beneficial way.

Economic Behavior Theory

Behavior economics is usually focused on demand or consumer selection choices. When looking at the choice to enter into a job that is in the agrarian sector or industry sector, behavior economics is also present. The life cycle of spending requires the means to make funds first to then spend. I look at behavior economics to be important to occupation sector selection.

Camerer and Loewenstein (2002) state that "…the core of behavioral economics is the conviction that increasing the realism of the psychological underpinnings of economic analysis will improve economics on its own terms—generating theoretical insights, making better predictions of field phenomenon, and suggesting better policy" (p. 1). Camerer and Loewenstein write in their article titled, "Behavioral Economics: Past, Present, Future" when they contribute, "behavioral models will gradually replace simplified models based on stricter rationality, as the behavioral models prove to be tract

able and useful in explaining anomalies and making surprising predictions" (p. 48). Camerer and Loewenstein identify the origins of behavioral economics stating, "When economics first became identified as a distinct field of study, psychology did not exist as a discipline" (p. 3). As each discipline matures, it becomes clear that both development economics and behavioral economics can benefit from the other.

Solow contributes to the behavior discussion noting, "The permanent substructure of applicable economics cannot be too very large because social institutions and social norms evolve, and the characteristics of economic behavior will surely evolve with them" (Solow, 1987, par. 55). Solow identifies economic behavior will change and this study helps study that change in greater detail.

Quantitative and Qualitative Methods

The three main pillars of the economy triangle are labor capital, financial capital, and natural resource capital. All of these can be measured using a quantitative or a qualitative method. Labor capital could be described as a population of a nation. To be more specific, it could be refined to actual working age labor, but this operationalization is quantitative in nature. What do these categories really mean on their own? Qualitative measures may be used to help identify degrees and more specifics, like the average education level of the working age labor. This concept implies that some labor is better than other types of labor or that the quality of an indicator matters in addition to quantity.

Kuznets won the Nobel Prize in 1971 for his work on modern economic growth. Kuznets (1971) added to the method dialogue that "the quantitative base and interest in economic growth have widened greatly in the last three to four decades, and the

accumulated results of past study of economic history and of past economic analysis" (par. 29). Kuznets continues, "Economic analysis could be combined with the richer stock of quantitative data to advance the empirical study of the process" (Kuznets, 1971). Kuznets (1971) identifies the separation in quantifiable economic models from that of qualitative grounding. While the trend moved to quantifiable data 40 years ago, it now needs to move back to qualitative foundations. This is starting to happen with work on human development indicators and the beneficial work of the United Nations (UNDP, 2012).

Economic System Classifications

Systems have observable behavior. Understanding the main elements of systems can contribute to the understanding of the interaction between labor capital, financial capital, and natural resource capital, the economic triangle (the foundation to all economic models or schemes). These systems are typically recognized by the political structure as main players in the game of economics (see Figure 7). From smallest to largest, the main systems can be labeled as follows: (a) individuals, (b) families, (c) community groups, (d) businesses, (e) governments, (f) nation-states, and (g) international organizations. These different systems work together and against one another. All systems include the smallest system: individuals. Most individuals belong to families, so the family system contributes and is impacted by the other systems. The concept of a business as an independent system is a key element to modern development. There are countless systems. Only the primary systems are identified here, because it will become important to distinguish between them later. When dealing with

international studies, nation-states are typically the main players. Finally, international organizations are really a phenomenon that grew after World War II. International organizations have significant impact and influence in modern models.

International organizations dominate some of the newest models, with growing collections of data and international clout & visibility. With the invention of the internet, many researchers look to international organizations to check or cross check individual nation state data bases. Many nations do not have the capacity to collect international information and rely on international organizations for key comparison and decision making data.

Figure 7. Economic Systems Classifications.

Using economic systems is a way of classifying different behavior. Governments act differently from businesses. It is important to study systems, because the better we get at classifying groups and recognizing their behavior, the more accuracy we will have in the analysis. This study is an international comparison study, so most of the attention is on nation-state systems. I focused on the economic path each nation has taken and identify the options that are available as well.

Measurement and Assumption Problems

Let us for a moment attempt to think about a common economic problem: How can economic development happen? If economic development is made up of three primary elements, and any of these increases with no negative growth in the other two elements, then positive gains are made to the economy (i.e., the economy triangle gets larger). This is called economic expansion. We know, however, that all three elements are usually moving; in fact, we have a difficult time really measuring any of these three elements. Solow (1987) writes about assumption, stating "I would like to remind my colleagues and their readers that every piece of empirical economics rests on a substructure of background assumptions that are probably not quite true" (par. 41).

The population of a nation-state is always fluctuating. It is difficult trying to identify who is actually working, who is working two or more jobs, and so on. Who is working full-time, part-time, and who is working under the table, promoting a black market economy? There are difficulties identifying undocumented immigrants and emigrants. Money is made through legal and illegal methods. It becomes difficult to identify how often money moves between these numerous systems (although countless labor hours are devoted to just that). Then, when one attempts to calculate money exchanged through barter, foreign exchanges, lost money, and/or counterfeit currency—especially in an electronic currency environment—limitless calculations exist. Finally, any attempt to calculate actual natural resources becomes equally tricky as both legal and illegal methods are used. Until all of the oil or copper is extracted from the ground, one can only estimate how much one has. Then there are legitimate reasons to not want the

actual number of resources within a system publicly known. Ultimately, there is a measurement problem in economics. Therefore, a degree of acceptance is required to better understand and appreciate these measurement shortcomings. Measurements at the international level are dependent upon many things.

While data collection is getting better, it is still susceptible to significant error. This is important to note, not because analysis cannot be made, but to identify the shortfalls in collection at such a macro level. Kuznets (1971), in his Nobel reception speech, says, "It seems fairly clear that a number of analytical and measurement problems remain in the theory and in the evaluation of economic growth in the developed countries themselves" (par.32). Kuznets continues, "One may look forward to major changes in some aspects of the analysis, in the national economic accounting, and in the stock of empirical findings, which will occupy economists in the developed countries in the years ahead" (Kuznets, 1971). Indeed we have seen just that.

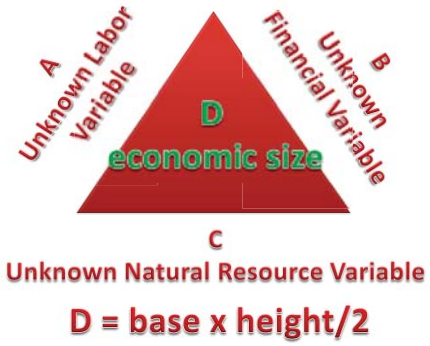


Figure 8. Triangle Economy Model.

This literature review is about economic models. It is, therefore, important to recognize that all models have assumptions. It is these assumptions that often get overlooked. Let us consider an equation of three unknown variables (see Figure 8). How

can we identify the value of one variable? If one has an assumed value of two of the variables, we can come up with a value for the third, but that is only true if one agrees with the assumptions of the first two values. Models are tools and they can help provide significant insight into complex economic problems. Like tools, however, if used improperly, misleading insight is possible. Development economics has used models to help clarify dominant social concerns. Take, for example, the Great Depression in the 1930s. The unemployment issue was at the top of government priority lists around the world. Therefore, it should be expected that the models that were developed in that decade were directed mainly on labor issues. It is also critical to identify some important behavioral economic assumptions. Group systems act differently and it becomes almost impossible to clearly differentiate behavior between the countless systems). This is because an individual can be part of a family, extended family, businesses, a religious group, nation-state, regional organizations, and possibly even international organizations. Any individual can belong to many different systems at one time. Priorities may change over time for the individual and for each system as well. Productivity theory (neo-classical thought) has shed significant insight into this dilemma, but there is still a long way to go. The lens through which a problem is viewed is important. Many existing models fall into a different theory classification. Some may fall into more than one theory as well. This becomes important as we attempt to boil down different systems to get a clearer view of what may be happening. The assumptions we make to get one value may not be accurate. If they are not, then the results will invariably be affected. The type of model, the lens, and the assumptions made will impact the final analysis. As we

review some of the key models, perhaps we can view some old development problems through a newer behavioral lens.

Kuznets (1971) contributes to this discussion in the following:

> The lag has been in the analysis of these data by economists and other social science scholars, because of the scarcity of such scholars who cannot be spared for research within the less developed countries themselves and because of the natural preoccupation of economists in the developed countries with problems of their own countries. One may hope but with limited expectations, that the task of refining analysis and measurement in the developed countries will not be pursued to the exclusion or neglect of badly needed studies of the less developed countries, studies that would deal with the quantitative bases and institutional conditions of their performance in addition to those concentrating on what appear to be their major bottlenecks and the seemingly optimal policy prescriptions. (par. 32)

The resources needed to conduct economic activity can be found in the economy triangle which uses three sides represented as capital assets. These capital assets are labor, financial, and natural resources. Learning how to grow the economy or economy triangle requires the identification of each side. Once the "sector" is identified, measurement of it is needed. This requires both the quantity and quality of each indicator be defined.

Labor Capital Growth

Labor capital is the first pillar to the economic triangle (see Figure 9). Labor capital growth can be broken into two categories: One is demographic or quantitative in nature, such as birth rates, life expectancy, and immigration; the other is qualitative in nature, such as education level, literacy, and experience level. Labor can and does move between systems. Growing the labor capital means both getting more workers, and getting better workers. Unemployment becomes important to this resource, as balancing how many workers with available jobs is important to any economy. Steady and predictable growth is the goal. One thought is that in order to move from an agrarian society to a manufacturing society, you have to have excess labor first. Furthermore, some believe that advances in farming technology simply freed up labor to move to the city to pursue industry. Which came first is still a topic of discussion, but identifying that labor is a key element in economic models is critical as it is one of the three basic building blocks in all the models we review.

Figure 9. Labor Capital Growth

Aghion and Howitt (1997) discuss this important economic building block in their work titled endogenous growth theory. Garcia-Penalosa (1998) contributed in this work

with a section titled “Problems and Solutions,” by writing, “Although the absolute size of population is irrelevant, its rate of increase is not.”(p. 14) Garcia-Penalosa continues:

> Because faster population growth will tend to reduce the amount of capital per person in much the same way as faster depreciation would, not by destroying capital but by “diluting it”—by increasing the number of people that must share it (Garcia-Penalosa, 1998, p. 14).

In recognizing the importance of labor capital in the broader economic spectrum, 2010 was a significant year. Pissarides, Mortensen, and Diamond gave three Nobel Prize lectures on labor capital titled, “Equilibrium in the Labour Markets with Search Frictions” (Pisssarides, 2010), “Markets with Search Friction and the DMP Model” (Mortensen, 2010), and “Unemployment, Vacancies, Wages” (Diamond, 2010), respectively. These three speeches reinvigorated interest in the labor discussion.

Financial Capital Growth

Financial capital growth is the second pillar to the economic triangle (see Figure 10). It is another key component in almost all economic models.

Figure 10. Financial Capital Growth.

It is broken into qualitative and quantitative categories as well. When society moved from a barter-dominated economy to a currency economy, several advances occurred. The saving of money would allow a buildup which could be used for development investment. Marx (1867) highlighted the means of production as integral to economics, as mentioned earlier. Who owns or benefits the most from economic activity is important. Ultimately, Marx (1867) was concerned with qualitative issues. If an economy is missing resources, financial capital can be used to obtain extra labor or additional natural resources in order to pursue efficient production cycles and balanced growth. Other factors come into play in this sector. Having money is important, but having access to money is critical as well. Loans and the ability to borrow have been found to be positive as well. Attracting foreign direct investment or aide is also seen as beneficial to the receiving system. Some models will focus on what type of money is more important given the circumstances. The knowledge that money is a key component to economic modeling and that different types of money have different values will help as we review historic development models and modern models.

Natural Resources Capital Growth

Natural resource capital is the third primary element in the economic triangle (see Figure 11).

Figure 11. Natural Resources Capital Growth.

Just like the first two pillars in the economic triangle, it is also found in most economic models. It refers to resources such as minerals, crops, water, oil, and trees. Mining, drilling, fishing, and farming are all behaviors that develop and use natural resources. It should be easy to see that the person who owns these resources will benefit the most. When kings owned all the land, it was the king that benefitted the most from its development. When property rights and rule of law came into favor, the average person obtained access to benefit from land development. This is a key element to most economic models. Quantity and quality will become important when studying this resource. Different resources have different values. When looking through a lens of efficiency under the king example, those working the land did so with minimum personal benefit. Thus, if land ownership changes, than the benefit to those actually working the land will increase, this makes the overall system more efficient and all economic decisions should be about efficiency.

Historical Background

Before we look at the dominant economic growth models in the last 90 years, we need to appreciate the historical background that brings the discipline to the point at which economic models contribute as they currently do. Classical growth theory and belletristic growth models can be attributed to the late 1700s and the work of Smith. Smith is often thought of as the founding father of modern economics. Smith's main work, *An Inquiry into the Nature and Causes of the Wealth of Nations*, was published in 1776. It is important to note the global climate during 1776, as the United States gained independence this year on new economic principles. The British colonialism was beginning to wane and a new economic and political chapter was emerging. Smith is known for his "invisible hand" analogy and the concept of the free market. He focused on three primary indicators: capital, labor force, and land. Two main themes of his work are the contributions of economies of scale and the division of labor (Smith, 1776).

Classical growth theory was pursued in the 1800s by Ricardo and Malthus. Ricardo added technology to his modeling in addition to Smith's previous model indicators. Ricardo is best known for coining the term, comparative advantage. His work published in 1817 titled, *The Principles of Political Economy and Taxation*, focuses on getting a product or service to market first to leverage the return (Ricardo, 1817). Significant attention is given to technology as a driving force in economic growth. It should be noted that Ricardo wrote his main work shortly after the War of 1812. This is of particular importance, in that the international community was watching the United States and Britain to see how future international economic relations were going to be

impacted. With the United States' victory, colonialism as it was known faded, and a new chapter in economic behavior was secured.

What is so important about comparative advantage is the addition of time and market into the discussion. Not only does it matter what is being sold, but also when and where. Both the quantity *and* quality of sale items is important. The notion of time and market are pivotal concepts in development economics. The market can be seen as the location, or the distance it takes to get to the buyer. The size of the market is also important, as some markets are bigger than others and the quality of buyers is pertinent as well. The quality of modern markets is an area of research that could benefit the economic growth and development models when advances are made in measuring markets.

Malthus published six editions of *An Essay on the Principles of Population* in the early 1800s. He focused on indicators such as national income, profit, wages, and capitalist consumption. Malthus (1798) is known primarily for his work with the labor force, however. Together, Smith, Ricardo, and Malthus pioneered the new discipline known today as classical theory of growth. Significant global events during this era include colonization (the focus on natural resource procurement), slavery (the distortion of the labor force), and mercantilism (a new means of production and trade).

One of the great examples in economics is the United States during the Civil War. The North, dominated with factories, and the South, dominated with farms, ultimately disagreed on the issue of slavery. This can be seen, however, as a development issue over labor. The distinction between the types of economies in the North and South

promoted different types of behaviors. This is outlined in what later becomes the global North-South debate. In reality, it is a farming and industrialization debate. The insight, however, comes from observing the different behaviors in the farming economy and the industrial economy. Ultimately, we know that the North won the war. If one takes the position that industrialization is the driving force for human rights (maybe because the focus on business systems promotes less need to dominate labor for financial benefit), then economic progress is good for equality. The means of production comes into play, however.

Arrow (1972) addresses a war's impact on supply and demand in the following statement:

> The history of the capitalist system has been marked by recurring periods in which the supply of available labor and productive equipment available for production of goods has been in excess of their utilization, sometime, as in the 1930s, by very considerable magnitudes. Further, the relative balance of overall supply and demand in the postwar period in the United States and Europe is in good measure the result of deliberate governmental policies, not an automatic tendency of the market to balance. (par. 3)

In the farming example, the plantation owner owned the labor. In the manufacturing example, the business does not own the labor, but creates the opportunity for individual gain by choosing to work at the factory. The incentive for the worker in the North to work hard was positive, while the incentive for the slave to work hard in the South was not. Ultimately, the factory system is more efficient because both the business

owner has incentive to work hard and the laborer has financial gain from working hard. It is not hard to see why one was more successful than the other. Creating a more efficient system should be the goal of all economics.

This example brings up another concern, one of group behavior. If the agrarian sector is tied to weather and seasons (which are not reliable), and industry is not constrained by these elements, it can be stated that industry is more reliable than the agrarian sector. Generally, industry is more consistent, which is better for planning purposes. Just like the budget example for a nation-state, steadiness and consistency is preferred.

Era 1: World War Era (1930s, 1940s, and 1950s)

The schemas (Piaget, 1964), or way of organizing information, were set during the historical period we just reviewed. Using Piaget's (1964) theory of cognitive development, we learn that of four distinct stages of development, the use of economic models, at best, might best fall into the third stage, or concrete operations. The four stages are (a) sensorimotor stage, (b) preoperational stage, (c) concrete operational stage, and (d) formal operational stage (see Figure 12). One could argue that the World War Era would embody the sensorimotor stage for economic models: Indeed, there is sensory-motor causality in the four models we will review in this era. Piaget (1964) identifies that the learning process in this stage sets the agenda for follow on stages, with "a series of structures which are indispensable for the structures of later representational thought" (p.19).

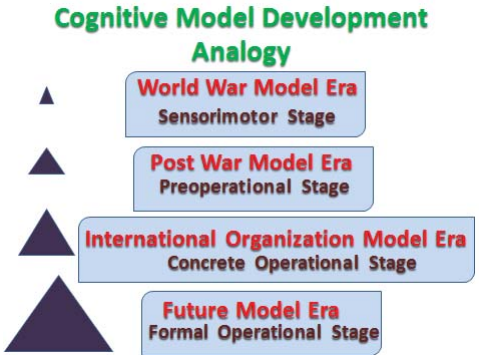


Figure 12. Cognitive Model Development Example.

The four models in this era that capture the most dominant influence on the discipline of economic growth are: 1) the input-output model, 2) dual sector model, 3) the exogenous savings rate model, and 4) the exogenous technological progress model (see Figure 13). These four models represent the dominant models from the 1930s through the 1950s.

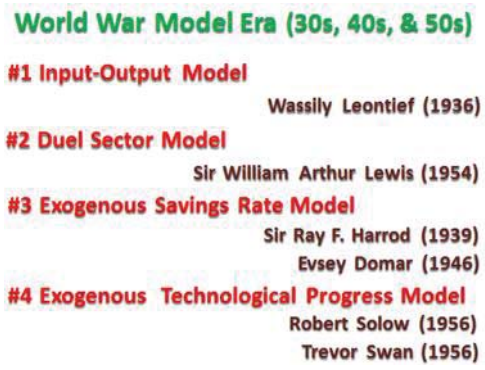


Figure 13. World War Model Era.

Model 1: Input-Output Model

The input-output model was the work of Leontief (1947). The work titled *Quantitative Input and Output Relations in the Economics System of the United States* identifies the use of a matrix model that captures the life cycles of different industries in the United States. The timing of this model was right in the middle of the Great

Depression, which was likely the motivation for the study. This study focused on one country and broke down different industries in a methodical fashion.

Kooros and Badeaux (2007) write about the input-output model, praising "the ingenuity of Leontief to provide an eloquent predictive system pertaining to the real-world behavior through the formulation of this mathematical model" (p. 123). They add, "Whereas to many it [the input/output model] was initially considered pure abstraction, it is now a well-recognized model" (Kooros & Badeaux, 2007, p. 123).

Leontief eventually won the Nobel Prize in economics for his model contributions and to furthering economic understanding through his matrixes. In 1973, during his Prize Lecture, Leontief defines his model in his own words:

> The world economy, like the economy of a single country, can be visualized as a system of interdependent processes. Each process, from the manufacture of steel to the education of youth or the running of a household, generates certain outputs and absorbs a specific combination of inputs. Direct interdependence between two processes arises whenever the output of one becomes an input of the other: Coal, the output of the coal mining industry, is an input of the electric power generating sector. The chemical industry uses coal not only directly as a raw material but also indirectly in the form of electrical power. A network of such links constitutes a system of elements which depend upon each other directly, indirectly or both. (Leontif, Structure of the world economy, 1973, p. 1)

Kooros and Badeaux (2007) write about Leontief and state the following about the models that they reviewed: "Many countries aspire to formulate economic development strategies to improve their quality of life" (p. 121). They continue stating, "Development economics has lacked viable planning models" (Kooros & Badeaux, 2007, p. 121). Leontief explains the model when accepting the Nobel Prize:

> The state of a particular economic system can be conveniently described in the form of a two-way input-output table showing the flows of goods and services among its different sectors, and to and from processes or entities ("value added" and "final demand") viewed as falling outside the conventional borders of and input-output system. As the scope of the inquiry expands, new rows and columns are added to the table and some of the external inflows and outflows become internalized. (Leontief, 1973, p.2)

Leontief (1973) uses an example in his Nobel Prize Lecture of a world economy broken down into two classifications, one of developed and one of less developed nations. An example that is only divided into two groups may be seen as limiting in scope and depth. His production matrixes, however significantly added to the development economics discussion.

Model 2: Dual Sector Model

The dual sector model is a work of Lewis (1954). At the end of the Korean War, Lewis wrote *Economic Development with Unlimited Supplies of Labor*. He later won a Nobel Economic Prize for the efforts in defining the transition between an agrarian

economy and an industry economy (see Figure 2 and the Industrialization Phase). This model is helpful in that it looks beyond political borders to capture a trend of labor movement towards viable economic employment. When economic incentives are advantageous, people will come. This refers to women and other members of society that may not have engaged in economic activity until the incentives improve.

The concept of keeping labor constant in models is a common assumption, but can be viewed as a model limitation. The concept of perfect competition is also very common in models, but in the real world assumptions like these are unrealistic. In the model world, however, it is a necessity to make assumptions in order to solve other unknown variables to complete equations. Solow (1987) contributes to this discussion during the Economic Nobel Prize reception lecture, stating "[Productivity] Growth theory was invented to provide a systematic way to talk about and to compare equilibrium paths for the economy" (par. 25) As a key author on productivity growth theory he states with authority, "I am also inclined to believe that the segmentation of the labor market by occupation, industry and region, with varying amounts of unemployment from one segment to another, will also react back on the equilibrium path" (Solow, 1987, par. 26). This thought becomes important when looking at the BIED-GPM in Chapter 3.

Kooros and Badeaux (2007) elaborate on this discussion when they reflect on a dual system society:

> Economic development transforms a traditional dual-system society into a productive framework in which everyone contributes and from which receive benefits accordingly. Economic development occurs when all

> segments of the society benefit from the fruits of economic growth through economic efficiency and equity. Economic efficiency will be present with minimum negative externalities to society, including agency, transaction, secondary, and opportunity costs. At the same time, disintegration of national sovereign states into more fragmented nations along the ethnic lines would not help these newly formed societies to accede to a formidable economic development regardless of their form of government. (p.120)

Model 3: Exogenous Savings Rate Model

Productivity growth theory probably encompasses the most models and includes the third and fourth models in the World War Era category. The exogenous savings rate model is from Sir Harrod (1939) and Domar (1946). Together, their research has become known as the Harrod-Domar model, or when labeled based on behavior, it is known as the exogenous savings rate model. This model focuses on exogenous growth and primarily the individual and group behavior of saving. This activity can also be seen as spending less than what is made. In practical terms, the benefit comes from positive internal production cycles.

The main idea of productivity growth theory is the distinction between two categories of systems: individuals, and groups or businesses. This separation identifies individuals (and families) that will attempt to maximize utility, while businesses will attempt to maximize profits. What is insightful about the theory is that it actually identifies different systems and defines noticeable behaviors between them. Solow

(1987) had the following to say during his Sveriges Riksbank Economic Prize acceptance speech on the exogenous savings rate model:

> Harrod and Domar seemed to be answering a straightforward question: when is an economy capable of steady growth at a constant rate? They arrived by noticeably different routes, at a classically simple answer: the national savings rate (the fraction of income saved) has to be equal to the product of the capital-output ratio and the rate of growth of the (effective) labor force. Then and only then could the economy keep its stock of plant and equipment in balance with its supply of labor, so that steady growth could go on without the appearance of labor shortage on one side of labor surplus and growing unemployment on the other side. They were right about that general conclusion. (par.3)

Model 4: Exogenous Technological Progress Model.

The fourth model in the World War Era is made up of two different authors, as is the third model. Swan's work on the rate of technical progress was combined with Solow's work and is now known as the Solow-Swan neoclassical growth theory, or the exogenous technological progress model. Solow and Swan added to the Harrod and Domar Models. With the growth of legal business entities and land rights, the economic dynamics changed. Specific attention was drawn to the new industry sector and how its behavior differed from agrarian practices. Shift work was a much different behavior than farming or taking care of animals. It was less dependent on the weather and season cycles as discussed earlier. The economic systems that operated in industry became

quickly dependent on skilled and reliable labor. The industrial sector became very efficient using three shifts and keeping plants operational around the clock. This efficiency made it profitable and increasingly more attractive to agrarian activities. The labor force typically voted in opposition and moved to industry, which is tied to factories. This phenomenon is seen in the moving from a rural area (i.e., where agrarian economies exist) to city centers (i.e., where industry economies exist). It should be noted that another difference between agrarian and industry sectors is where "the market" is located. The two sectors are not equal regarding where people live and buy their goods. When people live on farms and sell goods in the city, there are logistical costs involved. When people live in the city and buy/sell goods in the same city, additional efficiencies are realized. The agrarian sector is less efficient than the industry sector in this matter. Another label for this transition is the "industrial revolution" or the Industrialization Phase (see Figure 2).

Figure 14. External Production Cycle.

Exogenous growth theory is a collection of research that focuses on external production cycle behavior. This is economic activity between other systems. In the international realm, this is primarily nation-state activity with other nation-states.

Obviously, business level (private sector) activity happens, but it is collected at the national level to compare against other national levels. The external production cycle is made up from the cost of the cycle, plus the return of the cycle and equals either a positive or negative growth. The goal of external production cycles or exogenous growth models is to find the comparative advantage between systems using different political structures and rules for economic gain.

The two driving forces behind dependency theory are Singer (1949) and Prebisch (1945). The crux of their work is that trade after World War II was changing the known rules of the international environment and the global competitive market. The countries with money needed resources to grow and typically found cheaper resources in those nations with little money. This seemed to put less developed nations at a disadvantage, as the only good or service wanted by those with money would impact the terms of procurement. This seemed to make the less developed nation "dependent" on the primary income source (typically the industrialized world).

After World War II, the world was very internationally aware. Only the United States had a modern economy without significant infrastructure damage due to the war. This influenced how nations approached rebuilding modern economies, who lent, who borrowed, and what the terms were. Also, the world was being divided by two contradicting political thoughts: communism and capitalism. Though we now know how this debate eventually ends, this was not clear in the 50s and 60s. Therefore, the dominant observations were about development aid, monopolies, and natural resource procurement. If labor moves to jobs, natural resources move to where labor is, and

money moves to where natural resources are, then the economic triangle would demonstrate significant movement. This model places an emphasis on natural resources and its movement toward industry production sites. Marx would be interested in this, because it depicts a concern for who owns the means of production: The mining location or market is a production site, but not the important end or more profitable production site. Therefore, it is less beneficial than the industry market. The concept of a market is the key here. Where is money actually being made? Indeed, profits can be made in natural resources, but better profits typically exist in the industry phase. Thus, again a distinction is made between the type of production and location. An example of this would be auto manufacturing: The primary profit centers are in iron ore (a natural resource), steel production (industry), auto manufacturing plant (industry), and auto show room (service). The iron ore stays in the ground until there is adequate demand and money to retrieve it. While money can be made in this transaction, additional money is further in the value chain cycle. This becomes a good example of the qualitative method. Observing that natural resources are flowing from third world countries to first world countries only tells part of the story. What terms were the third world countries getting, and who owned the more profitable cycles of production, are great concerns for qualitative models?

Productivity growth theory is also a product of the international environment during the World War Era. With such events as World War I, the Great Depression, and World War II dramatically impacting the labor force, unemployment, immigration, and trade, classic growth theory was replaced with a new way of looking at economics. It

should also be noted that until the 1900s, shipping and rail was the dominant logistics technology. The means to travel internationally by airplane significantly impacted *how* business was being done and managed.

Productivity growth theory made significant gains in economics, but took broad assumptions in the process. The addition of some new concepts contributed to the theory as well, including equilibrium, rate of technical progress, saving rates, inputs, and outputs. As an academic discipline, there was initially little understanding of basic definitions, concepts, and processes. It could be said that models had limited sensory motor causality.

Era 2: Post War Era (1960s, 1970s, and 1980s).

Using Piagetian terms, the post war era models operated within the preoperational stage of development. Piaget (1964) wrote that "In the absence of operational reversibility, there is no conservation of quantity" (p.21). Focus on endogenous growth theory begins in the post war era.

Endogenous growth theory is a collection of materials that assess the primary system to clarify what is happening and address what options are available within the system. These models seem to be closed models that emphasize specific relationships that are internal. In other words, rather than focusing on that which cannot be controlled, focus on the national system and work to fix what can be controlled, while attempting to influence what cannot be controlled.

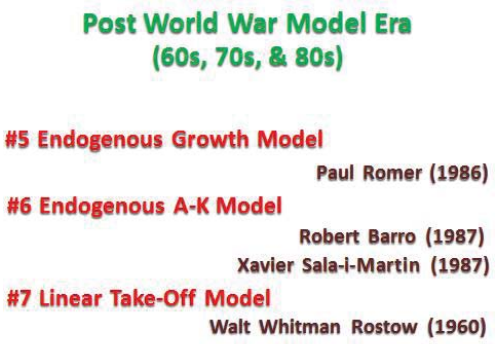


Figure 15. Post World War Model Era.

Jalles (2007) addresses the change to a new era of economic models, stating, "At an early stage models assumed positive rate of technological chance, but nowadays they have evolved to models that generate growth endogenously" (p.2). Ickes (1996) writes, "Much of the recent literature distinguishes between exogenous and endogenous growth models" (p. 1). Ickes writes, "The neo-classical [Exogenous Technological Progress] model predicts that countries with low per-capita incomes grow faster than those with high, so that over time per-capita incomes converge". (Ickes, 1996, p. 1)

Using models that focus on the inner workings and efficiencies of a specific system should have been expected in an era with such technological advances as computers and robotics. What is the value of a faster computer chip? It should be noted that when endogenous growth started to gain popularity, the shift to a service-dominated economy was in force globally, also known as the de-industrialization phase. Global competition was truly beginning again. After World War II, most industrialized nations had devastated infrastructures as a result of aggressive attacks during the war. It took most of these nations roughly two decades (1945 to 1965) before they started being competitive at the global level. Because the United States did not fight significantly on

its soil, its infrastructure was extremely functional. The United States had a semi monopoly on international trade for about 2 decades because of this infrastructure difference. Therefore, the post war model era depicts these global competition policy concerns. The three dominant models in this era are model #5: endogenous growth model, model #6: the AK model and model #7: Rostow's take-off model.

Model 5: Endogenous Growth Model.

Romer started writing about increasing returns and long run growth in the 1980s. His article titled, "The Origins of Endogenous Growth" helped cement his model in the economic community (Romer, 1994). Its popularity helped spur a collection of research to view economic problems through an endogenous lens. The endogenous growth theory is often referred to as the endogenous growth model and the two are used interchangeably. It is important to make a distinction between a model and a tool to help us compare information, and a theory, however. A model should never be the same as a theory. Because development economics and economic growth economics are still young disciplines, these distinctions have not been worked through, conceptualized and universally accepted yet. Therefore, one influential paper or a charismatic personality can dramatically impact the community and the type of research that is pursued as well as how things should potentially be labeled.

In Romer's (1994) own words, he contributes to the discussion when he writes about the phenomenon of endogenous growth:

> The phrase "endogenous growth" embraces a diverse body of theoretical and empirical work that emerged in the 1980s. This work distinguishes

> itself from neoclassical growth [productivity growth theory] by emphasizing that economic growth is an endogenous outcome of an economic system, not the result of forces that impinge from outside. For this reason, the theoretical work does not invoke exogenous technological change to explain why income per capita has increased by an order of magnitude since the industrial revolution. The empirical work does not settle for measuring a growth accounting residual that grows at different rates in different countries. It tries instead to uncover the private and public sector choices that cause the rate of growth of the residual to vary across countries. As in neoclassical growth theory [Productivity Growth Theory], the focus in endogenous growth is on the behavior of the economy as a whole. As a result, this work is complementary to, but different from, the study of research and development or productivity at the level of the industry or firm. (p. 3)

Romer (1994) is, of course, referring to the accounting concerns that were popular in model #4, the Solow-Swan exogenous technological progress model of diminishing returns. Romer (1994) writes in a section labeled "An Evaluation of the Convergence Controversy:"

Romer continues, "Everyone agrees that a conventional neoclassical model with an exponent of about one-third on capital and about two-thirds on labor cannot fit the cross-country or cross-state data" (Romer, 1994, p. 10).

Romer writes that endogenous "growth starts from the observation that we had enough evidence to reject all the available growth models throughout the 1950s, 1960s, and 1970s" (p. 11). Romer continues, "Endogenous growth is therefore concerned with the painfully slow progress we have made in constructing formal economic models at the aggregate level" (Romer, 1994, p. 11). Romer further identifies the limited progress in models when writing further, "Progress in economics does not come merely from the mechanical application of hypothesis tests to data sets. There is a creative act associated with the construction of new models that is also crucial to the process" (Romer, 1994, p. 11). The last take away from Romer (1994) is this:

> The evidence about growth that economists have long taken for granted and that poses a challenge for growth theorists can be distilled in five basic facts. (1) There are many firms in a market economy, (2) Discoveries differ from other inputs in the sense that many people can use them at the same time, (3) It is possible to replicate physical activities, (4) Technological advance comes from things that people do, and (5) Many individuals and firms have market power and earn monopoly rents on discoveries. (p. 12)

Romer was really making an argument for adding behavior, especially in points 3 and 4 to economic modeling. Endogenous growth model has its limitations, however. Parente (2001) states, "Endogenous growth may prove useful for understanding growth in world knowledge over time, but it is not useful for understanding why some countries are so poor relative to the United States today" (p. 1).

Model 6: Endogenous AK Model

The second model in this era is called the AK model, known for the two main letters in the equations: *A* for total factor productivity and *K* for capital. Aghion and Howitt (1997) describe this type of model that many researchers use with slight modifications in "the effects of diminishing returns, thus allowing output to grow in proportion to capital" (p. 24). Garcia-Penalosa wrote in 1998, "These models are generally referred to as AK models, because they result in a production function of the form Y=AK, with A constant" (Garcia-Penalosa, 1998, p. 24)

As depicted in *Economic Growth*, Barro and Sala-i -Martin (2004) contribute to the AK Models. The AK models hold a constant savings rate and a fixed technology rate. There is no diminishing return to capital in this model, unlike the Solow model, which eventually gets named the Solow Residual in his honor. While numerous authors and researchers have used a variant of the AK model, Barro and Sala-i-Martin (2004) write about the model for the better part of a decade and their position is absorbed by the economic community as an authority on AK model contributions.

One of the themes that materializes in endogenous growth theory and is addressed in model #5 and model #6 is that of intellectual property, ideas, and the concept of research and development. Parente (2001), author of *The Failure of Endogenous Growth* discusses the incentive to actually put money into research and development. Parente writes, "These papers introduce imperfectly competitive elements to the models by conferring monopoly power to the successful innovator" (p.3). Finally Parente finishes, "Without the potential to earn monopoly profits, no self-interested agent would incur the costs to engaging in R&D activities" (p. 3).

Figure 16. International Production Cycle.

Two major cycles found in economics will now be outlined: Internal production cycles and external production cycles. Endogenous growth theory is really the focus on internal production cycles (see Figure 16). This cycle is an economic activity that uses the three primary elements in different models to better understand these complex relations. The cost of the cycle plus the return of the cycle equals either a positive or negative growth of the cycle. Assumptions are made to give values to as many elements as possible and then attention is given to solve for the remaining unknown element, usually technology.

Parente (2001) might have dismissed the reason to study internal production cycles and endogenous growth models, but he was able to point out the flaws in the initial model assumptions. The internal production cycle is important because it has several unknown variables and focuses on the element known as technology (see Figure 16). Technology is extremely difficult to measure, so it becomes the fallback in many models. Assumptions are made to identify the size of the labor force; the money on hand or in the system, and the materials needed for the economic activity and depicts the unknown

technology element as the answer. When all other methods fail, technology explains the difference.

Hsiu-Yun Lee (2003) contributes to the endogenous discussion in the article titled, "Does an Exogenous or an Endogenous Growth Model Fare Better: Evidence from the GDP Growth Rates of 24 OECD Countries," when Hsiu-Yun Lee wrote, "Identifying the driving force behind economic growth is of great importance both in the design of policy and for theoretical interest" (p.1). Lee continues, "It is well known today that, given a process for output, we can always choose an exogenous technology process which can match that output" (Lee, 2003, p.2). Finally, "From a theoretical point of view, there is no way of telling exogenous and endogenous growth models apart based on the output process adopted" (Lee, 2003, p.2).

Model 7: Rostovian Take-Off Model

Rostow wrote the *Stages of Economic Growth: A Non-Communist Manifesto* (Rostow, 1960). As the title suggests, it includes a political current on the major debate of that time, one of communism versus capitalism. Essentially, Rostow (1960) observed five distinct behaviors of economic growth in what has been labeled the Rostovian take-off economic growth model (see Figure 17).

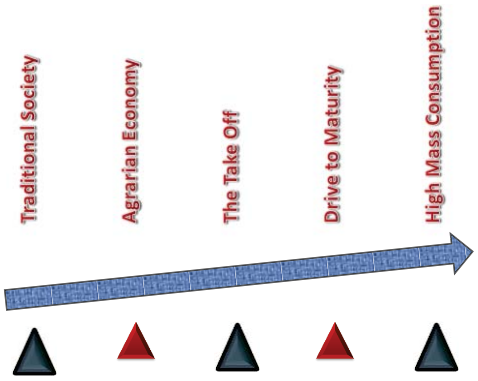


Figure 17. Rostovian Take-Off Model

These behaviors are 1) the traditional society, 2) the preconditions for takeoff, 3) the takeoff, 4) the drive to maturity, and 5) the age of high mass consumption (Rostow, 1960). These observations are worthy and still stand true today 50 years later. In an effort to plead the case for capitalism, however he went as far as saying one step needs to happen before the next, eventually drawing a lot of criticism. Rostow focused on financial capital, through mechanisms like foreign direct investment (FDI), to promote the next level of development. Rostow included measurements that may not be universal, like the Drive to Maturity stage comes about 60 years after the take-off (Rostow, 1960). While this may very well be an observation he had at the time for some of the Nations he was looking at, we know that time is relative and not all countries will follow this measurement. This does not mean that the behavior classification is flawed, just some of the measurements. While this has been shown to have significant flaws from a cause-effect perspective, his classifications of behavior are still valid observations. Even by today's international organization model standards that only use three or four categories, the five distinct behaviors used by Rostow can really divide up a large data pool for more specific observation and may still be used today with modifications.

The other criticism with the take-off model is that, while it is the most popular linear economic growth model, it does not account for negative growth. If a nation achieves one level, can it only go back to the previous level, say, in the negative growth years of Eastern Europe when the U.S.S.R. dissolved? With only two directions to go (i.e., up or down), the model did not maintain popularity with researchers. If some of his assumptions are removed, much can be added to this material, especially the distinct behavior groups. I used his observations and overlaid them into the new model, one that is not linear and one that accounts for both positive and negative growth. Rostow's (1960) model is a post war era model and it has a great foundation in behavior. It has been selected for this reason and will be used in comparison to the non-linear behavior international economic development growth path model.

Era 3: International organization era (1990s, 2000s, and 2010s)

Returning to the comparison to Piaget, the international organization era models would likely fall under the concrete operational stage, the third stage of development. It identifies what they call elementary logic of classes and relations (Piaget, 1964). The economic models construct numbers, spatial temporal operations in the immediate neighborhood with emphasis on agreed upon classifications. It does not seem that we have gotten to the point where the economic growth models have evolved past this stage, as we certainly do not agree upon classifications and are focused on local economics instead of the economics of the whole global system. While advances are being made and improvements are being achieved, it should be fair to say we are in the concrete operational stage. The third stage will end with successive inclusions. The fourth stage,

the formal operational stage (Piaget, 1964), will come in the future when the economic models involve hypothetic-deductive operations. Thus, as best we can determine, economic growth and economic development models are only in stage three out of four, indicating the nascence of the discipline.

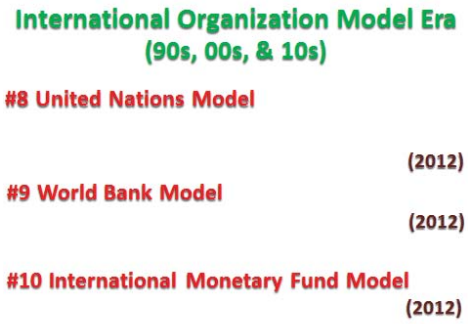


Figure 18. International Organization Model Era.

Nielsen authored an IMF working paper titled "Classifications of Countries Based on Their Level of Development: How it is Done and How it Could be Done" in February of 2011. The paper outlines the dominant models used today by influential international organizations, specifically model #8: the United Nations Development Program (UNDP), model #9: the World Bank (WB), and model #10: the International Monetary Fund (IMF), through their sheer size and dominant financial impact on communities (see Figure 18). Essentially, Nielsen (2011) outlines the history and development of the models most often used today to define international development of nations. The political nature of each group, however, determines the outcome of these models. This does not dampen the wide use and reliance on these models today. It should be noted that the international development community is usually tied to the UN, WB, and IMF. The relation of these international organizations and dominance in

development literature significantly impacts the lens on the economic discipline, both socially and academically.

Model 8: United Nations Model

"Where exactly to draw the line between developing and developed countries is not obvious, and this may explain the absence of a generally agreed criterion," Nielsen (2011, p. 3) writes. Nielsen (2011) goes on, "This could suggest that a developing/developed country dichotomy is too restrictive and that a classification system with more than two categories could better capture the diversity in development outcomes across countries" (p. 3). Nielsen identified shortcomings in the current international organization models. The new behavioral international economic development growth path study will use nine classifications in the model.

Figure 19. United Nations Model.

Historically, Nielsen (2011) identifies a landslide of literature that was content with a two-classification model, "poor/rich, backward/advanced, underdeveloped/developed, North/South, late-comers/pioneers, Third World/First World, and developing/industrialized" (p. 4). While the third world/first world model really has

three classifications, the significance of the statement echoes with truth: It is not that a two-classification system cannot shed light and insight on a topic. However, for models to mature, sometimes they need to become more complex.

Sen and Mahbub ul Haq are credited for the UN model and for advancements in what are now labeled human development factors. Sen, in a Nobel Prize Lecture, credits Mahbub ul Haq as "the United Nations Development Programme (UNDP) has made systematic use of a particular type of informational broadening to make comparisons based on observed features of living conditions (Reported in UNDP, Human Development Reports)" (Sen, 1998, p. 193).

"The rise of the South is radically reshaping the world of the 21st century, with developing nations driving economic growth," starts the 2013 *Human Development Report*. It continues, "Lifting hundreds of millions of people from poverty, and propelling billions more into a new global middle class, says the United Nations Development Programme" (UNDP, 2013). This new trend is captured in an elaborate research report model that was started in 1990 by the UNDP. The goal of this model was to bring human capital development to the forefront. Mayer-Foulkes writes in 2010 in a UNDP human development reports research paper, "Two decades of empirical investigations left behind long-held views that economic growth consisted fundamentally of a process of capital accumulation, finding that human capital, technology, institutions and economic geography to be essential components of the process" (p. 2). Mayer-Foulkes continues, "The main debate, nevertheless, is to what extent the growth process generated by markets is sufficient to bring about economic development, and where not,

what the most effective complementary policies can be" (2010, p. 2). Mayer-Foulkes also adds, "What these studies show is that economic and human developments are complex processes with historical, political, economic, institutional and geographical determinants that do not conform to some simple linear model" (Mayer-Foulkes, 2010, p. 3). Molina & Purser contribute add to the discussion when they contribute:

> The main feature revealed by the descriptive analysis is that Human Development, as well as its determinants, follow a series of superposed transitions that first take off with increasing divergence and then converge to a higher equilibrium. This very fundamental feature of development is almost completely missing in most theoretical models on economic growth. It could be said that vicious cycles keep transitions from beginning. Once they begin, they are characterized by virtuous cycles that reach a higher equilibrium. The Human Development Report is published once a year and outlines what is called the Human Development Index, which is made up from a measurement of 22% (weight) literacy rates, 11% gross education enrollment rates, 33% life expectancy rates, and 33% GDP per capita. The scale is zero on the low side, and one on the high, indicating better human development. (Molina & Purser, 2010, p. 4)

The UN can also be credited with the commonly used classification identified as least developed countries (LDCs). As Nielson (2011) points out, the general assembly never established what can be labeled as development taxonomy.

Model 9: World Bank Model

The WB model is based on absolute measures, meaning that a country either fits into the category or doesn't. The labels used, however, are relative: high, middle, and low which allude to a division of statistics divided into thirds. This is not the case for the WB, as the labels do not match the criteria evenly. It should be noted that the model has changed over the last several decades. Currently, there are three indicator classifications: low income, lower middle income, and high income.

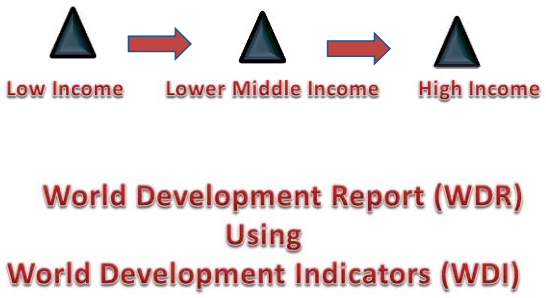


Figure 20. World Bank Model.

The WB model is set up for a specific purpose: as a tool to help lend money. The International Bank for Reconstruction and Development (IBRD) lends money to eligible borrowers. This system is seen as a political model, which means it is based less on scientific labeling but need/capacity or worthiness. While some nations may be deserving of funding, if they are out of political favor, they may not qualify and put in a different classification. It may seem peculiar to include non-scientific models in this literature review; however, the WB has a significant research database and prominent presence in research today. The World Development Indicators are a staple in modern research. These are used and published in the *World Development Report (WDR)*, which

is another yearly publication. The visibility the WDR gets is impressive, but the requirements to help lenders lend is paramount. Because of this important need, very detailed information is collected. It is, therefore, an important source of information and should be seen as a significant model in economic growth and economic development research.

The WB has a financing arm called the International Development Association or IDA. There are two primary tiers within the IDA, donors and borrowers, referred to as Part 1 and Part 2. The lending threshold has changed over the years. This model should be seen as a political tool, and deserves to be mentioned as a dominant model.

Figure 21. International Monetary Fund (IMP) Model.

Model 10: International Monetary Fund Model

The IMF model uses a simple three-classification approach. It is used as a system to identify who may be eligible for loans. It is not based on a scientific method, but a political and, more specifically, business method. The insight in this model is similar to the other models in the international organization taxonomy theory collection. Nielson (2011) breaks down the IMF country classification system, stating that

"operational policies related to financial assistance, surveillance, and technical assistance did not discriminate among members based on their level of development for the first three decades of the Fund's existence" (p. 14).

Literature Review Conclusion

This literature review has identified 10 economic growth and development models that have significantly impacted the academic discipline of international economics. I have reviewed three eras of models and research. The first era highlighted models that focused on productivity, industrialization, savings rates, and technology. The second era of models focused on endogenous growth and looked within the national system for answers. The third era is dominated by international organizations and their influence on national systems in data collection and analysis. The underpinnings of global events dominate each era. As we would expect in the economics field, most of the models used are quantitative studies. In the first two eras, the World War Era and the Post War Era, economic growth, math-centric, quantitative prediction models dominated research. In the International Organization Era, development economics, human development indicators, and qualitative models dominate research.

Economic Nobel Laureates Stiglitz (2001) and Ostrom (2009) identify a need for new behavior models in economics to further the understanding of economic growth and, specifically, development economics. The goal is to identify like development growth paths or clusters. We may benefit from studying like groups and the behavior of these new groups. The paradigm of looking at nation states as 1st world (post industrialized),

2nd world (industrializing), and 3rd world (agrarian and poor) is simply too vague and broad to get specific insight and theoretical perspective in detail. A study that uses more classification labels can help provide additional insight on this identified literature gap, providing social benefit to public administrators with a new tool to help make better management decisions.

Chapter 3: Research Method

Introduction to the BIED-GPM Design

I built upon the traditional linear growth (3 stages) model and the Rostovian (5 stage) Take Off model using the grounded theory Constant Comparison Method of Strauss and Glaser (1967) and the structured coding procedures for data analysis from Strauss and Corbin (1990). Glaser and Strauss wrote a ground-breaking book titled *The Discovery of Grounded Theory: Strategies for Qualitative Research* in 1967. Glaser and Strauss believe that grounded theory can promote relevant theory from quantitative data and devote an entire chapter to it called, "Theoretical Elaborations of Quantitative Data." (p. 185). In this study I take quantitative data, as defined in the sub chapter titled secondary analysis of quantitative data (p.185) through the 3 defined coding processes to build a Conditional Matrix. Observe the behavior of the new stages of nonlinear growth with qualitative methods until patterns arise. Grounded theory allows for both quantitative and qualitative analysis, it, therefore, aligns well with this study. (Glaser & Strauss, 1967, p. 1).

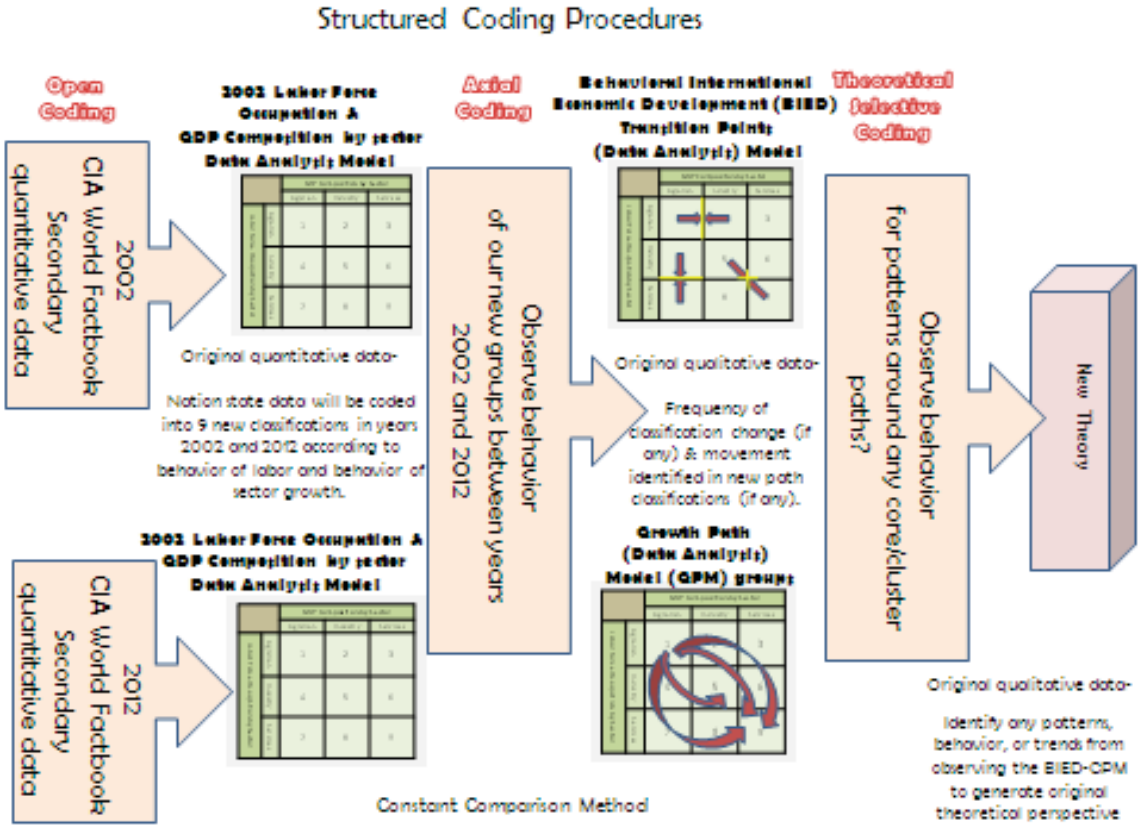


Figure 22. Grounded Theory Structured Coding Procedures.

The decision to use a sociology research method in an economic discussion is not common. It is, however, an appropriate method for this research project. The current paradigm with economic models leans heavily on quantitative methodology. Bitsch (Bitsch, 2005) identifies that "qualitative research as understood in other social sciences is virtually nonexistent in the American Journal of Agricultural Economics (AJAE)." (p.75) Also, as nine classifications will be created (more than twice as many as most models) in order to get a more specific picture as to what might be happening in the labor sector. Strauss and Corbin's (1990) work promotes grounded theory, "One does not begin with a theory, then prove it" (p22). Grounded theory was chosen for its fluid and

open approach to theoretical conceptualization (Glaser & Strauss, 1967). Glaser and Strauss (1967) go on to identify that grounded theory should provide perspective on behavior.

Strauss and Corbin (1990) have put together a good set of procedures to help guide a grounded theory study. They emphasize setting up structured coding procedures to facilitate a research design. Unlike the Glaser approach that promotes an open slate before the study to capture concepts inductively.

The role of the researcher is to design a secondary study from both the 2002 and 2012 *CIA World Factbook*. This provided a decade of data movement to review and new classifications to observe. Since this is a path behavior study, the nonlinear movement was built into the design to avoid some of the criticism found in the Rostovian Take off model. This accommodates both positive and negative growth. Both a conditional matrix was used as well as a conditional path.

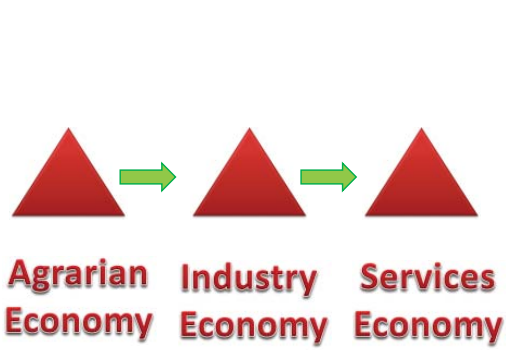
		GDP Composition by Sector		
		Agrarian	Industry	Services
Labor Force Occupation by Sector	Agrarian	1	2	3
	Industry	4	5	6
	Services	7	8	9

Figure 23. The Behavioral International Economic Development (BIED) Conditional Matrix Growth Path Model.

Using the typical indicator of GDP by sector to help measure the growth of the financial capital sector along with the new behavior indicator of labor force occupation

by sector to create a grid matrix, nine distinct classifications were created to help manage the data set (see Figure 23). With GDP composition by sector on the top and labor force occupation by sector on the side, both indicators help create a more specific look at the *CIA World Factbook* data sets. All nations identified in the *CIA World Factbook* were considered. If it could be determined what the majority GDP composition by sector is, then it was used. If the majority labor force occupation by sector could be determined, then it was used. Simple majority was used for this study: Whichever one of the three has the largest percent was considered to dominant behavior of that society and therefore was used in the model. The largest sectors, for the purpose of this study, will represent the dominant classification in the new model.

Figure 3 showed two examples of how China could be labeled when GDP by sector and Labor Force Occupation by sector were used independent from each other. When we use both indicators together in figure 23, China's GDP by Sector is (Agrarian-9.60%, Industry-46.80%, & Services-43.60%) has Industry as the dominate sector. China's Labor Force by Occupation Model is (Agrarian- 38.10%, Industry-27.80%, & Services-34.10%) or an Agrarian dominated labor force. Since the labor force is agrarian and the GDP is industrial, these two indicators intersect in box 2 of the new BIED-GPM. This example allows us to classify each nation state to see if it helps to get a more detailed picture of what is happening. It also allows us a scientific way of measuring paths and routes taken over time, which should be helpful in any analysis comparisons.



Vs.

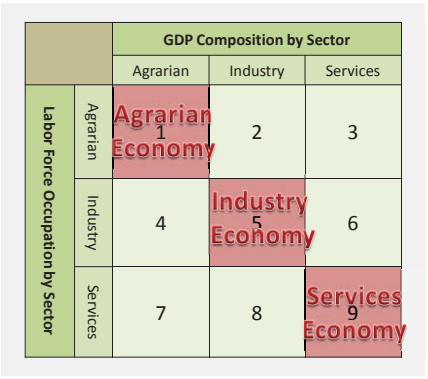


Figure 24. Traditional Linear Growth Model Embedded in the BIED-GPM.

Figure 24 demonstrates how Figure 1 (the traditional linear growth model) might look when added into the new BIED-GPM. The traditional linear path would move from classification box 1 (agrarian) to box 5 (Industry,) and then to box 9 (Services). Having six additional classifications should help to define a society's behavior in more depth. This new model also allows for negative and nonlinear movement. It also allows researchers the opportunity to systematically look at economic paths. How does one system move between these different classifications? The outcome is that by studying any changes of classification movement, that policy makers might be able to better prepare for what is most likely the next dominant behavior of a particular society. This behavior has its own set of concerns, priorities, and considerations. This study does not get into depth on the concerns, priorities, and considerations within each stage, but will attempt to assess whether the data and analysis of such a lens contributes significant insight into the relations identified. If significant insight is possible, then further clarification research might be ideal for future research. Grounded Theory allows the inductive process to happen as many times as needed, until patterns surface.

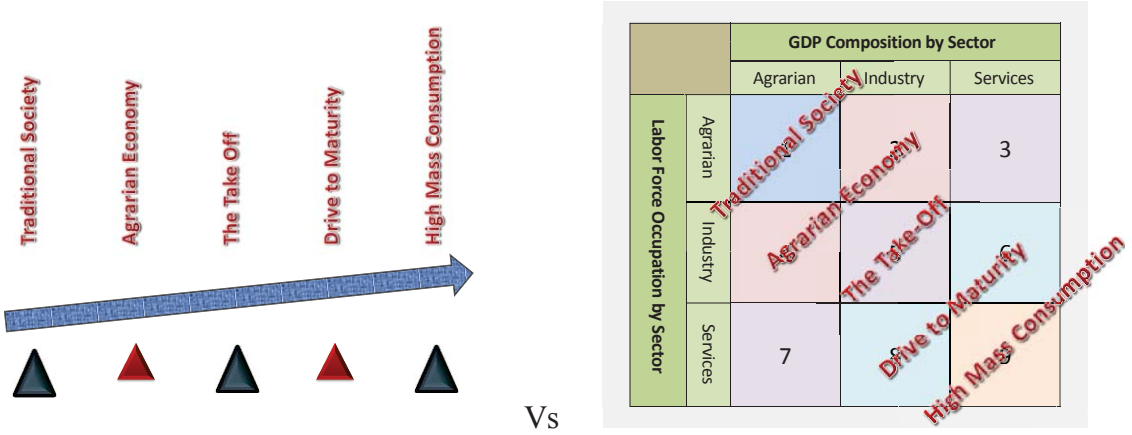


Figure 25. Rostovian Take-Off Model Inside The BIED-GPM.

Figure 25 displays the Rostovian take-off model when identified within the new behavioral international (nonlinear) economic development growth path model. Classification box 1 identifies Rostow's traditional society. Boxes 2 and 4 identify the agrarian economy. Boxes 3, 5, and 7 identify the take-off stage. Boxes 6 and 8 identify the drive to maturity stage. Finally, box 9 identifies the high mass consumption stage.

In 1961, Ohlin wrote "Reflections on the Rostow Doctrine;" with further dissent by Itagaki (1963) in "Criticism of Rostow's Stage Approach: The concepts of Stage, System, and Type," noting that "It is only in the third stage ("take off") and the fifth stage ("high mass-consumption") that Rostow's leading sectors emerge" (Itagaki, 1963, p. 5). What Ohlin and Itagaki identify is that the traditional society stage, the take-off stage, and the high mass consumption stage (stages 1, 3, and 5) are primary stages, while the agrarian economy stage and drive to maturity stage are more transitional in nature. While neither had the benefit of the behavior international economic (nonlinear) development growth path model conditional matrix (BIED-GPM), we can more clearly conceptualize what each was describing (in Figure 25). The primary stages are agrarian GDP and

agrarian-dominated labor force occupation by sector (stage 1), industry GDP and industry-dominated labor force by sector (stage 5), and services GDP and services-dominated labor force occupation by sector (stage 9). This can be identified by the earliest observations and classifications in the traditional linear growth model. While Ohlin (1961) and Itagaki (1963) may have observed a weaker relationship in the second and fourth stages, Rostow's (1961) seminal contribution is identifying additional classifications and ultimately behavior observations to grow the body of understanding in the first place. Rostow's attempt to define each stage at the time was actually an attempt to classify the observed behavior. The attempt used stretching assumptions and flawed measurements which led too much of the criticism of the model. The original behavior observations, however, are strong.

When actual behavior is used and classified, a different picture is possible. Also having four extra classifications helps add depth to the five observed categories in the Rostow model. The thought is that behavior dominates a society. If the majority of people in a society or "system" are making a living doing one type of occupation compared to another, then it is the dominant behavior that is driving the economy. The public policy in a system that is made up of farmers is focused on one set of issues, while a system that is made up of factory workers has a different set of issues. It should be the behavior that should define the classifications along with GDP (a measure of the success of each behavior). Together, these two indicators, GDP composition by sector and labor force occupation by sector, help to show the dominant behavior and relative return on behavior, which should be useful in theory development. Itagaki (1963) calls for "a fresh

approach to the stage theory, in order to unify the knowledge of theory, history and policy by distinguishing and relating at the same time the key concepts of 'stage,' 'phase,' 'system,' 'type,' 'policy,' and 'strategy'" (p. 17).

Using the previously discussed traditional linear growth model (see Figure 1), we know that most nations start in classification 1, an agrarian economy. When they industrialize they will move out of classification 1. There are only three options: classifications 2, 4, or 5 (see Figure 26).

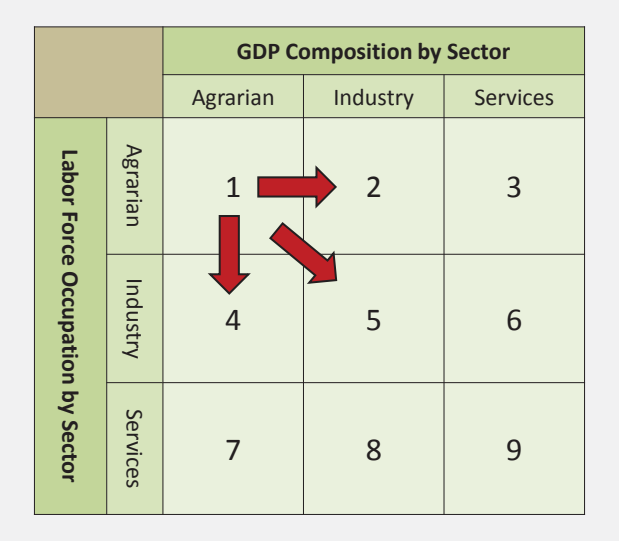


Figure 26. Corners Only Have Three Path Options.

After industrialization, we know that a move to the service sector is likely if using an upward growth trend. This move would depend on what category dominates during the industrialization phase. What this model does is capture the growth, either positive or negative, in the financial sector as dominated in GDP composition by sector. It also includes the behavior of individuals to choose a job in a specific sector. Assuming people vote in opposition and decide what job to participate in, and then a conscious choice is made to be in an agrarian, industry, or services occupation. Using the belief

that behavior is a better matrix of what is important in policy and administrative considerations, but still identifying that the actual increase in financial capital grows the economy triangle, the combination of both indicators should provide considerable depth when we get to the analysis stage in the research.

The outside middle classifications (2, 4, 6, and 8) have five options (see Figure 27). This is considerably more than the corners and will impact probability during path analysis. Each classification allows for the reality of positive, as well as negative growth. This is a distinction from several models that only accommodate positive growth. Negative growth happens and the model should accommodate what is actually happening.

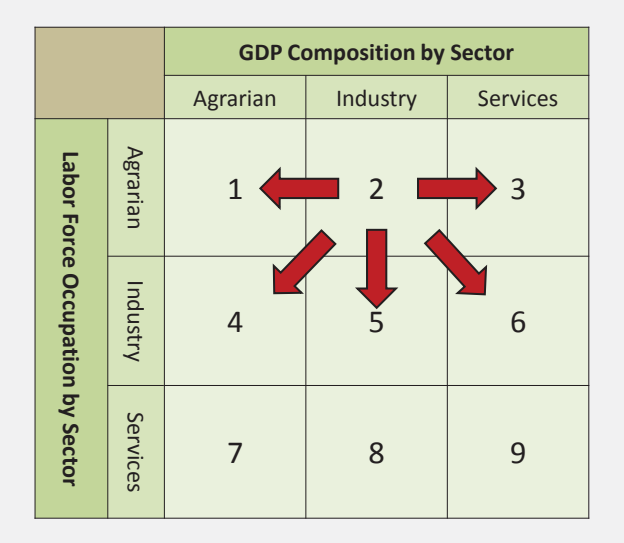


Figure 27. Outside Middle Classifications Have Five Options.

Finally, the center of the model, classification 5, has eight different directions; giving it the most options of any of the classifications (see Figure 28). This gives a society with the majority of its money coming in from the industry sector and when the majority of their labor force is earning a living in industry, the most options.

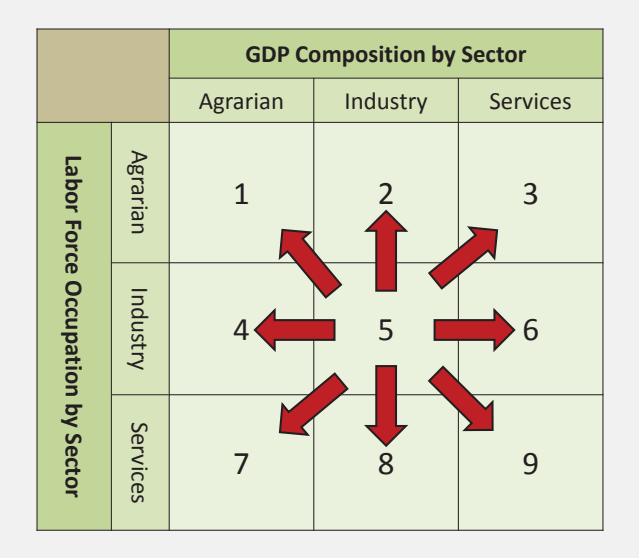


Figure 28. The Center Has The Most Options With Eight.

There are several paths that are possible, but the most common path is not known at this time. We do know that the corners (1, 3, 7, and 9) have the fewest options (i.e., only three bordering classifications). Category 5 has the most options, being eight. While there is some insight into this model based on probability, there should not be any bias. The data will fall where it may. Once the data from 2002 and 2012 is collected, we should be able to see what movement has happened in the last decade, if any. This will give us an indication where the current trends may be for this ten year period. Please see Figure 29 for path options (these are only examples of possible movement/insight from the BIED-GPM).

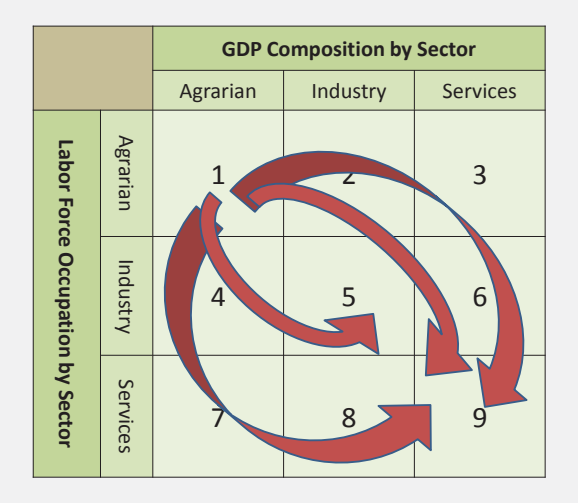


Figure 29. A Few Path Analysis Examples.

Figure 29 displays four examples of paths. One follows a path of 1, 2, 3, 6, and 9. One follows a path of 1, 2, 5, 6, and 9. Another path is 1, 4, 5 and the last example path is 1, 4, 7, 8, and 9. If enough data is collected, a nation could be tracked and could help determine the most common behavioral economic growth path. This would give public policy and public administrators some likely and probable paths to plan towards, or perhaps even attempt to prevent or avoid. This model will accommodate both positive growth as well as negative growth. It is not linear, but provides a new observable dimension and should provide new insight into the economic growth literature, development economics literature, and particularly to the behavior economics literature.

Follow-up research may examine to specific patterns. Specifically, what behaviors are commonly found in one path compared to the behaviors of another path? Using both behavior and path analysis can broaden the understanding of these economic relationships.

Researcher's Role

The researcher will use the *CIA World Factbook* data from 2002 and 2012. All profiles in each publication were reviewed to determine if enough information can determine which sector is the largest. The 2002 *Factbook* has 268 profiles, while the 2012 *Factbook* has 257. The sample size for this study uses all 525 nation state profiles to get the broadest insight possible. Some of these profiles are not actual nation states but collectives like "the world". I used all entries to determine if they had enough data to evaluate. The two indicators that I used can be found in the Central Intelligence Agency (CIA) in the World *Factbook*, GDP composition by sector and labor force occupation by sector. Each of these indicators is found in the economy section of the profile. With two indicators and three measurements in each (that of agrarian, industry, & services) a total of six statistics per nation state will be considered. Any profile that does not clearly indicate all three categories for each indicator in agrarian, industry, and services will not be able to move to the next round of evaluation in the grounded theory process. Only profiles that had collected a clear advantage from all six categories will be used in this study and added to the new conditional matrix model.

This study utilizes secondary data and thus, only the statistical information found in the 2002 and 2012 *CIA World Factbooks* will be used (CIA, 2011). Ethical protection has been considered and every effort was made to be transparent in the data collection, assembly into the new model, and analysis as possible.

Emerging Concerns

There is a lot of material to cover in an international study this large. With 525 samples to review, qualify, build in the new model, validate, compare the last decade's

movement, and interpret, many emerging concerns are possible. The priority for this study was to cycle 10 years of data through this new model to see if the international economic development growth path behavioral model can provide substantial insight for comparative purposes. Follow-up research may add to the depth of this model by including more years to provide a longer path perspective. Also, once enough data is input, a better grasp of the common path routes can be considered through basic probability reviews. Unlike the international organization taxonomy theory, which is political in nature, this behavioral approach is based in scientific principles, allowing for a more stable foundation.

Context

The concept of using a sociology method (i.e., grounded theory) to review and study the math-centric and dominated discipline of economics is unique. When most economic studies are quantitative, a need for qualitative research exists. Several economists have identified a need for a new approach of looking at economic interaction. The context of this study is an attempt to bridge gaps in previous models in order to account for positive, as well as negative economic, growth. One of the unique principles of this new model is its ability to account for lateral shifts, forward progress, and negative cycles. Its foundation is pinned to behavior. Behavior, which is considered to be the best indicator for policy and administration professionals, is what seems to be missing from the economic discipline as a whole until now.

Participant Criteria

Because this is a secondary study, the participants that are used in the *CIA World Factbook* will be nation state entries. As many profiles will be used as possible, as long as there has been enough data collected to determine the largest percentage agrarian, industry, or services sector for each of the two indicators. Whatever indicator that has the highest percentage will be used and considered to be the dominate behavior for both indicators. The original data collection was done on a massive scale. It can be more clearly defined from the 2012 *Factbook* introduction:

> The World Factbook is prepared by the Central Intelligence Agency for the use of US Government officials, and the style, format, coverage, and content are designed to meet their specific requirements. Information is provided by Antarctic Information Program (National Science Foundation), Armed Forces Medical Intelligence Center (Department of Defense), Bureau of the Census (Department of Commerce), Bureau of Labor Statistics (Department of Labor), Central Intelligence Agency, Council of Managers of National Antarctic Programs, Defense Intelligence Agency (Department of Defense), Department of Energy, Department of State, Fish and Wildlife Service (Department of the Interior), Maritime Administration (Department of Transportation), National Geospatial-Intelligence Agency (Department of Defense), Naval Facilities Engineering Command (Department of Defense), Office of Insular Affairs (Department of the Interior), Office of Naval Intelligence (Department of Defense), US Board on Geographic Names (Department of the Interior), US

> Transportation Command (Department of Defense), Oil & Gas Journal, and other Public and private sources. (CIA, 2011, p. v)

Model Indicators

There will be two indicators in this study. The first is a common economic measurement, known as GDP broken into three sectors, agrarian, industry, and services. The *CIA World Factbook* (2012) defines how they collected GDP and the methodology used in their calculations of GDP:

> In the Economy category, GDP dollar estimates for countries are reported both on an official exchange rate (OER) and purchasing power parity (PPP) basis. Both measures contain information that is useful to the reader. The PPP method involves the use of standardized international dollar price weights, which are applied to the quantities of final goods and services produced in a given economy. The data derived from the PPP method probably provide the best available starting point for comparisons of economic strength and well-being between countries. In contrast, the currency exchange rate method involves a variety of international and domestic financial forces that may not capture the value of domestic output. Whereas PPP estimates for OECD countries are quite reliable, PPP estimates for developing countries are often rough approximations. In developing countries with weak currencies, the exchange rate estimate of GDP in dollars is typically one-fourth to one-half the PPP estimate. Most of the GDP estimates for developing countries are based on extrapolation of PPP numbers published by the UN International Comparison Program (UNICP) and by

> Professors Robert Summers and Alan Heston of the University of Pennsylvania and their colleagues. GDP derived using the OER method should be used for the purpose of calculating the stare of items such as exports, imports, military expenditures, external debt, or the current account balance, because the dollar values presented in the *Factbook* for these items have been converted at official exchange rates, not at PPP. One should use the OER GDP figure to calculate the proportion of, say, Chinese defense expenditures in GDP, because that share will be the same as one calculated in local currency units. Comparison of OER GDP with PPP GDP may also indicate whether a currency is over or under valued. If OER GDP is smaller than PPP GDP, the official exchange rate may be undervalued, and vice versa. However, there is no strong historical evidence that market exchange rates move in the direction implied by the PPP rate, at least not in the short or medium-term. (CIA, 2011, p. xi)

The GDP composition by sector (i.e., agrarian, industry, and services) is the first indicator that will be used. It will be the quantifiable indicator to identify the actual success of the profile economy. It will also capture the sector that is dominated in each country. The second indicator that will be used is labor force occupation by sector. This will be the qualitative indicator. It is also the contribution to behavior and human development as recommended by Ostrom (2009). Together these two indicators will fill the nine classifications of the new BIED-GPM.

Coding Procedures

Strauss and Corbin's (1991) guidelines were used in this study to inform the method. Open coding will be used first. Open coding as defined by Strauss and Corbin (1991) is "The process of breaking down, examining, comparing, conceptualizing, and categorizing data" (p. 96). Here the models were identified and open coded, axial coding came next. According to Strauss and Corbin (1991), axial coding is an opportunity to put information back together in new classifications (p. 96).

A conditional matrix was used and conditional paths followed the open and axial coding process. Strauss and Corbin (1991) identify conditional matrix as "an analytic aid, a diagram useful for considering the wide range of conditions and consequences related to the phenomenon under study. The matrix enables the analyst to both distinguish and link levels of conditions and consequences" (p. 158). Following the conditional matrix, a conditional path was used. Strauss and Corbin (1991) define this step as "the tracking of an event, incident, or happening from action/interaction through the various conditional and consequential levels, and vice versa, in order to directly link them to a phenomenon" (p. 158).

2002

		GDP Composition by Sector		
		Agrarian	Industry	Services
Labor Force Occupation by Sector	Agrarian	1	2	3
	Industry	4	5	6
	Services	7	8	9

2012

		GDP Composition by Sector		
		Agrarian	Industry	Services
Labor Force Occupation by Sector	Agrarian	1	2	3
	Industry	4	5	6
	Services	7	8	9

Difference

		GDP Composition by Sector		
		Agrarian	Industry	Services
Labor Force Occupation by Sector	Agrarian	1	2	3
	Industry	4	5	6
	Services	7	8	9

Figure 30. 2002 and 2012 Compared For Any Path Movement For This Decade.

Two data points were collected in this study, one in 2002 and the second in 2012. A difference matrix was then created to identify any changes during this ten year period to look at any trends that were visible (see Figure 30). The majority or dominant sector for each indicator was put into the model and intersect in one of the nine classifications. Now that the countries have been input for both years, an appendix includes each country name in each of the nine classification boxes. To depict actual path movement, the transition points (see Figure 31) were used to see what nations and what percentage of collected states had movement. The transition points are any line or corner located inside the model. Crossing a transition point indicates significant movement in a nation's sector GDP or a labor shift. Either of these two events indicates a stage change. When the open coding was completed, there are now two snapshots. The axial coding began to capture any movement between transition points and was identified in the movement difference matrixes. The most common path is the transition point with the highest value. The line or point that has been crossed the most will identify the most common system movement path during this decade.

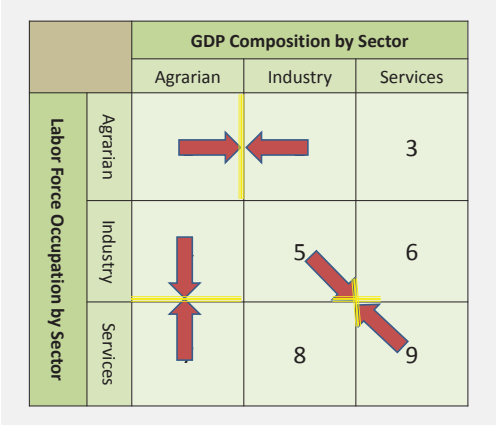


Figure 31. Transition Points (12 lines and 4 corners = 16 points).

The model has nine nonlinear stages as follows:

- Classification (1) Agrarian GDP with Agrarian Labor
- Classification (2) Industry GDP with Agrarian Labor
- Classification (3) Services GDP with Agrarian Labor
- Classification (4) Agrarian GDP with Industry Labor
- Classification (5) Industry GDP with Industry Labor
- Classification (6) Services GDP with Industry Labor
- Classification (7) Agrarian GDP with Services Labor
- Classification (8) Industry GDP with Services Labor
- Classification (9) Services GDP with Services Labor

The model has 16 transition points between Classification stages. They are:

1. Between classification 1 & 2
2. Between classification 2 & 3
3. Between classification 4 & 5
4. Between classification 5 & 6
5. Between classification 7 & 8
6. Between classification 8 & 9
7. Between classification 1 & 4
8. Between classification 2 & 5
9. Between classification 3 & 6
10. Between classification 4 & 7
11. Between classification 5 & 8

12. Between classification 6 & 9
13. Between classification 1 & 5
14. Between classification 3 & 5
15. Between classification 7 & 5
16. Between classification 9 & 5

Strauss and Corbin (1990) define 7 criterion found in the Judging a Grounded Theory Study, subchapter. (p253) This criterion helped to facilitate a proven technique tied to the Strauss & Corbin Grounded Theory constant comparison method. The criterion is:

- Criterion #1: How was the original sample selected? What grounds?
- Criterion #2: What major categories emerged?
- Criterion #3: What were some of the events, incidents, actions, and so on (as indicators) that pointed to some of these major categories?
- Criterion #4: On the basis of what categories did theoretical sampling proceed? That is, how did theoretical formulations guide some of the data collection? After the theoretical sampling was done, how representative did these categories prove to be?
- Criterion #5: What were some of the hypotheses pertaining to conceptual relations (that is, among categories), and on what grounds were they formulated and tested?
- Criterion #6: Were there instances when hypotheses did not hold up against what was actually seen? How were these discrepancies accounted for? How did they affect the hypotheses?

- Criterion #7: How and why was the core category selected? Was this collection sudden or gradual, difficult or easy? On what grounds were the final analytic decisions made?

These seven criterions were used to empirically ground this research according to Strauss & Corbin (1990) defined procedures.

Grounded Theory Method: (BIED-GPM)

The conclusion of this study is to further develop classifications of behavior by nation state systems using two indicators, Gross Domestic Product by sector and Labor Force by Occupation Sector. With a better understanding of past behavior and a broader conceptualization of future options, this study identifies nonlinear movement as nations develop. This should assist public administrators make better policies and contribute to a social benefit in better analysis. The movement through "development stages" is actually the study of group behavior. By using attributes of development economics and behavior economics, synergies were found to further both disciplines.

Chapter 4: Research

Introduction

Using the Strauss and Corbin (1990) coding procedures for grounded theory constant comparative method, this study used open coding, axial coding, and theoretical selective coding. The open coding stage identified the CIA World Factbook nations in 2002 and 2012 (see Appendix B for 2002 and Appendix C for 2012). All nations were put into a BIED-GPM to identify if they had enough indicator information to determine if a dominate sub category (Agrarian, Industry, or Services) could be found in both indicators, Gross Domestic Product Composition by Sector and Labor Force Occupation by Sector. If a dominate sector was found in each sub category in both indicators, the nation was assigned an axial coding number and was examined further in the axial coding stage. If there was not enough information found in either the 2002 or 2012 CIA World Factbooks, the nation was not reviewed further as identified in Appendix D: open coding results.

The axial coding stage assigned each nation that had enough information on GDP and Labor Force a Growth Path number. This number was found by putting each nation into one of nine new classifications in the BIED-GPM for each year examined, 2002 and 2012. Once a determination could be made as to what classification each nation was in during each year, the path was examined. The path number is the 2002 BIED-GPM number followed by the 2012 BIED-GPM number. This combination of numbers creates a sequence known as the BIED-GPM path number.

Finally, once each nation was reclassified into growth path numbers, the Theoretical Selective Coding Stage put the newly identified paths into yet another classification based on identified behavior. With this grounded theory process a wealth of information was identified, reviewed, observed, classified, and new insight is now possible.

Setting and Demographics

The setting of this study is grounded in new labels and observing the newly labeled groups. If the data clearly indicates the dominant behavior in each indicator (GDP composition by sector & Labor Force by Occupation) sub categories, agrarian, industry, or services, it falls into one of nine classifications based on which indicator most influences the system. If there was concern with the data collection computation, the inquiry can be addressed with CIA Statistics managers. This study promotes a new way of looking at international development and growth.

The demographics of this study were international nation state labels. While these are political classifications and change from time to time, because they include several territorial claim disputes, etc. International accepted boundary norms were used as defined in the Factbook parameters. These norms should provide validity to the categories used and support the new classifications built in this study. Individual economic systems and nation-state systems are initially studied in this study. Once new economic labels are identified, these new groups are studied.

Data Collection

The data collection was rigorous, by putting each nation state entry from both the 2002 and 2012 CIA World Factbooks into the BIED-GPM to identify if a 1-9 stage could be identified in each year. Of 279 original open coded nation-state entries, 115 had enough information to move into the axial coding stage. Appendix B shows the 2002 CIA World Factbook nations in new BIED classification stages, one through nine. Appendix C shows the 2012 CIA World Factbook nations with new BIED classifications stages. These new BIED Classification Stages identify the behavior of individual decisions to work in the agrarian, industry, or services sectors. There are many factors that go into a decision to work in one of these three sub categories, like potential income, educations, availability, community prestige, as well as both short and long term interests. These decisions are represented by the labor force occupation indicators. The gross domestic product composition by sector behavior indirectly shows policy decisions made by nation-state government economic systems. The decision making criteria of individual economic systems and nation-state economic systems are made with both short term and long term interests calculated ultimately impacting behavior.

Appendix D shows the outcome of the Open Coding stage. Of the 268 identified nation states in the 2002 Factbook and 257 nation states in the 2012 Factbook (totally 279 different nations), 115 nation entries had enough data to clearly determine where the dominant behavior of sector GDP was coming and from what sector the majority of the working labor force was coming. These two indicators, when used together, help identify one of nine new BIED classifications. When both indicators had enough information to clearly determine each sector, they were combined in the growth path model to get a

cross classification or a combined GDP/Labor Force by sectors label known here as a BIED-GPM classification stage.

Data Analysis-Open Coding

Open Coding was conducted by putting the available data found in both the 2002 and 2012 CIA World Factbooks into the matrix in Figure 32. The nine boxes represent a new labeling system that helps track economic stage movement during this study when multiple points are reviewed. For this study two points were reviewed, one in 2002 and another in 2012. BIED-GPM stage one is an agrarian dominated GDP economy and an agrarian dominated labor force economy. BIED-GPM stage five is an industry dominated GDP economy and an industry dominated labor force economy, stages one, five, and nine are considered prime stages because both the GDP and labor is the same (agrarian-agrarian, industry-industry, or services-services). BIED-GPM stage nine is a service dominated GDP economy and a service dominated labor force economy. The stages in between are a combination of agrarian, industry, or service dominated GDP economies and agrarian, industry, or services labor force dominated economies. Each nation will get a new label that will include both the source of sector income and sector labor in one easy BIED-GPM stage 1-9.

Gross Domestic Product Composition by Sector				
Labor Force by Occupation		Agriculture	Industry	Services
	Agriculture	1	2	3
	Industry	4	5	6
	Services	7	8	9
Grounded Theory Non Linear Conditional Matrix- Behavioral International Economic Development (BIED) Growth Path Model (GPM)				

Figure 32. BIED-GPM Grounded Theory Non Linear Conditional Matrix.

A trend was identified only from the nations that had enough information in both 2002 and 2012 to clearly identify a BIED-GPM stage twice, showing two points to determine a trend. If both stages were identified and given new labels then they were included in the trend analysis. In 2002, 67 nations fell into the advanced economic stage of having a GDP services dominated economy and a Labor Force by Occupation services dominated working force or stage 9. In 2012 this number increased by 34 nations states to 101. Open Coding Analysis showed the following information (see Figure 33), two of the stages reduced (stage 1 and stage 3). During the ten years covered in this study, both stage 1 and stage 3 lost nations. Three stages stayed the same, stage 4 (Agriculture GDP & Industry Labor), stage 6 (Services GDP & Industry Labor), and stage 7 (Agriculture GDP & Services Labor) with zero nation states. Ten nation states have moved into

industry dominated GDP, stage 2 (Industry GDP & Agriculture Labor), stage 5 (Industry GDP & Industry Labor), and stage 8 (Industry GDP & Services Labor).

2002		GDP composition by sector		
Country Name		Agriculture	Industry	Services
Labor Force Occupation	Agriculture	14	4	33
	Industry	0	0	0
	Services	0	2	67

2012		GDP composition by sector		
Country Name		Agriculture	Industry	Services
Labor Force Occupation	Agriculture	4	8	28
	Industry	0	2	0
	Services	0	6	101

Trend		GDP composition by sector		
Country Name		Agriculture	Industry	Services
Labor Force Occupation	Agriculture	-10	4	-5
	Industry	0	2	0
	Services	0	4	34

Figure 33. Open Coding Data Analysis.

The trend identified in Figure 33 identifies the first finding and answers the first research question as to what is the most popular trend classification change in the last ten year (2002-2012), BIED-GPM classification 9 (GDP Service dominated economy with a Labor Force by Occupation in the Services Sector) grew the most. This new classification increased over this time frame of ten years by 34 nation states, the only two digit increase. This study showed four of the nine new classification labels increased over the ten years 2002-2012 (classifications 2, 5, 8, & 9), while two classifications reduced in size (classification 1 & 3). The remaining three classifications remained the same, having no nation-states.

The findings of the open coding stage is that this study indicates the services GDP increased by 29 nation-states compared to an increase in the industry GDP by 10 nation-states and finally the agriculture GDP decreased by 10 nation-states. The trend indicates a movement to a service dominant work force and service dominance in GDP. The second finding shows the largest growth path identified was classification 3 (Services-GDP & Agrarian-Labor) to classification 9 (Services-GDP & Services-Labor), showing a switch from agrarian labor force to a service dominated labor force. This study shows 8

nations moved from classification 3 to 9 and two were in transition at the start of the ten years of research, for a total of ten nations following the same path.

The third finding in the open coding stage is that there is a noticeable absence of industry dominant labor nation states. In 2002 the BIED-GPM shows 51 nations with an agriculture dominant labor force and 69 nations with a services dominant labor force. There are no nations with an industry dominant labor force, creating a noticeable void in the middle of the model. While 2012 shows 40 nation-states having an agriculture labor force compared to 107 with a services dominant labor force. Only two nations in 2012 show an industry dominant labor force. This is a significant finding and could help indicate public administrations inability to manage economic efficiencies and efficient labor movements.

The open coding results are found in Appendix D. This helps show what nations were included in 2002 and in 2012. It also shows which nations had enough information to move to the axial coding phase. If enough information was available to clearly determine a dominant behavior in both 2002 and 2012, it was given an axial coding number and reviewed further. The open coding results indicate the 115 nation-states that were studied in the Axial coding phase.

Data Analysis-Axial Coding

The BIED-GPM Path Classifications chart shows the data from the open coding stage as well as the newly identified growth paths (see Appendix E). This is one of the most helpful displays of data in this study, as it identifies what was found in two of the three coding stages (open and axial coding). This Path Classification Chart is unique, in

that it includes a stage for each nation in 2002 and in 2012 where possible. A third column was added to include the growth path change over the ten years covered in this study. The fourth column finally includes the BIED-GPM path classification.

The Axial Coding Results chart shows the original data set, only those nation-states that have an identifiable BIED-GPM path are included (see Appendix F). The inclusion of a new axial coding number is included to keep track of the 115 new growth path classifications that were identified. This coding stage helps show the nation-states that have enough collected labor and GDP data to clearly identify growth paths. Now that we have labels identified and paths identified, growth paths can be explored and compared. These findings allow the research to move into the third grounded theory research stage known as the Theoretical Selective Coding stage.

The fourth finding in this research is found in the Axial Coding Appendix G. This finding identifies 15 new BIED GPM growth paths. This BIED-GPM New Path Classification Chart can be used to see what nations are behaving like other nation-states. This information can be used for multiple follow on studies. A third indicator can be included to see if different stages have different outcomes. Possible future studies will be included in Chapter 5.

The fifteen new paths include a series of numbers. The first number is the 2002 BIED-GPM classification stage number. The second number is the 2012 BIED-GPM classification stage number. The fifteen new growth path classifications are:

1. (1-3) - Agrarian GDP/agrarian labor to a services GDP/agrarian labor society.

2. (1/2-2) - Agrarian GDP/agrarian labor split with industry GDP/agrarian labor to a non-split industry GDP/agrarian labor society.
3. (1/3-3) - Agrarian GDP/agrarian labor split with a service GDP/agrarian labor to a non-split service GDP/agrarian labor society.
4. (1-1) - Agrarian GDP/agrarian labor society-with no movement.
5. (2-2) - Industry GDP/agrarian labor society-with no movement.
6. (2-3) - Industry GDP/agrarian labor to a service GDP/agrarian labor society.
7. (3-3) - Service GDP/agrarian labor-with no movement.
8. (3/9-3 neg.) - Service GDP/agrarian labor split with a service GDP/service labor negative move to a service GDP/agrarian labor society.
9. (3-2 neg.) - Service GDP/agrarian labor negative move to an industry GDP/agrarian labor society.
10. (3/9-9) – Services GDP/agrarian labor split with service GDP/service labor to a service GDP/service labor society.
11. (3-9) – Services GDP/agrarian labor to a service GDP/service labor society.
12. (8-8) – Industry GDP/industry labor – with no movement.
13. (8-9) – Industry GDP/service labor to a service GDP/service labor society.
14. (9-8 neg.) – Service GDP/service labor negative move to an industry GDP/service labor society.
15. (9-9) – Service GDP/service labor – with no movement.

Data Analysis-Theoretical Selective Coding

Theoretical selective coding is the third and final stage in this grounded theory study. The 15 identified paths show in the New Path Classification Chart Annex G new behavior that can be examined. The fifth finding in this research, upon observing these new paths is a pattern that reveals four distinct clusters. These new clusters are (1) Non Transitional (Steady) States, (2) Positive Transitional States, (3) Split Transitional States, and (4) Negative Transitional States. These four new classifications are labeled based on the group's behavior. The first clusters, non-transitional (steady) states, are those that did not move BIED-GPM classification stages from 2002 to 2012. These nations simply remained steady. The second cluster, positive transitional states, moved up in BIED-GPM classification stages from 2002 to 2012. The third cluster, split transitional states, seem to be in the middle of a transition in 2002. These nations were actually in two stages at the beginning of the time studied, but finished the transition by 2012. The final cluster, negative transitional states, contained nations that moved down on the BIED-GPM classification stage during the ten years. A more detailed look at these clusters is found in Appendix H: the BIED-GPM Path Cluster Chart. This coding stage clearly shows new patterns that can help focus future studies as well.

BIED-GPM Path Cluster 1: Non Transitional (Steady) States

The first cluster from the BIED-GPM Path Cluster Chart identifies five of the fifteen identified paths, specifically 1-1, 2-2, 3-3, 8-8, and 9-9. I have labeled this new cluster (1) Non Transitional (Steady) States (see Figure 34). As far as actual path analysis in this group, the path remained the same over the ten years of the study for these

nations. There is an absence of stages 4, 5, 6, & 7 in this cluster. One of the first questions that arose after this cluster was revealed was do these nations seem to be steady? While there were some nations that jumped out as being unstable, it became clear that the instability that I associated with the nation was often due to political strife. While political instability can affect the economy, it doesn't mean it will affect it. It is possible that political instability can be present and economic stability remains steady, at least for the short term. Therefore emphasis on economic output and labor movement labeling can help minimize bias that may arise from political perceptions. Using a grounded labeling structure can help keep focus and minimize social perception concerns.

I. Non Transistional (Steady) States					
1-1	2-2	3-3	8-8	9-9	
Burma	China	Bangledesh	Libya	Bahamas	South Korea
Ethiopia	Gabon	Dominic		Barbados	Latvia
Liberia		Morocco		Balgium	Lithuania
Togo		India		Brazil	Malta
		Haiti		Bulgaria	Mexico
		Guatemala		Columbia	Federated States of Micronesia
		Ghana		Costa Rica	Netherlands
		Gambia		Cuba	Netherlands Antilles
		Niger		Cyprus	New Caledonia
		Pakistan		Czech Republic	New Zealand
		Sudan		Denmark	Nicaragua
		Tajikistan		Dominican Republic	Norway
		Vantuatu		Ecuador	Panama
		Zambia		Egypt	Poland
		Zimbabwa		El Salvador	Portugal
				Estonia	Russia
				France	St. Lucia
				French Polynesia	St Vincent & Grenadines
				Germany	Seychelles
				Greece	South Africa
				Grenada	Spain
				Honduras	Sri Lanka
				Hungary	Sweden
				Iran	Switzerland
				Iceland	Taiwan
				Italy	Ukraine
				Ireland	United Arab Emirates
				Jamaica	United Kingdom
				Japan	Venezuala
				Jordan	West Bank
				Kazikstan	

Figure 34. BIED-GPM Cluster (1) Non Transitional (Steady) States.

This cluster makes up 83 of the 115 nation states that could be evaluated. This is the largest cluster of the four. This cluster identifies those nations that remained consistent in the same category in 2002 and 2012 encouraging a label of "steady state" due to the limited path movement.

The first item that stands out is the large size of the steady state cluster. With only ten years of data, I expected a small group of transition nation states. The three other clusters make up a larger group than I initially expected. There is more movement in the BIED-GPM than I would have expected. While the steady state cluster is large, there are already political changes that may impact countries like Egypt and Libya, as we watch what happens in years to come. Future studies can build upon this model and are recommended. There are nations in this cluster that may not be considered stable politically, but this research shows that at least in the last ten years some economies have been economically stable while maintaining a stable work force.

One of the research questions was answered here, what is the most common BIED-GPM path over the ten years studied. The answer is BIED-GPM path 9-9 a steady state path. This helps show that even with large political events in the 1990s, like the fracturing of the Union of Soviet Socialist Republics previous political borders and other events that 2002-2012 was relatively stable.

BIED-GPM Path Cluster 2: Positive Transition States

II. Positive Transition States			
1-3	2-3	3-9	8-9
Afghanistan	Turkmenistan	Australia	Maldova
Albania		Austria	
Armenia		Belize	
Bhutan		Cayman Islands	
Camaroon		Nambia	
Mozanbique		Romania	
Nepal		Tonga	
Uganda		Tunisia	

Figure 35. BIED-GPM Cluster (2) Positive Transition States.

The second cluster identified is (2) The Positive Transition States (see Figure 35). This cluster moved from one of the BIED-GPM categories in 2002 to a higher numerical category in 2012. The second cluster of positive transitional states has 18 nations. Path 1-3 has eight nations and path 3-9 has eight nations. This path cluster helps give visual description to the second finding of this study, identified earlier. The determination of the non-steady states that had the second most movement was the 3-9 path. This conclusion was partially made from this cluster with eight nations identified. Two additional 3-9 paths were identified in the third cluster to make this path include ten nations. This is the largest actual path movement outside of the steady paths identified in the first cluster.

Further study of this group may show something in common as to why these specific nations have moved ahead in the BIED-GPM stages. These new found clusters should be critically analyzed as more data is available to identify any new insight as to what nations develop with positive paths and why.

BIED-GPM Path Cluster 3: Split Transitional States

The third cluster identified in this study is (3) The Split Transitional States. Only four nations fall into this group, but it is clearly different behavior than the other three clusters. This cluster is the smallest of the four clusters. There are only four nation's states in this category. These nations all have positive growth and could be put in the positive growth nation's cluster if desired, but I wanted to identify in this ten year study that the transition started before 2002, making this a distinct different cluster for this study. If a different set of years was used, this category could be included within the positive or negative trend cluster as appropriate.

III. Split Transitional States		
1/2-2	1/3-3	3/9-9
Nigeria	Kyrgastan	Syria Turkey

Figure 36. BIED-GPM Cluster (3) Split Transitional States.

Syria and Turkey are the two nations that were added to the 3-9 path identified in the second cluster discussion. And the second finding is the eight nations in cluster (2) positive transitional states along with the two already transitioning, equal the actual largest group of non-steady state movement during this decade. The largest identified path is however, 9-9 non-transitional (steady state) BIED-GPM path.

BIED-GPM Path Cluster 4: Negative Transitional States

The fourth cluster identified in this study is (4) The Negative Transitional States. This group has ten nation states in it. While not specifically intended to be a negative label in country output, this label was called negative because it moves down in the 9 new BIED-GPM numbered stages. One stage is not better than another, but simply a

means to identify different behavior. Because there are 9 stages, each stage has a number, but they are not intended to move sequentially or linearly. The negative transitional states cluster indicates a lower numerical BIED-GPM number in year 2012 than in 2002. Nine of these nations show a switch from dominance in GDP from the Service sector to dominance in the industry sector. This is a particularly interesting behavior change and should be studied further. Why do nine nations slide in international economic development and what behavior do they have in common? Future attention to these ten nations may provide insight as to this behavior observation.

IV. Negative Transitional States		
3/9-3 (neg)	3-2 (neg)	9-8 (neg)
Georgia	Indonesia Maritania Thailand Uzbekistan Vietnam	Algeria Azerbajan Chile Saudi Arabia

Figure 37. BIED-GPM Cluster (4) Negative Transitional States.

Evidence of Trustworthiness

Seven Criteria are suggested by Strauss and Corbin (91) to help ground research in any Grounded Theory Study. These criteria (as identified in Chapter 3) and answers are identified in the following:

- Criterion #1: How was the original sample selected? What grounds were used to identify the data?

  - Three different levels of coding were used to identify behavior, give labels, and observe new behavior from these new classifications. The BIED-GPM was used to put the CIA World Factbook nation state information into 9 new BIED growth path classifications based on two indicators, GDP by sector (Agrarian, Industry, & Service) and Labor Force by Occupation Sector (Agrarian, Industry, & Service) in years 2002 and 2012. Many studies today rely on the classification systems and labeling from international organizations, like the U.N., IMF, and World Bank. This new labeling system is more scientific and promotes an emphasis on behavior which can be seen as a positive thing for social change. Removing credit worthy labels (for example) will help strengthen the international discussion of economic development.

- Criterion #2: What major categories emerged?
  - Beyond the nine new classifications identified in the Open Coding BIED-GPM stage, 15 Growth Paths were identified in the Axial Coding stage, and 4 new path clusters were identified in the theoretical coding stage.
- Criterion #3: What were some of the events, incidents, actions, and so on (as indicators) that pointed to some of these major categories?
  - Once the growth paths were identified they could be put into new classifications in the Theoretical Selective Coding stage. These four new classifications are (1) Non Transitional (Steady) States, (2) Positive

Transitional States, (3) Split Transitional States, & (4) Negative Transitional States.

- Criterion #4: On the basis of what categories did theoretical sampling proceed? That is, how did theoretical formulations guide some of the data collection? After the theoretical sampling was done, how representative did these categories prove to be?
    - From the original 279 nation-states identified, 115 had enough clarifying data to determine BIED-GPM classifications. Of these 115 growth paths, 15 different paths were identified in a BIED-GPM New Path Classification Chart (Appendix E). From these 15 new paths, the theoretical selective coding stage identified four clusters which seemed to be very representative of the original data set examined.
- Criterion #5: What were some of the hypotheses pertaining to conceptual relations (that is, among categories), and on what grounds were they formulated and tested?
    - The Services Sector in both indicators seems to be attracting significant movement over the past ten years, increasing from 67 nation-states to 101. This BIED-GPM classification box 9 far exceeds any other movement. The most common BIED-GPM growth Path is 9-9 or a Service dominated GDP with a service dominant economy in labor. Since the 9-9 BIED-GPM is a steady state path, it can be seen as not moving. Therefore, a second path was identified, one that shows economic development movement. The largest moving path is 3-9, a service dominant economy

with an agrarian labor force. It was tested through a classical grounded theory study.

- Criterion #6: Were there instances when hypotheses did not hold up against what was actually seen? How were these discrepancies accounted? How did they affect the hypotheses?
    - The most significant observation was that most of the world's nations are in the same functional box as the post industrialized nations. Many of these nations can be seen as third world nations by most models, but yet find themselves "acting" in a similar mode to those nations that industrialized decades ago. Is this movement a byproduct of imitation or a shift in abilities due perhaps to technology like the internet? The international aid organizations seem to promote first world solutions to third world problems, but it seems to be unclear if this is beneficial to agrarian or manufacturing societies. A question that arises when reviewing this data is, who is the driving force behind the decision making process, the individual or the nation state? It might be possible that long term benefits are not the same for each economic system group. Individuals want larger incomes so they are attracted to service dominated jobs that are typically associated with larger incomes. This can be seen as an individual gain. If, however, the overall nation state suffers from too many laborers joining the services sector too quickly, the nation-state may not benefit in the long term.

- Criterion #7: How and why was the core category selected? Was this collection sudden or gradual, difficult or easy? On what grounds were the final analytic decisions made?
    - All core categories were selected based on observations of the new classifications. The ten year period was selected because it would give a high rate of entries into the axial coding stage. While I would have liked to go back 15 or 20 years, the data available in the CIA World Factbooks would hinder a high "non- industrialized" data pool. Over time, the constant comparison method should be able to provide insight into broader economic issues for public administrators to review. This study should be extended to include more years in a follow on study. The final analytics were chosen due to the observed behavior of the new classifications and the patterns that were seen more often. While many methods could be used to observe new behavior, grounded theory was flexible enough to let patterns form without preconceived notions as to what should be seen.

These seven criterions were used to empirically ground this research according to Strauss & Corbin (1990) as valid procedures to consider when completing this grounded theory study.

All three layers of this grounded theory provide new insight into the academic discipline of development economics and behavior economics. The Open Coding phase gives actual combined economic stages in new classifications (BIED-GPM stages 1-9). The identification of these new nine stages help get more detailed comparison to the typical

(first world, second world, third world) comparison most often used in economics. The Open Coding phase divided up nation-states into new categories that contribute to a new understanding of labor forces influence in gross domestic output. It is labors input that helps broaden the scope of economic activity analysis.

Axial Coding promoted yet another important distinction, one of growth paths. While the Open Coding phase identified new BIED-GPM stages, the growth path analysis is vital to identifying nation states that are behaving similarly. It is the study of this new growth path behavior that helps contribute to the third stage of this grounded theory constant comparison study.

The Theoretical Selective Coding phase ultimately identifies four new behavior based BIED-GPM Growth Path Clusters. It is these four new growth path clusters that can impact the macro level insight. By looking at these new groups and seeing what nations are behaving similarly, it can help public administrators get more accurate information to make stronger more evidenced based decisions.

Summary

Five key findings were identified in this research (see Figure 38). Finding one shows the BIED-GPM Stage 9 (a Service GDP & Service Labor economy) grew the most. It is also the largest of the nine stages. The second finding identified that the BIED-GPM growth path 3-9 was the dominant growth path during 2002-2012. Finding three identified that there is a noticeable absence of industry dominant labor (a void in the middle) with polarized labor in the agrarian and service sectors. Finding four identified the BIED-GPM had 15 new growth paths over the ten years covered. And finally, the

fifth finding revealed the BIED-GPM identified 4 new growth path clusters. Combined, these five new findings help shed new insight into behavior economics and development economics broadening the literature in both sub fields.

These new classifications should help further research on development and behavior issues by giving another perspective or way of looking at complex information. In a discipline that is dominated by quantitative methods and analysis, it is helpful to use qualitative methods and analysis to broaden interpretation. This research should be looked at as a process and not a snap shot into economic activity. It is the new BIED-GPM (9 stage perspective) that helps give more detail to nation state growth and labor force activity, especially when compared to traditional 3 and 4 classification models. It is this foundation of 9 new economic development stage labels that give depth and insight to new paths between these new labels. It is the systematic (more scientific) identification, labeling, and further comparison of these growth stages that help shape the new insight. Further, the identification of growth path clusters can ultimately focus future research on like behavior (an input) and avoid studying like results (an output) alone.

Finding One: BIED-GPM Stage 9 (a service GDP & service labor economy) grew the most and is the largest of the stages.

Finding Two: BIED GPM growth path 3-9 is the dominant growth path during 2002-2012.

Finding Three: There is a noticeable absence of industry dominant labor (a void in the middle) with polarized labor in the agrarian and services sectors.

Finding Four: BIED GPM 15 new growth paths.

Finding Five: BIED GPM Identified 4 new growth path clusters.

Figure 38: BIED-GPM Key Findings

Chapter 5: Research Data Analysis

Introduction

Using the Grounded Theory Constant Comparison Method was a way to get new insight into economic development and behavior economics. Each of the three coding phases in this study produced new insight to the academic body of behavior economics and development economics. Three new data sets (products) were identified and can be called BIED-GPM Stages, BIED-GPM Growth Paths, and BIED-GPM Growth Path Clusters. Combined, however, the process of looking at economic quantitative data through a grounded theory constant comparative method to observe new qualitative behavior helps stimulate new perspectives and generate new theory. This new model seems helpful at organizing information, forming new labels, and observing the behavior of these new labeled groups.

Interpretation of the findings

The first data set product identified in this study, is the BIED-GPM stage identification in both 2002 and 2012. The importance of this new data shows a disproportional number of nations that are acting similarly to post industrialized nations. Nations that can traditionally be seen as third world or even second world by other labeling criteria are seen in this model as stage nine in the BIED-GPM (often considered a post industrialized stage). This is peculiar, in that, the international organization labeling systems don't identify such significant behavior similarities.

The second data-set product that was created identifies 15 new growth paths. Over time, we can use the constant comparative method to collect additional years of

information to help further define the economic behavior paths of nation-states. These new behavior/GDP growth paths can contribute to statistical probabilities over time. While probabilities were not calculated here, the notion that this new economic behavior model can provide a new perspective seems clear, it can and does. While 15 paths were identified in this study, over time, more may be identified. Studying these growth paths and the behavior of these paths in comparison to other (nation states) could become a more stable and consistent method of economic analysis as compared to some of the international organization models used today. With steps in place to be more scientific in the labeling than many of the international organization models, a solid foundation can be created to build broader theories and be potentially more accurate or grounded.

Finally, the third data-set product that was created was the four distinct growth path clusters, which was identified in the theoretical selective coding phase of this grounded theory study. These four clusters identify new behavior that can and should be further researched. These groups could provide significant insight on multiple disciplines and on many topics. When economic data is reviewed in this manner, several questions arise. What is the most efficient BIED-GPM stage? What happens in a society that races to imitate developed post industrialized nations behavior, possibly skipping or racing through the industrialization phase? If the industrialization phase brings significant money into the system, if the stage is minimized or shortened, how does the amount of financial resources in the system impact the service sector later? Put another way, if one stage is more efficient and brings resources into the nation-state system better than other stages, should public administrators encourage slowing individuals into a less efficient

stage in order to promote long term benefits to the nation stage system? These are important questions that have been difficult to address until now. With a systematic way of looking at economic data, future comparisons could be possible and beneficial. Political labels and classifications seem to have limited use in this capacity. A more scientific labeling system should contribute to better measurement of nation system comparison and analysis leading to better public administration management at the nation state level and possibly individual long term economic prosperity, seen as positive social change.

Limitations of the Study

The limitations of this study lie with the short time frame of available data, specifically in the Labor Force by Occupation indicators for developing nations. Using the Constant Comparison Grounded Theory Method, this limitation in historical data will get better with time as follow on studies add to the body of knowledge. Better analysis and comparisons may be facilitated when the database gets bigger. New data sets, besides the CIA World Factbook should be used to see if the results hold up. There is no reason to believe that the data sets used or created in this research are misleading, but additional studies using other data sets could strengthen the findings here.

Recommendations

While many questions arose from this research, the first is what economic growth stage is the most efficient? While this study does not address this question, it seems to be an interesting next step. The follow on research suggestions would be to identify what BIED-GPM has the highest and lowest Gross National Savings rate, Budget Surplus or

Deficit, Public Debt, GDP Consumption by Household, GDP Consumption by Government, GDP Investment in Fixed Capital, GDP Investment in Inventories, GDP Exports of Goods and Services, and GDP imports of Goods and Services. Inputting these ten new data sets into the BIED-GPM would strengthen the visibility into a 9 classification system and should give more specific details in the economic growth and behavior at the nation state system level.

The final recommendation is to continue inputting information into the BIED-GDP in each year, so exact transition time frames can be measured. While some historical data is not going to be available, the new transitions can and should be studied yearly, if not more often. This should help build a body of research and a database that can identify both positive and negative changes as well as nonlinear economic growth movements.

Implications

Identifying the most common economic growth path and stage helps show a movement towards imitation. While individuals desire a high paying services job, does the rapid movement towards a services dominated economy create alternative problems? If the services sector is dominated by jobs that "move" money around and the industry sector is dominated with bringing money into the "nation-state" system, then serious attention needs to be on the impact of skipping or even moving too quickly through the industry phases. What is good for the individual level may not be what is in the nation-state levels best interest? Introduced in a different way, the short term benefit from pursuing policies that focus on individual gain may be served better by focusing on

nation-state policies that promote steady long term growth leading to individual growth as well as nation-state growth? Does the good of the overall system build a better livelihood for the population and labor force if there is more money in the system before it goes to a services dominated cycle? And I believe this to be the most neglected question in economics, what is the cost of this option to that option? What is the most expensive BIED-GPM stage, or what stage burns the most cash? These are some of the proposed follow on research recommendations that can help further define behavior economics and development economics.

Conclusion

The importance of a nine classification economic model does help develop details that are not possible with only three or four classifications. While the dominance of international organizations to collect data, put labels on groups, and impact modern research is easily understandable, should it be accepted by scientific communities? The bias of these political organizations or at least the possibility of political conflict should be a concern. While this data was taken from the CIA World Factbook and the same can be said for it. The conclusion that many databases should be used to triangulate the concept this research suggests and to validate the international data and diverse collection techniques. Not just the CIA World Fact Book data should be used in this BIED-GPM. I encourage other databases to be used, to see if the results will be similar. The noticeable absence of a labor dominated industry economy is a concern. Service dominated economies seem to be in favor. Why are there only two nations (see Appendix C) with an industry labor dominant economy (stage 4, 5, or 6)? It would seem

that stage 5 has the most options and be potentially the most efficient stage from a nation state perspective. Stage 9 on the other hand seems to favor the individual.

This study identifies five findings, (1) BIED-GPM stage 9 grew the most and is the largest of the growth path, (2) BIED-GPM 3-9 is the dominant growth path, (3) a Noticeable absence of industry dominant labor, (4) BIED-GPM 15 identified Growth Paths, and finally (5) the BIED-GPM identified four new growth path clusters. An additional note is that qualitative sociology studies like the Classic Grounded Theory (CGT), constant comparison method can provide insight into complex economic issues. As a unique way to structure and observe quantitative data, the use of qualitative methods can and should benefit academic discourse on complex economic activities. Finally, this study did generate new theory. Economics cannot be properly studied without the equally important question of cost. With this new labeling system, more precise analysis and comparisons can be made at the nation-state level. I recommend follow on studies that help identify the most costly economic stage and the most efficient. Individuals are going to flock to what they see as the best economic decisions for them and their families. The social change from this study is this; public administrators need to be the ones looking out for the best nation state system. If that means slowing down the rate at which individuals flow towards the service sector from the agriculture sector, than policies should be used to promote nation state health.

The analogy I like to use when describing this phenomenon is that of a secretary making $30,000 who buys a $750,000 house. On the surface it looks like the secretary is successful, as evidenced by a beautiful home. However, after further analysis, we learn

that the secretary has committed all the funds available to the purchase and monthly mortgage payments on the house, but now has no money to fix the roof, mow the yard, etc. If racing to a service dominated economy with a service dominated labor force was the answer, more nations would be prospering. Perhaps it is because too many nations have bought the expensive house before they have an adequate income to properly afford it. If a stage 9-9 (a service GDP/service labor force) is the most expensive government to run, than it may help to stay in the industry sector for as long as possible to fill the nation state system with financial resources. The extra financial capital can help offset other problems as they arise, making the public administration of the system more stable, flexible, and adaptable.

New Theory Creation

New theory is the goal from any grounded theory study. The theory created in this study stems from a formulation of questions brought out by the new insights found in this research. To start, economics is about efficiency, having efficient markets, efficient labor forces, and efficient policies. Any economic model should advance the understanding of markets, labor, or policies. The BIED-GPM does just this. The Behavioral International Economic Development Growth Path model is nonlinear, because movement is not always positive, and models should be created to accommodate negative movement. Behavior economics seems to focus on consumer selection, but that is only the behavior to part of that economic pie. In order to buy goods or services, first decisions are made to make money, specifically what sector should be chosen to earn a living. This study addresses such behavior. This new theory suggests that individual

desire for high incomes motivate their behavior to gravitate toward the service sector. While this seems appropriate from the individual perspective it may not be beneficial from the perspective of the nation-state. The lack of management and understanding of this behavior may minimize the importance of this difference at the public policy decision making level. What is best for the individual may not be the best for the nation-state. If moving through important industrialization and manufacturing stages bring vital resources "into" the nation-state system, it can easily be perceived that abbreviating such an important phase would likely impact the system. What is the most efficient labor force balance? While this research indicates that most nations are "imitating" the behavior of post industrialized nations as found in the number of nations in BIED-GPM stage 9 (Service GDP/Service Labor), more research is needed to address the proper balance to what is the most efficient use of time in each BIED-GPM stage. Both short and long term effects should also be studied on the phenomenon of nation-states racing to BIED-GPM stage 9. This theory could be abbreviated: Nation-state and individual economic interests diverge through the development process. Finding an efficient balance between the interests of nation-states and individuals as they move through BIED-GPM stages can build a stronger understanding of the efficiencies and impacts to both. Using BIED-GPM Growth Paths and BIED-GPM Growth Path Clusters to help compare and contrast economic behavior can help promote better policy and understanding. The BIED theory is that new labels (BIED-GPM Stages) help establish a sound scientific labeling of nation-states to anchor comparisons of BIED-GPM Growth Paths in order to improve analysis and comparison in regard to efficiencies. BIED-GPM

Clusters add even more qualitative depth to the understanding of behavior in job selection. The goal of the BIED theory is to find and explain the efficient path through development at different levels, in this research, the individual economic systems and the nation-state systems. The BIED-GPM, BIED-GPM Stages, BIED-GPM Growth Paths, BIED-GPM Clusters are all tools to help compare and analysis data in order to find efficiencies in the balance between different economic systems.

More research needs to be done to validate this theory, as this research only suggests such possibilities. Further studies should include costs of government in different stages, costs of business in different stages, and identification to which stage is the most efficient, which stage is least efficient, and when enough data has been collected, what time line is typical with the transition of different stages, and at different levels of economic systems as well. This study was only ten years and a review of a longer time frame should contribute to more understanding of these BIED-GPM stages, growth paths, and clusters.

Social Change

The social change in this study comes with looking at economic information differently and having a new tool that can help label nation states better, so more accurate analysis may be possible. Better decision making comes with new perspective and new tools like the BIED-GPM stages, paths, and clusters. New theory indicates that individual decisions and nation state decisions do not benefit the nation state the same. Political borders are important in regard to rules and laws, but political labels can distort economic activity and labeling. Moving to more accurate labels can significantly

improve analysis as individuals and nation-states find balance. Measurements between more accurate labels may also be possible, contributing to the betterment of social structures and comprehension. The implications for positive social change from this research include (1) a new BIED-GPM tool to aid in economic analysis of development economics and growth economics, (2) new economic labels based more on scientific principles and less on political or lending preferences, (3) further development of a young behavior economic sub field, promoting qualitative perspective in a quantitative dominated field, and finally (4) positive social change is found in augmenting the perception that individuals and nation-states may not benefit the same from racing to a service dominant GDP/service dominant labor economy. While individuals desire high incomes and the lifestyle a BIED-GPM stage 9 (service dominant GDP/service dominant labor economy) historically provides, nation-states that speed through the industrial stage may not benefit from having enough financial capital within the system to afford the high cost of such an economy. More research will help define the impact of this social change, but this study should help focus attention to the new discipline of behavior economics and the importance of thinking differently to better the human experience.

A fifth social change element was identified in this research, in the ability of a sociology research methods contribution to economics. The implications of positive social change stemming from using an established sociology research method in the field of economics, specifically in behavior economics and growth economics can help balance the lop sided quantitative heavy contributions over the last century adding important qualitative depth improving analysis and understanding in a positive way. This was not

the intended purpose of this study, but the contributions of this research method seem to clearly indicate that positive social change is found by the research method known as classical grounded theory or grounded theory.

References

Aghion, P. A., Howitt, P. A., & Peñalosa, C. G. (1998). *Endogenous growth theory*. Cambridge, MA: The MIT Press.

American Economic Association. (2013). *JEL classification codes guide*. Retrieved from http://www.aeaweb.org/jel/guide/jel.php

Arrow, K. J. (1972, December 12). *General economic equilibrium: Purpose, analytic techniques, collective choice* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1972/arrow-lecture.pdf

Barro, R. J., & Sala-i-Martin, X. (2004). *Economic growth 2e*. Cambridge, MA: The MIT Press.

Bitsch, V. (2005, Spring). Qualitative research: A grounded theory example and evaluation criteria. *Journal of Agribusiness, 23*, 75-91. Retrieved from http://www.caes.uga.edu /departments/agecon/about/JAB.html

Camerer, C. F., & Loewenstein, G. (2002). Behavioral economics: Past, present, future. In C. F. Cramerer, G. Loewenstein, & M. Rubin (Eds.), *Advances in behavioral economics* (pp. 3-51). Princeton, NJ: Princeton University Press.

Central Intelligence Agency (CIA). (2001). *The CIA world factbook 2002.* New York, NY: Skyhorse.

Central Intelligence Agency (CIA). (2011). *The CIA world factbook 2012*. New York, NY: Skyhorse.

Cleveland, M. M. (2003, February 23). A classical model of distribution, productivity and growth: Adam Smith was right. Retrieved from http://www.mcleveland.org /working_papers/Distribution_Productivity_and_Growth3.CV.pdf

Contreras, R. (1999). Competing theories of economic development. *Transnational Law & Contemporary Problems, 9*, 93-108. Retrieved from http://www.uiowa.edu/~tlcp/

Diamond, P. A. (2010, December 8). *Unemployment, vacancies, wages* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2010/diamond-lecture.pdf

Domar, E. D. (1946). Capital expansion, rate of growth, and employment. *Econometrica, 14*, 137-147. doi:10.2307/1905364

European Development Research Network. (2010, December 1). Measure for measure: How well do we measure development? *Proceedings of the 8th Conference Agence Française de Développement (AFD) and European Development Research Network (EUDN)*. Retrieved from http://www.afd.fr/lang/en/home/EUDN2010

Frost, R. (1915). *North of Boston* (2nd ed.). New York, NY: Holt and Company.

Garcia-Penalosa, C. (1998). Problems and solutions. In P. Aghion, P. Howitt, & C. G. Peñalosa (Eds.), *Endogenous growth theory* (pp. 11-49). Cambridge, MA: The MIT Press.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. London, United Kingdom: Aldine Transaction.

Harrod, R. F. (1939). An essay in dynamic theory. *The Economic Journal, 49*, 14-33. doi:10.2307/2225181

Ickes, B. W. (1996, Spring). *Endogenous growth models*. Retrieved from the Penn State University website: http://econ.la.psu.edu/~bickes/endogrow.pdf

Itagaki, Y. (1963). Criticism of Rostow's stage approach: The concepts of stage system and type. *The Developing Economies, 1*, 1-17. doi:10.1111/j.1746-1049.1963.tb01138.x

Jalles, J. T. (2007, October). *Endogenous growth models: Jones vs Romer the path to a fully-fledged dynamic analysis* (FEUNL Working Paper No. 522). doi:10.2139/ssrn.1032607

Keyes, J. M. (1936). *The general theory of employment, interest, and money*. London, United Kingdom: Palgrave McMillan.

Kooros, S., & Badeaux, L. (2007). Economic development planning models: A comparative assessment. *International Research Journal of Finance and Economics, 7*, 120-139. Retrieved from http://www.internationalresearchjournaloffinanceandeconomics.com/

Kuznets, S. (1971, December 11). *Modern economic growth: findings and reflections* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org /nobel_prizes/economic-sciences/laureates/1971/kuznets-lecture.html

Lee, H.-Y. (2003). Does an exogenous or an endogenous growth model fare better? Evidence from the GDP growth rates of 24 OEDC countries. *Taipei Economic Inquiry, 39*, 1-25. Retrieved from http://www.ntpu.edu.tw/econ/eng/

Leontif, W. (1951, October). Input-output economics. *Scientific American*, 15-21. Retrieved from http://www.scientificamerican.com/

Leontif, W. (1973, December 11). *Structure of the world economy* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1973/leontief-lecture.pdf

Lewis, W. A. (1954). Economic development with unlimited supplies of labor. *The Manchester School, 22*, 139-191. doi:10.1111/j.1467-9957.1954.tb00021.x

Marx, K. (1867/1992). *Capital: A critique of political economy* (Vol. 1). London, United Kingdom: Penguin.

Mathus, T. R. (1798/1998). *An essay on the principle of population*. Retrieved from the Electronic Scholarly Publishing Project website: http://www.esp.org/books /malthus/population/malthus.pdf

Mayer-Foulkes, D. (2010). *Divergences and convergences in human development* (Research Paper No. 20). Retrieved from United Nations Development Programme website: http://hdr.undp.org/sites/default/files/hdrp_2010_20.pdf

Molina, G. G., & Purser, M. (2010). *Human development trends since 1970: A social convergence story* (Research Paper No. 2). Retrieved from United Nations

Development Programme website: http://hdr.undp.org/sites/default/files/hdrp_2010_02.pdf

Mortensen, D. T. (2010, December 8). *Markets with search friction and the DMP model* (Nobel Prize lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org /nobel_prizes/economic-sciences/laureates/2010/mortensen-lecture.pdf

Nielsen, L. (2011). *Classifications of countries based on their level of development: How it is done and how it could be done* (IMF Working Paper No. 1131). Retrieved from the International Monetary Fund website: http://www.imf.org/external/pubs/ft/wp/2011 /wp1131.pdf

Ohlin, G. (1961). Reflections on the Rostow doctrine. *Economic Development and Cultural Change, 9*, 648-655. doi:10.1086/449931

Ostrom, E. (2009, December 8). *Beyond markets and states: polycentric governance of complex economic systems* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2009/ostrom _lecture.pdf

Parente, S. (2001). The failure of endogenous growth. *Knowledge, Technology, & Policy, 13*, 49-58. doi:10.1007/BF02693989

Piaget, J. (1964). *Development and learning*. New York, NY: Harper & Row.

Pisssarides, C. A. (2010, December 8). *Equilibrium in the labour market with search frictions* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org /nobel_prizes/economic-sciences/laureates/2010/pissarides-lecture.pdf

Prebisch, P. (1945). Introducción al curso de economía política [Introduction to political economy course]. *Revista de Ciencias Económicas* [Journal of Economics], 525-527. Retrieved from http://www.iice.ucr.ac.cr/

Ricardo, D. (1817/1999). *The principles of political economy and taxation*. Retrieved from the Library of Economics and Liberty website: http://www.econlib.org/library/Ricardo /ricP.html

Romer, P. M. (1994). The origins of endogenous growth. *The Journal of Economic Perspectives, 8*, 3-22. doi:10.1257/jep.8.1.3

Rostow, W. W. (1960). *The stages of economic growth: A non-communist manifesto*. Cambridge, United Kingdom: Cambridge University Press.

Sen, A. K. (1998, December 8). *The possibility of social choice* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1998/sen-lecture.pdf

Singer, H. W. (1949). Economic progress in underdeveloped countries. *Social Research, 16*, 1-11. Retrieved from http://www.newschool.edu/cps/social-research/

Smith, A. (1776/2000). *An inquiry into the nature and causes of the wealth of nations*. Retrieved from the Library of Economics and Liberty website: http://www.econlib.org/library /Smith/smWN.html

Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economic Growth, 70*, 65-94. doi:10.2307/1884513

Solow, R. M. (1987, December 8). *Growth theory and after* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1987/solow-lecture.html

Stiglitz, J. E. (2001, December 8). *Information and the change in the paradigm in economics* (Nobel Prize Lecture) [Speech transcript]. Retrieved from http://www.nobelprize.org /nobel_prizes/economic-sciences/laureates/2001/stiglitz-lecture.pdf

Strauss, A. L., & Corbin, J. (1990). Basics of qualitative research: Grounded theory procedures and techniques. London, United Kingdom: Sage.

United Nations Development Programme. (2012). *Human development report*. Retrieved from http://hdr.undp.org/en/reports/

United Nations Development Programme. (2013). *Human development report 2013. The rise of the south: Human progress in a diverse world*. Retrieved from http://hdr.undp.org/sites /default/files/reports/14/hdr2013_en_complete.pdf

Verspagen, B. (1992). Endogenous innovation in neo-classical growth models: A survey. *Journal of Macroeconomics, 14*, 631-662. doi:10.1016/0164-0704(92)90004-R

Appendix A: BIED-GPM Indicators

Behavioral International Economic Development (BIED) - Growth Path Model (GPM) indicators are identified below (BIED-GPM).

Gross Domestic Product (GDP) by sector indicators:

1. Agrarian GDP - The majority of the GDP is generated from the agrarian sector.
2. Industry GDP - The majority of the GDP is generated from the industry sector.
3. Services GDP - The majority of the GDP is generated from the services sector.

Labor Force by Occupation (LFO) indicators:

4. Agrarian LFO - Those individuals making their living in farming, fishing, and forestry. (CIA, 2011)
5. Industry LFO - Those individuals making a living in mining, manufacturing, energy production, and construction activities. (CIA, 2011)
6. Services LFO - The non-goods sector includes economic activity in government, communications, transportation, and finance. (CIA, 2011)

Appendix B: Open Coding Data (2002 BIED-GPM)

Open Coding Data					
2002	Gross Domestic Product by Sector				
		Agriculture	Industry	Services	
Labor Force by Occupation	Agriculture	Afghanistan Albania Armenia Bhutan Burma Camaroon Ethiopia Kyrgyzstan (1 of 2) Liberia Mozambique Nepal Nigeria (1 of 2) Togo Uganda	China Gabon Nigeria (2 of 2) Turkmenistan	Australia Austria Bangladesh Belize Cayman Islands Dominica Gambia Georgia (1 of 2) Ghana Guatemala Haiti India Indonesia Kyrgyzstan (2 of 2) Mauritania Morocco Namibia	Niger Norway Pakistan Romania Sudan Syria (1 of 2) Tajikistan Thailand Tonga Tunisia Turkey (1 of 2) Uzbekistan Vanuatu Vietnam Zambia Zimbabwe
	Industry				
	Services		Libya Moldova	Algeria Azerbaijan Bahamas Barbados Belgium Brazil Bulgaria Canada Chile Colombia Costa Rica Cuba Czech Republic Denmark Dominican Republic Ecuador Egypt El Salvador Estonia France French Polynesia Georgia (2 of 2) Germany Greece Grenada Honduras Hungary Iceland Iran Ireland Italy Jamaica Japan Jordan Cyprus (Greek Cypriot area) Federated States of Micronesia Saint Vincent & Grenadines	Kazakhstan South Korea Latvia Lithuania Malta Netherlands Netherlands Antilles New Caledonia New Zealand Nicaragua Panama Poland Portugal Russia Saint Lucia Saudi Arabia Seychelles South Africa Spain Sri Lanka Sweden Switzerland Syria (2 of 2) Taiwan Turkey (2 of 2) Ukraine United Arabs Emirates United Kingdom Venezuela West Bank

Behavioral International Economic Development Growth Path Model (BIED-GPM), a Grounded Theory Conditional Matrix.

Appendix C: Open Coding Data (2012 BIED-GPM)

Open Coding Data							
2012	Gross Domestic Product by Sector						
		Agriculture	Industry	Services			
Labor Force by Occupation	Agriculture	Burma	China	Afghanistan	Kyrgyzstan		
		Ethiopia	Gabon	Albania	Morocco		
		Liberia	Indonesia	Armenia	Mozambique		
		Togo	Mauritania	Bangladesh	Nepal		
			Nigeria	Bhutan	Niger		
			Thailand	Burundi	Pakistan		
			Uzbekistan	Camaroon	Soloman Islands		
			Vietnam	Dominica	Sudan		
				Gambia	Tajikistan		
				Georgia	Turkmenistan		
				Ghana	Uganda		
				Guatemala	Vanuatu		
				Haiti	Zambia		
				India	Zimbabwe		
	Industry		Bahrain				
			Brunei				
	Services		Algeria	Argentina	El Salvador	Lithuania	San Marino
			Azerbaijan	Australia	Estonia	Luxembourg	Serbia
			Chile	Austria	European Union	Macedonia	Seychelles
			Iraq	Bahamas	Faroe Islands	Malaysia	Singapore
			Libya	Barbados	France	Malta	Slovenia
			Saudi Arabia	Balarus	French Polynesia	Marshall Islands	South Africa
				Belgium	Germany	Mexico	Spain
				Belize	Greece	Moldova	Sri Lanka
				Bolivia	Greenland	Mongolia	Suriname
				Bosnia and Herzegovina	Grenada	Namibia	Sweden
				Brazil	Honduras	Netherlands	Switzerland
				British Virgin Islands	Hungary	Netherlands Antilles	Syria
				Bulgaria	Iceland	New Caledonia	Taiwan
				Cayman Islands	Iran	New Zealand	Tonga
				Colombia	Ireland	Nicaragua	Tunisia
				Cook Islands	Israel	Norway	Turkey
				Costa Rica	Italy	Panama	Ukraine
				Croatia	Jamaica	Paraguay	United Arabs Emirates
				Cuba	Japan	Peru	United Kingdom
				Cyprus	Jordan	Philippines	Uruguay
				Czech Republic	Kazakhstan	Poland	Venezuela
				Denmark	Kiribati	Portugal	Virgin Islands
				Dominican Republic	South Korea	Romania	West Bank
				Ecuador	Latvia	Russia	World
				Egypt	Liechtenstein	Saint Lucia	
					Federated States of Micronesia		
					Saint Vincent & Grenadines		

Behavioral International Economic Development Growth Path Model (BIED-GPM), a Grounded Theory Conditional Matrix.

Appendix D: Open Coding Results

Open Coding Number	2002	2012	Enough Data for Axial Coding	Axial Coding No.	Open Coding Countries that have enough data to move to the Axial coding stage
1	Afghanistan	Afghanistan	Yes	1	Afghanistan
2	Albania	Albania	Yes	2	Albania
3	Algeria	Algeria	Yes	3	Algeria
4	American Samoa	American Samoa	No		
5	Andorra	Andorra	No		
6	Angola	Angola	No		
7	Anguilla	Anguilla	No		
8	Antarctica	Antarctica	No		
9	Antigua and Barbuda	Antigua and Barbuda	No		
10	Argentina	Argentina	No		
11	Armenia	Armenia	Yes	4	Armenia
12	Aruba	Aruba	No		
13	Ashmore and Cartier Islands	Ashmore and Cartier Islands	No		
14	Australia	Australia	Yes	5	Australia
15	Austria	Austria	Yes	6	Austria
16	Azerbajian	Azerbajian	Yes	7	Azerbajian
17	Bahamas	Bahamas	Yes	8	Bahamas
18	Baharain	Baharain	No		
19	Baker Island	Baker Island	No		
20	Bangladesh	Bangladesh	Yes	9	Bangladesh
21	Barbados	Barbados	Yes	10	Barbados
22	Bassas da India	Bassas da India	No		
23	Belarus	Belarus	No		
24	Belgium	Belgium	Yes	11	Belgium
25	Belize	Belize	Yes	12	Belize
26	Benin	Benin	No		
27	Bermuda	Bermuda	No		
28	Bhutan	Bhutan	Yes	13	Bhutan
29	Bolivia	Bolivia	No		
30	Bosnia and Herzegovina	Bosnia and Herzegovina	No		
31	Botswana	Botswana	No		
32	Bouvet Island	Bouvet Island	No		
33	Brazil	Brazil	Yes	14	Brazil
34	British Indian Ocean Territory	British Indian Ocean Territory	No		
35	British Virgina Islands	British Virgina Islands	No		
36	Brunei	Brunei	No		
37	Bulgaria	Bulgaria	Yes	15	Bulgaria
38	Burkina Faso	Burkina Faso	No		
39	Burma	Burma	Yes	16	Burma
40	Burundi	Burundi	No		
41	Cambodia	Cambodia	No		
42	Cameroon	Cameroon	Yes	17	Cameroon
43	Canada	Canada	No		
44	Cape Verde	Cape Verde	No		
45	Cayman Islands	Cayman Islands	Yes	18	Cayman Islands
46	Central African Republiic	Central African Republiic	No		
47	Chad	Chad	No		
48	Chile	Chile	Yes	19	Chile
49	China	China	Yes	20	China
50	Christmas Island	Christmas Island	No		
51	Clipperton Island	Clipperton Island	No		
52	Cocos (Keeling) Islands	Cocos (Keeling) Islands	No		
53	Colombia	Colombia	Yes	21	Colombia
54	Comoros	Comoros	No		
55	Congo, Democratic Republic of	Congo, Democratic Republic of	No		
56	Congo, Republic of	Congo, Republic of	No		
57	Cook Islands	Cook Islands	No		
58	Coral Sea Islands	Coral Sea Islands	No		
59	Costa Rica	Costa Rica	Yes	22	Costa Rica
60	Cote d'Ivoire	Cote d'Ivoire	No		

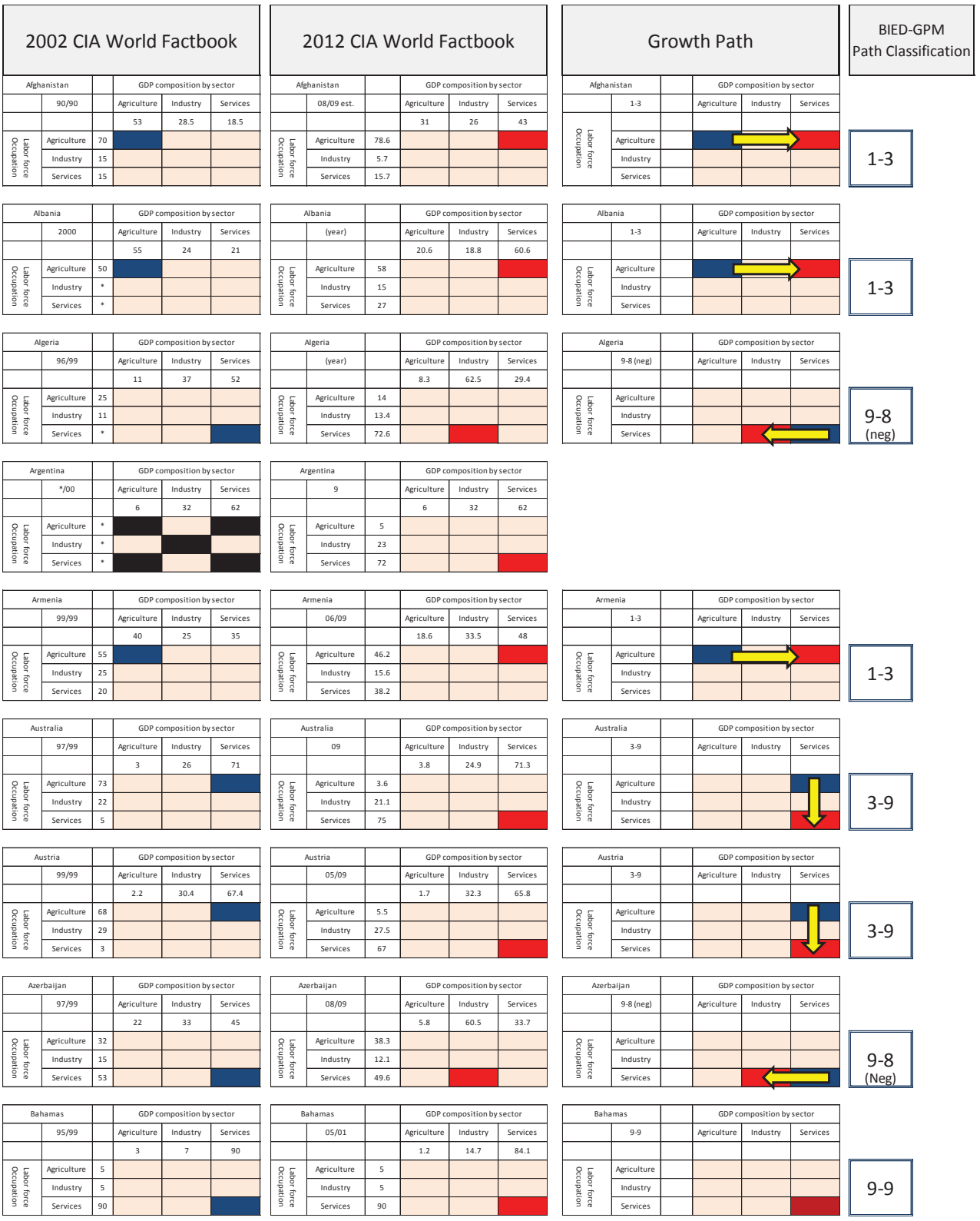
Open Coding Number	2002	2012	Enough Data for Axial Coding	Axial Coding No.	Open Coding Countries that have enough data to move to the Axial coding stage
61	Croatia	Croatia	No		
62	Cuba	Cuba	Yes	23	Cuba
63		Curaco	No		
64	Cyprus	Cyprus	Yes	24	Cyprus
65	Czech Republic	Czech Republic	Yes	25	Czech Republic
66	Denmark	Denmark	Yes	26	Denmark
67	Djibouti	Djibouti	No		
68	Dominica	Dominica	Yes	27	Dominica
69	Dominican Republic	Dominican Republic	Yes	28	Dominican Republic
70	East Timor		No		
71	Ecuador	Ecuador	Yes	29	Ecuador
72	Egypt	Egypt	Yes	30	Egypt
73	El Salvador	El Salvador	Yes	31	El Salvador
74	Equatorial Guinea	Equatorial Guinea	No		
75	Eritrea	Eritrea	No		
76	Estonia	Estonia	Yes	32	Estonia
77	Ethiopia	Ethiopia	Yes	33	Ethiopia
78	Europa Island	Europa Island	No		
79	Falkland Islands (Islas Malvinas)	Falkland Islands (Islas Malvinas)	No		
80	Faroe Islands	Faroe Islands	No		
81	Fiji	Fiji	No		
82	Finland	Finland	No		
83	France	France	Yes	34	France
84	France, Metropolitan	France, Metropolitan	No		
85	French Guiana	French Guiana	No		
86	French Polynesia	French Polynesia	Yes	35	French Polynesia
87	Lands	Lands	No		
88	Gabon	Gabon	Yes	36	Gabon
89	Gambia, The	Gambia, The	Yes	37	Gambia, The
90	Gaza Strip	Gaza Strip	No		
91	Georgia	Georgia	Yes	38	Georgia
92	Germany	Germany	Yes	39	Germany
93	Ghana	Ghana	Yes	40	Ghana
94	Gibraltar	Gibraltar	No		
95	Glorioso Islands	Glorioso Islands	No		
96	Greece	Greece	Yes	41	Greece
97	Greenland	Greenland	No		
98	Grenada	Grenada	Yes	42	Grenada
99	Guadeloupe	Guadeloupe	Yes	43	Guadeloupe
100	Guam	Guam	No		
101	Guatemala	Guatemala	No		
102	Guernsey	Guernsey	No		
103	Guinea	Guinea	No		
104	Guinea-Bissau	Guinea-Bissau	No		
105	Guyana	Guyana	No		
106	Haiti	Haiti	Yes	44	Haiti
107	Heard Island and McDonald Islands	Heard Island and McDonald Islands	No		
108	Holy See (Vatican City)	Holy See (Vatican City)	No		
109	Honduras	Honduras	Yes	45	Honduras
110	Hong Kong	Hong Kong	No		
111	Howland Island	Howland Island	No		
112	Hungary	Hungary	Yes	46	Hungary
113	Iceland	Iceland	Yes	47	Iceland
114	India	India	Yes	48	India
115	Indonesia	Indonesia	Yes	49	Indonesia
116	Iran	Iran	Yes	50	Iran
117	Iraq	Iraq	No		
118	Ireland	Ireland	Yes	51	Ireland
119	Israel	Israel	No		
120	Italy	Italy	Yes	52	Italy

Open Coding Number	2002	2012	Enough Data for Axial Coding	Axial Coding No.	Open Coding Countries that have enough data to move to the Axial coding stage
121	Jamaica	Jamaica	Yes	53	Jamaica
122	Jan Mayen	Jan Mayen	No		
123	Japan	Japan	Yes	54	Japan
124	Jarvis Island	Jarvis Island	No		
125	Jersey	Jersey	No		
126	Johnston Atoll	Johnston Atoll	No		
127	Jordan	Jordan	Yes	55	Jordan
128	Juan de Nova Island	Juan de Nova Island	No		
129	Kazakhstan	Kazakhstan	Yes	56	Kazakhstan
130	Kenya	Kenya	No		
131	Kingman Reef	Kingman Reef	No		
132	Kiribati	Kiribati	No		
133	Korea, North	Korea, North	No		
134	Korea, South	Korea, South	Yes	57	Korea, South
135		Kosovo	No		
136	Kuwait	Kuwait	No		
137	Kyrgyzstan	Kyrgyzstan	Yes	58	Kyrgyzstan
138	Laos	Laos	No		
139	Latvia	Latvia	Yes	59	Latvia
140	Lebanon	Lebanon	No		
141	Lesotho	Lesotho	No		
142	Liberia	Liberia	Yes	60	Liberia
143	Libya	Libya	Yes	61	Libya
144	Liechtenstein	Liechtenstein	No		
145	Lithuania	Lithuania	Yes	62	Lithuania
146	Luxembourg	Luxembourg	No		
147	Macau	Macau	No		
148	Macedonia, The Republic of	Macedonia, The Republic of	No		
149	Madagascar	Madagascar	No		
150	Malawi	Malawi	No		
151	Malaysia	Malaysia	No		
152	Maldives	Maldives	No		
153	Mali	Mali	No		
154	Malta	Malta	Yes	63	Malta
155	Man, Isle of	Man, Isle of	No		
156	Marshall Islands	Marshall Islands	No		
157	Martinique	Martinique	No		
158	Mauritania	Mauritania	Yes	64	Mauritania
159	Mauritius	Mauritius	No		
160	Mayotte	Mayotte	No		
161	Mexico	Mexico	Yes	65	Mexico
162	Micronesia, Federated States of	Micronesia, Federated States of	Yes	66	Micronesia, Federated States of
163	Midway Islands	Midway Islands	No		
164	Misc. (French) Indian Ocean Islands		No		
165	Moldova	Moldova	Yes	67	Moldova
166	Monaco	Monaco	No		
167	Mongolia	Mongolia	No		
168		Montenegro	No		
169	Montserrat	Montserrat	No		
170	Morocco	Morocco	Yes	68	Morocco
171	Mozambique	Mozambique	Yes	69	Mozambique
172	Myanmar	Myanmar	No		
173	Namibia	Namibia	Yes	70	Namibia
174	Nauru	Nauru	No		
175	Navassa Island	Navassa Island	No		
176	Nepal	Nepal	Yes	71	Nepal
177	Netherlands	Netherlands	Yes	72	Netherlands
178	Netherlands Antilles	Netherlands Antilles	Yes	73	Netherlands Antilles
179	New Caledonia	New Caledonia	Yes	74	New Caledonia
180	New Zealand	New Zealand	Yes	75	New Zealand

Open Coding Number	2002	2012	Enough Data for Axial Coding	Axial Coding No.	Open Coding Countries that have enough data to move to the Axial coding stage
181	Nicaragua	Nicaragua	Yes	76	Nicaragua
182	Niger	Niger	Yes	77	Niger
183	Nigeria	Nigeria	Yes	78	Nigeria
184	Niue	Niue	No		
185	Norkolk Island	Norkolk Island	No		
186	Northern Mariana islands	Northern Mariana islands	No		
187	Norway	Norway	Yes	79	Norway
188	Oman	Oman	No		
189	Pakistan	Pakistan	Yes	80	Pakistan
190	Palau	Palau	No		
191	Palmyra Atoll	Palmyra Atoll	No		
192	Panama	Panama	Yes	81	Panama
193	Papua New Guinea	Papua New Guinea	No		
194	Paracel Islands	Paracel Islands	No		
195	Paraguay	Paraguay	No		
196	Peru	Peru	No		
197	Philippines	Philippines	No		
198	Pitcairn Islands	Pitcairn Islands	No		
199	Poland	Poland	Yes	82	Poland
200	Portugal	Portugal	Yes	83	Portugal
201	Puerto Rico	Puerto Rico	No		
202	Qatar	Qatar	No		
203	Reunion	Reunion	No		
204	Romania	Romania	Yes	84	Romania
205	Russia	Russia	Yes	85	Russia
206	Rwanda	Rwanda	No		
207		Saint Barthelemy	No		
208	Saint Helena	Saint Helena	No		
209	Saint Kitts and Nevis	Saint Kitts and Nevis	No		
210	Saint Lucia	Saint Lucia	Yes	86	Saint Lucia
211		Saint Martin	No		
212	Saint Pierre and Miquelon	Saint Pierre and Miquelon	No		
213	Saint Vincent and the Grenadines	Saint Vincent and the Grenadines	Yes	87	Saint Vincent and the Grenadines
214	Samoa	Samoa	No		
215	San Marino	San Marino	No		
216	Sao Tome and Principe	Sao Tome and Principe	No		
217	Saudi Arabia	Saudi Arabia	Yes	88	Saudi Arabia
218	Senegal	Senegal	No		
219		Serbia	No		
220	Seychelles	Seychelles	Yes	89	Seychelles
221	Sierra Leone	Sierra Leone	No		
222	Singapore	Singapore	No		
223		Sint Maarten	No		
224	Slovakia	Slovakia	No		
225	Slovenia	Slovenia	No		
226	Solomon Islands	Solomon Islands	No		
227	Somalia	Somalia	No		
228	South Africa	South Africa	Yes	90	South Africa
229	South Georgia and the Islands	South Georgia and the Islands	No		
230	Spain	Spain	Yes	91	Spain
231	Spratly Islands	Spratly Islands	No		
232	Sri Lanka	Sri Lanka	Yes	92	Sri Lanka
233	Sudan	Sudan	Yes	93	Sudan
234	Suriname	Suriname	No		
235	Svalbard	Svalbard	No		
236	Swaziland	Swaziland	No		
237	Sweden	Sweden	Yes	94	Sweden
238	Switzerland	Switzerland	Yes	95	Switzerland
239	Syria	Syria	Yes	96	Syria
240	Taiwan	Taiwan	Yes	97	Taiwan

Open Coding Number	2002	2012	Enough Data for Axial Coding		Axial Coding No.	Open Coding Countries that have enough data to move to the Axial coding stage
241	Tajikistan	Tajikistan		Yes	98	Tajikistan
242	Tanzania	Tanzania	No			
243	Thailand	Thailand		Yes	99	Thailand
244		Timor-Leste	No			
245	Togo	Togo		Yes	100	Togo
246	Tokelau	Tokelau	No			
247	Tonga	Tonga		Yes	101	Tonga
248	Trinidad and Tobago	Trinidad and Tobago	No			
249	Tromelin Island	Tromelin Island	No			
250	Tunisia	Tunisia		Yes	102	Tunisia
251	Turkey	Turkey		Yes	103	Turkey
252	Turkmenistan	Turkmenistan		Yes	104	Turkmenistan
253	Turks and Caicos Islands	Turks and Caicos Islands	No			
254	Tuvalu	Tuvalu	No			
255	Uganda	Uganda		Yes	105	Uganda
256	Ukraine	Ukraine		Yes	106	Ukraine
257	United Arab Emirates	United Arab Emirates		Yes	107	United Arab Emirates
258	United Kingdom	United Kingdom		Yes	108	United Kingdom
259	United States	United States	No			
260	United States Minor Outlying Islands	United States Minor Outlying Islands	No			
261	Uruguay	Uruguay	No			
262	Uzbekistan	Uzbekistan		Yes	109	Uzbekistan
263	Vanuatu	Vanuatu		Yes	110	Vanuatu
264	Venezuela	Venezuela		Yes	111	Venezuela
265	Vietnam	Vietnam		Yes	112	Vietnam
266	Virgin Islands	Virgin Islands	No			
267	Virgin Islands (UK)	Virgin Islands (UK)	No			
268	Virgin Islands (US)	Virgin Islands (US)	No			
269	Wake Island	Wake Island	No			
270	Wallis and Futuna	Wallis and Futuna	No			
271	West Bank	West Bank		Yes	113	West Bank
272	Western Sahara	Western Sahara	No			
273	Western Samoa	Western Samoa	No			
274	World	World	No			
275	Yemen	Yemen	No			
276	Yugoslavia		No			
277	Zaire	Zaire	No			
278	Zambia	Zambia		Yes	114	Zambia
279	Zimbabwe	Zimbabwe		Yes	115	Zimbabwe

Appendix E: Axial Coding Data



2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

Bahrain

			GDP composition by sector		
	97/96		Agriculture	Industry	Services
			1	46	53
Labor force Occupation	Agriculture	1			
	Industry	*			
	Services	*			

Bahrain

			GDP composition by sector		
	97/09		Agriculture	Industry	Services
			.5	58	41.5
Labor force Occupation	Agriculture	1			
	Industry	79			
	Services	20			

Bangladesh

			GDP composition by sector		
	95/6//00		Agriculture	Industry	Services
			30	18	52
Labor force Occupation	Agriculture	63			
	Industry	11			
	Services	26			

Bangladesh

			GDP composition by sector		
	08/09		Agriculture	Industry	Services
			18.7	28.7	52.6
Labor force Occupation	Agriculture	45			
	Industry	30			
	Services	25			

Bangladesh

			GDP composition by sector		
	3-3		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-3

Barbados

			GDP composition by sector		
	96/98		Agriculture	Industry	Services
			4	16	80
Labor force Occupation	Agriculture	10			
	Industry	15			
	Services	75			

Barbados

			GDP composition by sector		
	96/00		Agriculture	Industry	Services
			6	16	78
Labor force Occupation	Agriculture	10			
	Industry	15			
	Services	75			

Barbados

			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Balarus

			GDP composition by sector		
	*/99		Agriculture	Industry	Services
			13	46	41
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Balarus

			GDP composition by sector		
	03/09		Agriculture	Industry	Services
			9.3	39.7	51
Labor force Occupation	Agriculture	14			
	Industry	34.7			
	Services	51.3			

Belgium

			GDP composition by sector		
	99/00		Agriculture	Industry	Services
			1.4	26	72.6
Labor force Occupation	Agriculture	2			
	Industry	25			
	Services	73			

Belgium

			GDP composition by sector		
	07/09		Agriculture	Industry	Services
			.8	24.5	74.7
Labor force Occupation	Agriculture	2			
	Industry	25			
	Services	73			

Belgium

			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Belize

			GDP composition by sector		
	94/00		Agriculture	Industry	Services
			18	24	58
Labor force Occupation	Agriculture	38			
	Industry	32			
	Services	30			

Belize

			GDP composition by sector		
	07/08		Agriculture	Industry	Services
			29	16.9	54.1
Labor force Occupation	Agriculture	10.2			
	Industry	18.1			
	Services	71.1			

Belize

			GDP composition by sector		
	3-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-9

Bhutan

			GDP composition by sector		
	00/		Agriculture	Industry	Services
			38	37	25
Labor force Occupation	Agriculture	93			
	Industry	2			
	Services	5			

Bhutan

			GDP composition by sector		
	04/06		Agriculture	Industry	Services
			22.3	37.9	39.8
Labor force Occupation	Agriculture	63			
	Industry	6			
	Services	31			

Bhutan

			GDP composition by sector		
	1-3		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

1-3

Bolivia

			GDP composition by sector		
	*/99		Agriculture	Industry	Services
			16	31	53
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Bolivia

			GDP composition by sector		
	06/08		Agriculture	Industry	Services
			11.3	36.9	51.8
Labor force Occupation	Agriculture	40			
	Industry	17			
	Services	43			

Bosnia and Herzegovina

			GDP composition by sector		
	*/96		Agriculture	Industry	Services
			19	23	58
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Bosnia and Herzegovina

			GDP composition by sector		
	08/06		Agriculture	Industry	Services
			10.2	23.9	66
Labor force Occupation	Agriculture	20.5			
	Industry	32.6			
	Services	47			

Brazil

			GDP composition by sector		
	99/99		Agriculture	Industry	Services
			9	29	62
Labor force Occupation	Agriculture	23.1			
	Industry	23.7			
	Services	53.2			

Brazil

			GDP composition by sector		
	03/09		Agriculture	Industry	Services
			6.5	25.8	67.7
Labor force Occupation	Agriculture	20			
	Industry	14			
	Services	66			

Brazil

			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

British Virgin Islands

			GDP composition by sector		
	99/96		Agriculture	Industry	Services
			1.8	6.2	92
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

British Virgin Islands

			GDP composition by sector		
	05/96		Agriculture	Industry	Services
			.9	10.7	88.3
Labor force Occupation	Agriculture	.06			
	Industry	40			
	Services	59.4			

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

Bahrain

	97/96		GDP composition by sector		
			Agriculture	Industry	Services
			1	46	53
Labor force Occupation	Agriculture	1			
	Industry	*			
	Services	*			

Bahrain

	97/09		GDP composition by sector		
			Agriculture	Industry	Services
			.5	58	41.5
Labor force Occupation	Agriculture	1			
	Industry	79			
	Services	20			

Bangladesh

	95/6//00		GDP composition by sector		
			Agriculture	Industry	Services
			30	18	52
Labor force Occupation	Agriculture	63			
	Industry	11			
	Services	26			

Bangladesh

	08/09		GDP composition by sector		
			Agriculture	Industry	Services
			18.7	28.7	52.6
Labor force Occupation	Agriculture	45			
	Industry	30			
	Services	25			

Bangladesh

	3-3		GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-3

Barbados

	96/98		GDP composition by sector		
			Agriculture	Industry	Services
			4	16	80
Labor force Occupation	Agriculture	10			
	Industry	15			
	Services	75			

Barbados

	96/00		GDP composition by sector		
			Agriculture	Industry	Services
			6	16	78
Labor force Occupation	Agriculture	10			
	Industry	15			
	Services	75			

Barbados

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Balarus

	*/99		GDP composition by sector		
			Agriculture	Industry	Services
			13	46	41
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Balarus

	03/09		GDP composition by sector		
			Agriculture	Industry	Services
			9.3	39.7	51
Labor force Occupation	Agriculture	14			
	Industry	34.7			
	Services	51.3			

Belgium

	99/00		GDP composition by sector		
			Agriculture	Industry	Services
			1.4	26	72.6
Labor force Occupation	Agriculture	2			
	Industry	25			
	Services	73			

Belgium

	07/09		GDP composition by sector		
			Agriculture	Industry	Services
			.8	24.5	74.7
Labor force Occupation	Agriculture	2			
	Industry	25			
	Services	73			

Belgium

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Belize

	94/00		GDP composition by sector		
			Agriculture	Industry	Services
			18	24	58
Labor force Occupation	Agriculture	38			
	Industry	32			
	Services	30			

Belize

	07/08		GDP composition by sector		
			Agriculture	Industry	Services
			29	16.9	54.1
Labor force Occupation	Agriculture	10.2			
	Industry	18.1			
	Services	71.1			

Belize

	3-9		GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-9

Bhutan

	00/		GDP composition by sector		
			Agriculture	Industry	Services
			38	37	25
Labor force Occupation	Agriculture	93			
	Industry	2			
	Services	5			

Bhutan

	04/06		GDP composition by sector		
			Agriculture	Industry	Services
			22.3	37.9	39.8
Labor force Occupation	Agriculture	63			
	Industry	6			
	Services	31			

Bhutan

	1-3		GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

1-3

Bolivia

	*/99		GDP composition by sector		
			Agriculture	Industry	Services
			16	31	53
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Bolivia

	06/08		GDP composition by sector		
			Agriculture	Industry	Services
			11.3	36.9	51.8
Labor force Occupation	Agriculture	40			
	Industry	17			
	Services	43			

Bosnia and Herzegovina

	*/96		GDP composition by sector		
			Agriculture	Industry	Services
			19	23	58
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Bosnia and Herzegovina

	08/06		GDP composition by sector		
			Agriculture	Industry	Services
			10.2	23.9	66
Labor force Occupation	Agriculture	20.5			
	Industry	32.6			
	Services	47			

Brazil

	99/99		GDP composition by sector		
			Agriculture	Industry	Services
			9	29	62
Labor force Occupation	Agriculture	23.1			
	Industry	23.7			
	Services	53.2			

Brazil

	03/09		GDP composition by sector		
			Agriculture	Industry	Services
			6.5	25.8	67.7
Labor force Occupation	Agriculture	20			
	Industry	14			
	Services	66			

Brazil

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

British Virgin Islands

	99/96		GDP composition by sector		
			Agriculture	Industry	Services
			1.8	6.2	92
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

British Virgin Islands

	05/96		GDP composition by sector		
			Agriculture	Industry	Services
			.9	10.7	88.3
Labor force Occupation	Agriculture	.06			
	Industry	40			
	Services	59.4			

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

Brunei

			GDP composition by sector		
	99/96		Agriculture	Industry	Services
			5	46	49
Labor force Occupation	Agriculture	10			
	Industry	*			
	Services	42			

Brunei

			GDP composition by sector		
	08/08		Agriculture	Industry	Services
			.7	74.1	25.3
Labor force Occupation	Agriculture	4.2			
	Industry	62.8			
	Services	33			

Bulgaria

			GDP composition by sector		
	98/00		Agriculture	Industry	Services
			15	29	56
Labor force Occupation	Agriculture	26			
	Industry	31			
	Services	43			

Bulgaria

			GDP composition by sector		
	08/09		Agriculture	Industry	Services
			7.5	27.6	64.9
Labor force Occupation	Agriculture	7.5			
	Industry	36.4			
	Services	56.1			

Bulgaria

			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Burma

			GDP composition by sector		
	99/00		Agriculture	Industry	Services
			42	17	41
Labor force Occupation	Agriculture	65			
	Industry	10			
	Services	25			

Burma

			GDP composition by sector		
	01/09		Agriculture	Industry	Services
			42.9	19.8	37.3
Labor force Occupation	Agriculture	70			
	Industry	7			
	Services	23			

Burma

			GDP composition by sector		
	1-1		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

1-1

Burundi

			GDP composition by sector		
	**/99		Agriculture	Industry	Services
			50	18	32
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Burundi

			GDP composition by sector		
	02/09		Agriculture	Industry	Services
			33.3	21	45.8
Labor force Occupation	Agriculture	93.6			
	Industry	2.3			
	Services	4.1			

Camaroon

			GDP composition by sector		
	/99		Agriculture	Industry	Services
			43.4	20.1	36.5
Labor force Occupation	Agriculture	70			
	Industry	13			
	Services	17			

Camaroon

			GDP composition by sector		
	01/09		Agriculture	Industry	Services
			19.8	29.7	50.4
Labor force Occupation	Agriculture	70			
	Industry	13			
	Services	17			

Camaroon

			GDP composition by sector		
	1-3		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

1-3

Canada

			GDP composition by sector		
	00/00		Agriculture	Industry	Services
			3	31	66
Labor force Occupation	Agriculture	3			
	Industry	15			
	Services	74			

Canada

			GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

Cayman Islands

			GDP composition by sector		
	95/94		Agriculture	Industry	Services
			1.4	3.2	95.4
Labor force Occupation	Agriculture	86			
	Industry	12.6			
	Services	1.4			

Cayman Islands

			GDP composition by sector		
	08/94		Agriculture	Industry	Services
			1.4	3.2	95.4
Labor force Occupation	Agriculture	1.9			
	Industry	19.1			
	Services	79			

Cayman Islands

			GDP composition by sector		
	3-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-9

Chile

			GDP composition by sector		
	97/00		Agriculture	Industry	Services
			8	38	54
Labor force Occupation	Agriculture	14			
	Industry	27			
	Services	59			

Chile

			GDP composition by sector		
	05/08		Agriculture	Industry	Services
			4.8	50.5	44.7
Labor force Occupation	Agriculture	13.2			
	Industry	23			
	Services	63.9			

Chile

			GDP composition by sector		
	9-8 (neg)		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-8 (Neg)

China

			GDP composition by sector		
	98/00		Agriculture	Industry	Services
			15	50	35
Labor force Occupation	Agriculture	50			
	Industry	24			
	Services	26			

China

			GDP composition by sector		
	08/09		Agriculture	Industry	Services
			10.9	48.6	40.5
Labor force Occupation	Agriculture	39.5			
	Industry	27.2			
	Services	33.2			

China

			GDP composition by sector		
	2-2		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

2-2

Colombia

			GDP composition by sector		
	90/99		Agriculture	Industry	Services
			19	26	55
Labor force Occupation	Agriculture	30			
	Industry	24			
	Services	46			

Colombia

			GDP composition by sector		
	09/09		Agriculture	Industry	Services
			9.1	38.2	52.8
Labor force Occupation	Agriculture	18			
	Industry	18.9			
	Services	63.1			

Colombia

			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

Cook Islands			GDP composition by sector		
	/		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

Cook Islands			GDP composition by sector		
	95/04		Agriculture	Industry	Services
			15.1	9.6	75.3
Labor force Occupation	Agriculture	29			
	Industry	15			
	Services	56			

Costa Rica			GDP composition by sector		
	99/99		Agriculture	Industry	Services
			12.5	30.7	56.8
Labor force Occupation	Agriculture	20			
	Industry	22			
	Services	58			

Costa Rica			GDP composition by sector		
	06/09		Agriculture	Industry	Services
			6.5	25.5	68
Labor force Occupation	Agriculture	14			
	Industry	22			
	Services	64			

Costa Rica			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Croatia			GDP composition by sector		
	**/99		Agriculture	Industry	Services
			10	19	71
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Croatia			GDP composition by sector		
	08/09		Agriculture	Industry	Services
			7	31.6	61.4
Labor force Occupation	Agriculture	5			
	Industry	31.1			
	Services	63.6			

Cuba			GDP composition by sector		
	98/98		Agriculture	Industry	Services
			7	37	56
Labor force Occupation	Agriculture	25			
	Industry	24			
	Services	51			

Cuba			GDP composition by sector		
	05/09		Agriculture	Industry	Services
			4.3	20.9	74.8
Labor force Occupation	Agriculture	20			
	Industry	19.4			
	Services	60.6			

Cuba			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Cyprus (Greek Cypriot area)			GDP composition by sector		
	00/98		Agriculture	Industry	Services
			6.3	22.4	71.3
Labor force Occupation	Agriculture	5			
	Industry	22			
	Services	73			

Cyprus (Greek Cypriot area)			GDP composition by sector		
	06/09		Agriculture	Industry	Services
			2.1	19	78.9
Labor force Occupation	Agriculture	8.5			
	Industry	20.5			
	Services	71			

Cyprus (Greek Cypriot area)			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Czech Republic			GDP composition by sector		
	00/99		Agriculture	Industry	Services
			3.7	41.8	54.5
Labor force Occupation	Agriculture	5			
	Industry	40			
	Services	55			

Czech Republic			GDP composition by sector		
	07/09		Agriculture	Industry	Services
			2.8	35	62.3
Labor force Occupation	Agriculture	3.6			
	Industry	40.2			
	Services	56.2			

Czech Republic			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Denmark			GDP composition by sector		
	00/00		Agriculture	Industry	Services
			3	25	72
Labor force Occupation	Agriculture	4			
	Industry	17			
	Services	79			

Denmark			GDP composition by sector		
	09/09		Agriculture	Industry	Services
			4.6	30.7	64.7
Labor force Occupation	Agriculture	2.5			
	Industry	20.2			
	Services	77.3			

Denmark			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Dominica			GDP composition by sector		
	**/99		Agriculture	Industry	Services
			21	16	63
Labor force Occupation	Agriculture	40			
	Industry	32			
	Services	28			

Dominica			GDP composition by sector		
	04/00		Agriculture	Industry	Services
			17.7	32.8	49.5
Labor force Occupation	Agriculture	40			
	Industry	32			
	Services	28			

Dominica			GDP composition by sector		
	3-3		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-3

Dominican Republic			GDP composition by sector		
	98/99		Agriculture	Industry	Services
			11.3	32.2	56.5
Labor force Occupation	Agriculture	17			
	Industry	24.3			
	Services	58.7			

Dominican Republic			GDP composition by sector		
	09/05		Agriculture	Industry	Services
			10.5	21.3	68.2
Labor force Occupation	Agriculture	14.6			
	Industry	22.3			
	Services	63.1			

Dominican Republic			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Ecuador			GDP composition by sector		
	99/99		Agriculture	Industry	Services
			14	36	50
Labor force Occupation	Agriculture	30			
	Industry	25			
	Services	45			

Ecuador			GDP composition by sector		
	09/05		Agriculture	Industry	Services
			6.8	35.7	57.6
Labor force Occupation	Agriculture	8.3			
	Industry	21.2			
	Services	70.4			

Ecuador			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

Egypt

	99/99		GDP composition by sector		
			Agriculture	Industry	Services
			17	32	51
Labor force Occupation	Agriculture	29			
	Industry	22			
	Services	49			

Egypt			GDP composition by sector		
	09/01		Agriculture	Industry	Services
			13.1	37.7	49.2
Labor force Occupation	Agriculture	32			
	Industry	17			
	Services	51			

Egypt			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

El Salvador

	99/99		GDP composition by sector		
			Agriculture	Industry	Services
			12	28	60
Labor force Occupation	Agriculture	30			
	Industry	15			
	Services	55			

El Salvador			GDP composition by sector		
	09/06		Agriculture	Industry	Services
			11.1	28.2	60.7
Labor force Occupation	Agriculture	19			
	Industry	23			
	Services	58			

El Salvador			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Estonia

	99/99		GDP composition by sector		
			Agriculture	Industry	Services
			3.6	30.7	65.7
Labor force Occupation	Agriculture	20			
	Industry	11			
	Services	69			

Estonia			GDP composition by sector		
	09/08		Agriculture	Industry	Services
			3	24.4	72.6
Labor force Occupation	Agriculture	2.8			
	Industry	22.7			
	Services	74.5			

Estonia			GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Ethiopia

	85/99		GDP composition by sector		
			Agriculture	Industry	Services
			45	12	43
Labor force Occupation	Agriculture	80			
	Industry	8			
	Services	12			

Ethiopia			GDP composition by sector		
	09/09		Agriculture	Industry	Services
			43.8	13.2	43
Labor force Occupation	Agriculture	85			
	Industry	5			
	Services	10			

Ethiopia			GDP composition by sector		
	1-1		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

1-1

European Union

			GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

European Union			GDP composition by sector		
	09/07		Agriculture	Industry	Services
			2.1	25.2	71.8
Labor force Occupation	Agriculture	5.6			
	Industry	27.7			
	Services	66.7			

Faroe Islands

	**/99		GDP composition by sector		
			Agriculture	Industry	Services
			27	11	62
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Faroe Islands			GDP composition by sector		
	07/08		Agriculture	Industry	Services
			16	29	55
Labor force Occupation	Agriculture	10.2			
	Industry	20.5			
	Services	69.2			

France

	97/99		GDP composition by sector		
			Agriculture	Industry	Services
			3.3	26.1	70.6
Labor force Occupation	Agriculture	4			
	Industry	25			
	Services	71			

France			GDP composition by sector		
	09/05		Agriculture	Industry	Services
			2.1	19	78.9
Labor force Occupation	Agriculture	3.8			
	Industry	24.3			
	Services	71.8			

France			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

French Polynesia

	97/97		GDP composition by sector		
			Agriculture	Industry	Services
			4	18	78
Labor force Occupation	Agriculture	13			
	Industry	19			
	Services	68			

French Polynesia			GDP composition by sector		
	05/02		Agriculture	Industry	Services
			3.5	20.4	76.1
Labor force Occupation	Agriculture	13			
	Industry	19			
	Services	68			

French Polynesia			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Gabon

	**/99		GDP composition by sector		
			Agriculture	Industry	Services
			10	60	30
Labor force Occupation	Agriculture	60			
	Industry	15			
	Services	25			

Gabon			GDP composition by sector		
	09/00		Agriculture	Industry	Services
			5.4	56.7	37.9
Labor force Occupation	Agriculture	60			
	Industry	15			
	Services	25			

Gabon			GDP composition by sector		
	2-2		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

2-2

Gambia

	**/98		GDP composition by sector		
			Agriculture	Industry	Services
			21	12	67
Labor force Occupation	Agriculture	75			
	Industry	*			
	Services	*			

Gambia			GDP composition by sector		
	09/96		Agriculture	Industry	Services
			33.5	8.5	58
Labor force Occupation	Agriculture	75			
	Industry	19			
	Services	6			

Gambia			GDP composition by sector		
	3-3		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-3

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

Georgia

			2002 CIA World Factbook: 99/99 GDP composition by sector			2012 CIA World Factbook: 07/06 GDP composition by sector			Growth Path: 3/9-3 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			32	23	45	12.1	25.9	62			
Labor force Occupation	Agriculture	40									
	Industry	20									
	Services	40									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 40	Agriculture 55.6		3/9-3 Neg
Industry 20	Industry 8.9		
Services 40	Services 35.5		

Germany

			2002 CIA World Factbook: 99/99 GDP composition by sector			2012 CIA World Factbook: 09/05 GDP composition by sector			Growth Path: 9-9 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			1.2	30.4	68.4	.9	27.1	72			
Labor force Occupation	Agriculture	2.8									
	Industry	33.4									
	Services	63.8									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 2.8	Agriculture 2.4		9-9
Industry 33.4	Industry 29.7		
Services 63.8	Services 67.8		

Ghana

			2002 CIA World Factbook: 99/00 GDP composition by sector			2012 CIA World Factbook: 06/05 GDP composition by sector			Growth Path: 3-3 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			36	25	39	37.3	25.3	37.5			
Labor force Occupation	Agriculture	60									
	Industry	15									
	Services	25									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 60	Agriculture 56		3-3
Industry 15	Industry 15		
Services 25	Services 29		

Greece

			2002 CIA World Factbook: 00/98 GDP composition by sector			2012 CIA World Factbook: 09/05 GDP composition by sector			Growth Path: 9-9 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			8.3	27.3	64.4	3.4	20.8	75.8			
Labor force Occupation	Agriculture	20									
	Industry	21									
	Services	59									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 20	Agriculture 12.4		9-9
Industry 21	Industry 22.4		
Services 59	Services 65.1		

Greenland

			2002 CIA World Factbook GDP composition by sector			2012 CIA World Factbook: 07 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services
						4.9	31.9	63.2
Labor force Occupation	Agriculture					4.9		
	Industry					31.9		
	Services					63.2		

Grenada

			2002 CIA World Factbook: 99/96 GDP composition by sector			2012 CIA World Factbook: 03/99 GDP composition by sector			Growth Path: 9-9 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			9.7	15	75.3	5.4	18	76.6			
Labor force Occupation	Agriculture	24									
	Industry	14									
	Services	62									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 24	Agriculture 24		9-9
Industry 14	Industry 14		
Services 62	Services 62		

Guatemala

			2002 CIA World Factbook: 99/00 GDP composition by sector			2012 CIA World Factbook: 09/99 GDP composition by sector			Growth Path: 3-3 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			23	20	57	13.5	25.1	61.4			
Labor force Occupation	Agriculture	50									
	Industry	15									
	Services	35									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 50	Agriculture 50		3-3
Industry 15	Industry 15		
Services 35	Services 35		

Haiti

			2002 CIA World Factbook: **/99 GDP composition by sector			2012 CIA World Factbook: 04/95 GDP composition by sector			Growth Path: 3-3 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			32	20	48	28	20	52			
Labor force Occupation	Agriculture	66									
	Industry	9									
	Services	25									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 66	Agriculture 66		3-3
Industry 9	Industry 9		
Services 25	Services 25		

Honduras

			2002 CIA World Factbook: 98/99 GDP composition by sector			2012 CIA World Factbook: 0905 GDP composition by sector			Growth Path: 9-9 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			16.2	31.9	51.9	14.2	27.9	57.9			
Labor force Occupation	Agriculture	29									
	Industry	21									
	Services	50									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 29	Agriculture 39.2		9-9
Industry 21	Industry 20.9		
Services 50	Services 39.8		

Hungary

			2002 CIA World Factbook: 96/00 GDP composition by sector			2012 CIA World Factbook: 09/08 GDP composition by sector			Growth Path: 9-9 GDP composition by sector		
			Agriculture	Industry	Services	Agriculture	Industry	Services	Agriculture	Industry	Services
			5	35	60	3.4	34.3	62.4			
Labor force Occupation	Agriculture	8									
	Industry	27									
	Services	65									

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification
Agriculture 8	Agriculture 4.5		9-9
Industry 27	Industry 32.1		
Services 65	Services 63.4		

2002 CIA World Factbook						2012 CIA World Factbook						Growth Path						BIED-GPM Path Classification
Iceland			GDP composition by sector			Iceland			GDP composition by sector			Iceland			GDP composition by sector			
	99/99		Agriculture	Industry	Services		09/08		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			15	21	64				5.2	24	70.8							
Labor force Occupation	Agriculture	5.1				Labor force Occupation	Agriculture	4.8				Labor force Occupation	Agriculture					9-9
	Industry	*					Industry	22.2					Industry					
	Services	59.5					Services	73					Services					
India			GDP composition by sector			India			GDP composition by sector			India			GDP composition by sector			
	95/00		Agriculture	Industry	Services		09/09		Agriculture	Industry	Services		3-3		Agriculture	Industry	Services	
			25	24	51				17.5	20	62.6							
Labor force Occupation	Agriculture	67				Labor force Occupation	Agriculture	52				Labor force Occupation	Agriculture					3-3
	Industry	18					Industry	14					Industry					
	Services	15					Services	34					Services					
Indonesia			GDP composition by sector			Indonesia			GDP composition by sector			Indonesia			GDP composition by sector			
	99/99		Agriculture	Industry	Services		09/06		Agriculture	Industry	Services		3-2 (neg)		Agriculture	Industry	Services	
			21	35	44				14.4	47.1	38.5							
Labor force Occupation	Agriculture	45				Labor force Occupation	Agriculture	42.1				Labor force Occupation	Agriculture					3-2 (Neg)
	Industry	16					Industry	18.6					Industry					
	Services	39					Services	39.3					Services					
Iran			GDP composition by sector			Iran			GDP composition by sector			Iran			GDP composition by sector			
	99/00		Agriculture	Industry	Services		09/07		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			24	28	48				10.9	45.2	43.9							
Labor force Occupation	Agriculture	33				Labor force Occupation	Agriculture	25				Labor force Occupation	Agriculture					9-9
	Industry	25					Industry	31					Industry					
	Services	42					Services	45					Services					
Iraq			GDP composition by sector			Iraq			GDP composition by sector									
	**/93		Agriculture	Industry	Services		09		Agriculture	Industry	Services							
			6	13	81				9.6	62.8	27.6							
Labor force Occupation	Agriculture	*				Labor force Occupation	Agriculture	21.6										
	Industry	*					Industry	18.7										
	Services	*					Services	59.8										
Ireland			GDP composition by sector			Ireland			GDP composition by sector			Ireland			GDP composition by sector			
	00/99		Agriculture	Industry	Services		02/06		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			4	38	58				5	46	49							
Labor force Occupation	Agriculture	8				Labor force Occupation	Agriculture	6				Labor force Occupation	Agriculture					9-9
	Industry	28					Industry	27					Industry					
	Services	64					Services	67					Services					
Israel			GDP composition by sector			Israel			GDP composition by sector									
	96/99		Agriculture	Industry	Services		09/08		Agriculture	Industry	Services							
			4	37	59				2.6	32	65.4							
Labor force Occupation	Agriculture	*				Labor force Occupation	Agriculture	2										
	Industry	*					Industry	16										
	Services	*					Services	82										
Italy			GDP composition by sector			Italy			GDP composition by sector			Italy			GDP composition by sector			
	99/00		Agriculture	Industry	Services		09/05		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			2.5	30.4	67.1				2.1	25	72.9							
Labor force Occupation	Agriculture	5.5				Labor force Occupation	Agriculture	4.2				Labor force Occupation	Agriculture					9-9
	Industry	32.6					Industry	30.7					Industry					
	Services	61.9					Services	65.1					Services					
Jamaica			GDP composition by sector			Jamaica			GDP composition by sector			Jamaica			GDP composition by sector			
	98/99		Agriculture	Industry	Services		09/06		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			7.4	35.2	57.4				5.7	29.7	64.7							
Labor force Occupation	Agriculture	21				Labor force Occupation	Agriculture	17				Labor force Occupation	Agriculture					9-9
	Industry	19					Industry	19					Industry					
	Services	60					Services	64					Services					
Japan			GDP composition by sector			Japan			GDP composition by sector			Japan			GDP composition by sector			
	**/99		Agriculture	Industry	Services		09/09		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			2	35	63				1.6	23.1	75.4							
Labor force Occupation	Agriculture	5				Labor force Occupation	Agriculture	4				Labor force Occupation	Agriculture					9-9
	Industry	30					Industry	28					Industry					
	Services	65					Services	68					Services					

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

Jordan

	92/98		GDP composition by sector		
			Agriculture	Industry	Services
			3	25	72
Occupation Labor force	Agriculture	7.4			
	Industry	11.4			
	Services	52			

Jordan	09/07		GDP composition by sector		
			Agriculture	Industry	Services
			3.7	29.9	66.5
Occupation Labor force	Agriculture	2.7			
	Industry	20			
	Services	77.4			

Jordan	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

9-9

Kazakhstan

	96/99		GDP composition by sector		
			Agriculture	Industry	Services
			10	30	60
Occupation Labor force	Agriculture	23			
	Industry	27			
	Services	50			

Kazakhstan	09/06		GDP composition by sector		
			Agriculture	Industry	Services
			6.4	38.1	55.5
Occupation Labor force	Agriculture	31.5			
	Industry	18.4			
	Services	50			

Kazakhstan	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

9-9

Kiribati

	85/96		GDP composition by sector		
			Agriculture	Industry	Services
			14	7	79
Occupation Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Kiribati	04/00		GDP composition by sector		
			Agriculture	Industry	Services
			8.9	24.2	66.8
Occupation Labor force	Agriculture	2.7			
	Industry	32			
	Services	65.3			

South Korea

	99/99		GDP composition by sector		
			Agriculture	Industry	Services
			5.6	41.4	53
Occupation Labor force	Agriculture	12			
	Industry	20			
	Services	68			

South Korea	08/07		GDP composition by sector		
			Agriculture	Industry	Services
			3	39.4	57.6
Occupation Labor force	Agriculture	7.2			
	Industry	25.1			
	Services	67.7			

South Korea	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

9-9

Kyrgyzstan

	99/99		GDP composition by sector		
			Agriculture	Industry	Services
			39	22	39
Occupation Labor force	Agriculture	55			
	Industry	15			
	Services	30			

Kyrgyzstan	09/05		GDP composition by sector		
			Agriculture	Industry	Services
			30.7	15.9	53.4
Occupation Labor force	Agriculture	48			
	Industry	12.5			
	Services	39.5			

Kyrgyzstan	1/3-3		GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

1/3-3

Latvia

	00/99		GDP composition by sector		
			Agriculture	Industry	Services
			5	33	62
Occupation Labor force	Agriculture	10			
	Industry	25			
	Services	65			

Latvia	09/05		GDP composition by sector		
			Agriculture	Industry	Services
			3.6	24	72.4
Occupation Labor force	Agriculture	12.1			
	Industry	25.8			
	Services	61.8			

Latvia	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

9-9

Liberia

	99/00		GDP composition by sector		
			Agriculture	Industry	Services
			60	10	30
Occupation Labor force	Agriculture	70			
	Industry	8			
	Services	22			

Liberia	02/00		GDP composition by sector		
			Agriculture	Industry	Services
			76.9	5.4	17.7
Occupation Labor force	Agriculture	70			
	Industry	8			
	Services	22			

Liberia	1-1		GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

1-1

Libya

	97/97		GDP composition by sector		
			Agriculture	Industry	Services
			7	47	46
Occupation Labor force	Agriculture	17			
	Industry	29			
	Services	54			

Libya	09/04		GDP composition by sector		
			Agriculture	Industry	Services
			4.2	77.9	17.9
Occupation Labor force	Agriculture	17			
	Industry	23			
	Services	59			

Libya	8-8		GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

8-8

Liechtenstein

			GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

Liechtenstein	08/06		GDP composition by sector		
			Agriculture	Industry	Services
			8	39	54
Occupation Labor force	Agriculture	1.7			
	Industry	43.5			
	Services	55.4			

Lithuania

	97/99		GDP composition by sector		
			Agriculture	Industry	Services
			10	33	57
Occupation Labor force	Agriculture	20			
	Industry	30			
	Services	50			

Lithuania	09/05		GDP composition by sector		
			Agriculture	Industry	Services
			4.4	27	68.6
Occupation Labor force	Agriculture	14			
	Industry	29.1			
	Services	56.9			

Lithuania	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation Labor force	Agriculture				
	Industry				
	Services				

9-9

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

Luxembourg

	00/00		GDP composition by sector		
			Agriculture	Industry	Services
			1	30	69
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Luxembourg

	07/07		GDP composition by sector		
			Agriculture	Industry	Services
			4	13.6	86
Occupation / Labor force	Agriculture	2.2			
	Industry	17.2			
	Services	80.6			

Macedonia

	**/00		GDP composition by sector		
			Agriculture	Industry	Services
			12	25	63
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Macedonia

	09/09		GDP composition by sector		
			Agriculture	Industry	Services
			11.9	29.9	58.2
Occupation / Labor force	Agriculture	18..6			
	Industry	29.5			
	Services	51.9			

Malaysia

	00/00		GDP composition by sector		
			Agriculture	Industry	Services
			14	44	42
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Malaysia

	09/05		GDP composition by sector		
			Agriculture	Industry	Services
			10.1	42.3	47.6
Occupation / Labor force	Agriculture	13			
	Industry	36			
	Services	51			

Malta

	99/99		GDP composition by sector		
			Agriculture	Industry	Services
			2.8	25.5	71.7
Occupation / Labor force	Agriculture	5			
	Industry	24			
	Services	71			

Malta

	07/09		GDP composition by sector		
			Agriculture	Industry	Services
			1.7	17.4	80.9
Occupation / Labor force	Agriculture	1.6			
	Industry	22.8			
	Services	75.6			

Malta

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

9-9

Marshall Islands

	**/95		GDP composition by sector		
			Agriculture	Industry	Services
			15	13	72
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Marshall Islands

	04/00		GDP composition by sector		
			Agriculture	Industry	Services
			31.7	14.9	53.4
Occupation / Labor force	Agriculture	21.4			
	Industry	20.9			
	Services	57.7			

Mauritania

	**/97		GDP composition by sector		
			Agriculture	Industry	Services
			25	31	44
Occupation / Labor force	Agriculture	47			
	Industry	14			
	Services	39			

Mauritania

	08/01		GDP composition by sector		
			Agriculture	Industry	Services
			12.5	46.7	40.7
Occupation / Labor force	Agriculture	50			
	Industry	10			
	Services	40			

Mauritania

	3-2 (Neg)		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

3-2 (Neg)

Mexico

	98/00		GDP composition by sector		
			Agriculture	Industry	Services
			5	27	68
Occupation / Labor force	Agriculture	20			
	Industry	24			
	Services	56			

Mexico

	09/05		GDP composition by sector		
			Agriculture	Industry	Services
			4	31	65
Occupation / Labor force	Agriculture	13.7			
	Industry	23.4			
	Services	62.9			

Mexico

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

9-9

Federated States of Micronesia

	**/96		GDP composition by sector		
			Agriculture	Industry	Services
			19	4	77
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	66**			

Federated States of Micronesia

	04/05		GDP composition by sector		
			Agriculture	Industry	Services
			28.9	15.2	55.9
Occupation / Labor force	Agriculture	.9			
	Industry	34.4			
	Services	64.7			

Federated States of Micronesia

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

9-9

Moldova

	98/98		GDP composition by sector		
			Agriculture	Industry	Services
			31	35	34
Occupation / Labor force	Agriculture	40			
	Industry	14			
	Services	46			

Moldova

	09/05		GDP composition by sector		
			Agriculture	Industry	Services
			21.8	17.6	60.6
Occupation / Labor force	Agriculture	40.6			
	Industry	16			
	Services	43.3			

Moldova

	8-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

8-9

Mongolia

	**/00		GDP composition by sector		
			Agriculture	Industry	Services
			36	22	42
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Mongolia

	09/08		GDP composition by sector		
			Agriculture	Industry	Services
			21.2	29.5	49.3
Occupation / Labor force	Agriculture	34			
	Industry	5			
	Services	61			

2002 CIA World Factbook					2012 CIA World Factbook					Growth Path					BIED-GPM Path Classification
Morocco			GDP composition by sector		Morocco			GDP composition by sector		Morocco			GDP composition by sector		
	99/99		Agriculture	Industry	Services		09/06		Agriculture	Industry	Services			Agriculture	Industry	Services	
			15	33	52				18.8	32.6	48.6						
Labor force Occupation	Agriculture	50				Labor force Occupation	Agriculture	44.6				Labor force Occupation	Agriculture				3-3
	Industry	35					Industry	19.8					Industry				
	Services	15					Services	35.5					Services				
Mozambique			GDP composition by sector		Mozambique			GDP composition by sector		Mozambique			GDP composition by sector		
	97/99		Agriculture	Industry	Services		09/97		Agriculture	Industry	Services		1-3	Agriculture	Industry	Services	
			44	19	37				24	30.6	45.3						
Labor force Occupation	Agriculture	81				Labor force Occupation	Agriculture	81				Labor force Occupation	Agriculture				1-3
	Industry	6					Industry	6					Industry				
	Services	13					Services	13					Services				
Namibia			GDP composition by sector		Namibia			GDP composition by sector		Namibia			GDP composition by sector		
	99/99		Agriculture	Industry	Services		08/08		Agriculture	Industry	Services		3-9	Agriculture	Industry	Services	
			12	25	63				8.5	40.7	50.8						
Labor force Occupation	Agriculture	47				Labor force Occupation	Agriculture	16.3				Labor force Occupation	Agriculture				3-9
	Industry	20					Industry	22.4					Industry				
	Services	33					Services	61.3					Services				
Nepal			GDP composition by sector		Nepal			GDP composition by sector		Nepal			GDP composition by sector		
	**/00		Agriculture	Industry	Services		09/04		Agriculture	Industry	Services		1-3	Agriculture	Industry	Services	
			41	22	37				35	16	49						
Labor force Occupation	Agriculture	81				Labor force Occupation	Agriculture	76				Labor force Occupation	Agriculture				1-3
	Industry	16					Industry	6					Industry				
	Services	3					Services	18					Services				
Netherlands			GDP composition by sector		Netherlands			GDP composition by sector		Netherlands			GDP composition by sector		
	98/00		Agriculture	Industry	Services		09/05		Agriculture	Industry	Services		9-9	Agriculture	Industry	Services	
			3.3	26.3	70.4				1.9	24.4	73.7						
Labor force Occupation	Agriculture	4				Labor force Occupation	Agriculture	2				Labor force Occupation	Agriculture				9-9
	Industry	23					Industry	18					Industry				
	Services	73					Services	80					Services				
Netherlands Antilles			GDP composition by sector		Netherlands Antilles			GDP composition by sector		Netherlands Antilles			GDP composition by sector		
	94/96		Agriculture	Industry	Services		00/05		Agriculture	Industry	Services			Agriculture	Industry	Services	
			1	15	84				1	15	84						
Labor force Occupation	Agriculture	1				Labor force Occupation	Agriculture	1				Labor force Occupation	Agriculture				9-9
	Industry	13					Industry	20					Industry				
	Services	86					Services	79					Services				
New Caledonia			GDP composition by sector		New Caledonia			GDP composition by sector		New Caledonia			GDP composition by sector		
	99/97		Agriculture	Industry	Services		03/02		Agriculture	Industry	Services			Agriculture	Industry	Services	
			4	30	66				15	8.8	76.2						
Labor force Occupation	Agriculture	7				Labor force Occupation	Agriculture	20				Labor force Occupation	Agriculture				9-9
	Industry	23					Industry	20					Industry				
	Services	70					Services	60					Services				
New Zealand			GDP composition by sector		New Zealand			GDP composition by sector		New Zealand			GDP composition by sector		
	95/99		Agriculture	Industry	Services		09/06		Agriculture	Industry	Services		9-9	Agriculture	Industry	Services	
			8	23	69				4.5	25.8	69.7						
Labor force Occupation	Agriculture	10				Labor force Occupation	Agriculture	7				Labor force Occupation	Agriculture				9-9
	Industry	25					Industry	19					Industry				
	Services	65					Services	74					Services				
Nicaragua			GDP composition by sector		Nicaragua			GDP composition by sector		Nicaragua			GDP composition by sector		
	99/99		Agriculture	Industry	Services		09/06		Agriculture	Industry	Services		9-9	Agriculture	Industry	Services	
			31.6	22.8	45.6				17.8	25.8	56.5						
Labor force Occupation	Agriculture	42				Labor force Occupation	Agriculture	29				Labor force Occupation	Agriculture				9-9
	Industry	15					Industry	19					Industry				
	Services	43					Services	52					Services				
Niger			GDP composition by sector		Niger			GDP composition by sector		Niger			GDP composition by sector		
	**/98		Agriculture	Industry	Services		01/95		Agriculture	Industry	Services		3-3	Agriculture	Industry	Services	
			40	18	42				39	17	44						
Labor force Occupation	Agriculture	90				Labor force Occupation	Agriculture	90				Labor force Occupation	Agriculture				3-3
	Industry	6					Industry	6					Industry				
	Services	4					Services	4					Services				

2002 CIA World Factbook					2012 CIA World Factbook					Growth Path					BIED-GPM Path Classification
Nigeria			GDP composition by sector		Nigeria			GDP composition by sector		Nigeria			GDP composition by sector		
	99/99		Agriculture	Industry	Services		09/99		Agriculture	Industry	Services		1/2-2		Agriculture	Industry	Services	
			40	40	20				33.1	33.8	33.1							
Labor force Occupation	Agriculture	70				Labor force Occupation	Agriculture	70				Labor force Occupation	Agriculture					1/2-2
	Industry	10					Industry	10					Industry					
	Services	20					Services	20					Services					
Norway			GDP composition by sector		Norway			GDP composition by sector		Norway			GDP composition by sector		
	95/99		Agriculture	Industry	Services		09/08		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			2	25	73				2.2	45.1	52.7							
Labor force Occupation	Agriculture	4				Labor force Occupation	Agriculture	2.9				Labor force Occupation	Agriculture					9-9
	Industry	22					Industry	21.1					Industry					
	Services	74					Services	76					Services					
Pakistan			GDP composition by sector		Pakistan			GDP composition by sector		Pakistan			GDP composition by sector		
	99/99		Agriculture	Industry	Services		09/05		Agriculture	Industry	Services		3-3		Agriculture	Industry	Services	
			25.4	24.9	49.7				20.8	24.3	54.9							
Labor force Occupation	Agriculture	44				Labor force Occupation	Agriculture	43				Labor force Occupation	Agriculture					3-3
	Industry	17					Industry	20.3					Industry					
	Services	39					Services	36.6					Services					
Panama			GDP composition by sector		Panama			GDP composition by sector		Panama			GDP composition by sector		
	95/99		Agriculture	Industry	Services		09/06		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			7	16.5	76.5				*	18.2	75.5							
Labor force Occupation	Agriculture	20.8				Labor force Occupation	Agriculture	*				Labor force Occupation	Agriculture					9-9
	Industry	18					Industry	18					Industry					
	Services	61.2					Services	67					Services					
Paraguay			GDP composition by sector		Paraguay			GDP composition by sector							
	**/99		Agriculture	Industry	Services		09/08		Agriculture	Industry	Services							
			28	21	51				22.3	18.1	59.6							
Labor force Occupation	Agriculture	45				Labor force Occupation	Agriculture	26.5										
	Industry	*					Industry	18.5										
	Services	*					Services	55										
Peru			GDP composition by sector		Peru			GDP composition by sector							
	**/99		Agriculture	Industry	Services		09/05		Agriculture	Industry	Services							
			15	42	43				8.2	25.1	54.5							
Labor force Occupation	Agriculture	*				Labor force Occupation	Agriculture	.7										
	Industry	*					Industry	23.8										
	Services	*					Services	75.5										
Philippines			GDP composition by sector		Philippines			GDP composition by sector							
	98/97		Agriculture	Industry	Services		09/09		Agriculture	Industry	Services							
			20	32	48				14.9	29.9	55.2							
Labor force Occupation	Agriculture	39.8				Labor force Occupation	Agriculture	34										
	Industry	*					Industry	15										
	Services	*					Services	51										
Poland			GDP composition by sector		Poland			GDP composition by sector		Poland			GDP composition by sector		
	99/99		Agriculture	Industry	Services		09/05		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			3.8	36.6	59.6				4.6	28.1	67.3							
Labor force Occupation	Agriculture	27.5				Labor force Occupation	Agriculture	17.4				Labor force Occupation	Agriculture					9-9
	Industry	22.1					Industry	29.2					Industry					
	Services	50.4					Services	53.4					Services					
Portugal			GDP composition by sector		Portugal			GDP composition by sector		Portugal			GDP composition by sector		
	99/99		Agriculture	Industry	Services		09/07		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			4	36	60				2.9	24.4	72.8							
Labor force Occupation	Agriculture	10				Labor force Occupation	Agriculture	10				Labor force Occupation	Agriculture					9-9
	Industry	30					Industry	30					Industry					
	Services	60					Services	60					Services					
Romania			GDP composition by sector		Romania			GDP composition by sector		Romania			GDP composition by sector		
	98/00		Agriculture	Industry	Services		09/06		Agriculture	Industry	Services		3-9		Agriculture	Industry	Services	
			13.9	32.6	53.5				12.4	35	52.6							
Labor force Occupation	Agriculture	40				Labor force Occupation	Agriculture	29.7				Labor force Occupation	Agriculture					3-9
	Industry	25					Industry	23.2					Industry					
	Services	35					Services	47.1					Services					

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Russia

	99/99		GDP composition by sector		
			Agriculture	Industry	Services
			7	34	59
Occupation / Labor force	Agriculture	15			
	Industry	30			
	Services	55			

Russia

	09/08		GDP composition by sector		
			Agriculture	Industry	Services
			5.2	37	57.9
Occupation / Labor force	Agriculture	10			
	Industry	31.9			
	Services	58.1			

Russia

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

9-9

Saint Lucia

	83/96		GDP composition by sector		
			Agriculture	Industry	Services
			10.7	32.3	57
Occupation / Labor force	Agriculture	43.4			
	Industry	17.7			
	Services	83.9			

Saint Lucia

	05/02		GDP composition by sector		
			Agriculture	Industry	Services
			5	15	80
Occupation / Labor force	Agriculture	21.7			
	Industry	24.7			
	Services	53.6			

Saint Lucia

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

9-9

Saint Vincent & Grenadines

	80/96		GDP composition by sector		
			Agriculture	Industry	Services
			10.6	17.5	71.9
Occupation / Labor force	Agriculture	26			
	Industry	17			
	Services	57			

Saint Vincent & Grenadines

	01/80		GDP composition by sector		
			Agriculture	Industry	Services
			10	26	64
Occupation / Labor force	Agriculture	26			
	Industry	17			
	Services	57			

Saint Vincent & Grenadines

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

9-9

San Marino

	98/**		GDP composition by sector		
			Agriculture	Industry	Services
			*	*	*
Occupation / Labor force	Agriculture	2			
	Industry	38			
	Services	60			

San Marino

	07/08		GDP composition by sector		
			Agriculture	Industry	Services
			.01	46.5	53.4
Occupation / Labor force	Agriculture	.01			
	Industry	37.7			
	Services	62.2			

Saudi Arabia

	99/98		GDP composition by sector		
			Agriculture	Industry	Services
			6	47	47
Occupation / Labor force	Agriculture	12			
	Industry	25			
	Services	63			

Saudi Arabia

	09/05		GDP composition by sector		
			Agriculture	Industry	Services
			3.2	60.4	36.4
Occupation / Labor force	Agriculture	6.7			
	Industry	21.4			
	Services	71.9			

Saudi Arabia

	9-8 (Neg)		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

9-8 (Neg)

Serbia

			GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

Serbia

	09/09		GDP composition by sector		
			Agriculture	Industry	Services
			12.7	23.5	63.8
Occupation / Labor force	Agriculture	23.9			
	Industry	20.5			
	Services	55.6			

Seychelles

	89/99		GDP composition by sector		
			Agriculture	Industry	Services
			3.1	26.3	70.6
Occupation / Labor force	Agriculture	10			
	Industry	19			
	Services	71			

Seychelles

	09/06		GDP composition by sector		
			Agriculture	Industry	Services
			15.5	28	56.5
Occupation / Labor force	Agriculture	3			
	Industry	23			
	Services	74			

Seychelles

	9-9		GDP composition by sector		
			Agriculture	Industry	Services
Occupation / Labor force	Agriculture				
	Industry				
	Services				

9-9

Singapore

	/		GDP composition by sector		
			Agriculture	Industry	Services
			*	30	70
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Singapore

	09/08		GDP composition by sector		
			Agriculture	Industry	Services
			0	26.8	73.2
Occupation / Labor force	Agriculture	0			
	Industry	23.8			
	Services	76.2			

Slovenia

	94/99		GDP composition by sector		
			Agriculture	Industry	Services
			4.5	29.3	66.2
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Slovenia

	09/09		GDP composition by sector		
			Agriculture	Industry	Services
			2	37	61
Occupation / Labor force	Agriculture	2.2			
	Industry	35			
	Services	62.8			

Soloman Islands

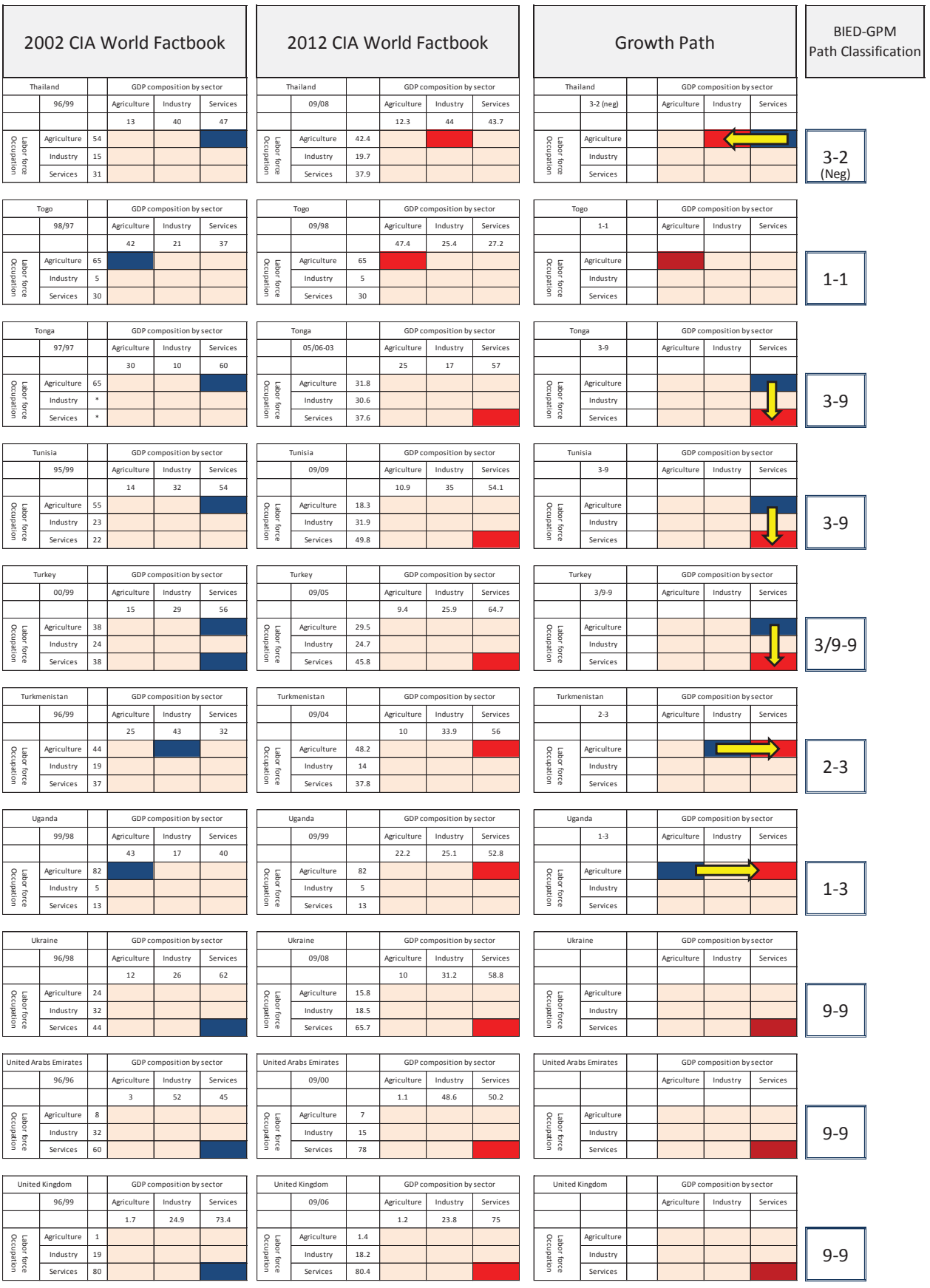
	**/95		GDP composition by sector		
			Agriculture	Industry	Services
			50	3.5	46.5
Occupation / Labor force	Agriculture	*			
	Industry	*			
	Services	*			

Soloman Islands

	05/00		GDP composition by sector		
			Agriculture	Industry	Services
			42	11	47
Occupation / Labor force	Agriculture	75			
	Industry	5			
	Services	20			

2002 CIA World Factbook						2012 CIA World Factbook						Growth Path						BIED-GPM Path Classification
South Africa			GDP composition by sector			South Africa			GDP composition by sector			South Africa			GDP composition by sector			
	99/99		Agriculture	Industry	Services		09/07		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			5	30	65				3.5	32.1	64.4							
Labor force Occupation	Agriculture	30				Labor force Occupation	Agriculture	9				Labor force Occupation	Agriculture					9-9
	Industry	25					Industry	26					Industry					
	Services	45					Services	65					Services					
Spain			GDP composition by sector			Spain			GDP composition by sector			Spain			GDP composition by sector			
	97/99		Agriculture	Industry	Services		09/09		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			4	31	65				3.4	26.9	69.6							
Labor force Occupation	Agriculture	8				Labor force Occupation	Agriculture	4.2				Labor force Occupation	Agriculture					9-9
	Industry	28					Industry	24					Industry					
	Services	64					Services	71.7					Services					
Sri Lanka			GDP composition by sector			Sri Lanka			GDP composition by sector			Sri Lanka			GDP composition by sector			
	98/98		Agriculture	Industry	Services		09/08		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			21	19	60				12.8	29.2	58							
Labor force Occupation	Agriculture	38				Labor force Occupation	Agriculture	32.7				Labor force Occupation	Agriculture					9-9
	Industry	17					Industry	26.3					Industry					
	Services	45					Services	41					Services					
Sudan			GDP composition by sector			Sudan			GDP composition by sector			Sudan			GDP composition by sector			
	96/98		Agriculture	Industry	Services		09/98		Agriculture	Industry	Services		3-3		Agriculture	Industry	Services	
			39	17	44				32.6	29.2	38.2							
Labor force Occupation	Agriculture	80				Labor force Occupation	Agriculture	80				Labor force Occupation	Agriculture					3-3
	Industry	10					Industry	7					Industry					
	Services	6					Services	13					Services					
Suriname			GDP composition by sector			Suriname			GDP composition by sector									
	**/98		Agriculture	Industry	Services		05/04		Agriculture	Industry	Services							
			13	22	65				10.8	24.4	64.8							
Labor force Occupation	Agriculture	*				Labor force Occupation	Agriculture	8										
	Industry	*					Industry	14										
	Services	*					Services	78										
Sweden			GDP composition by sector			Sweden			GDP composition by sector			Sweden			GDP composition by sector			
	00/99		Agriculture	Industry	Services		09/08		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			2.2	27.9	69.9				1.6	26.6	71.8							
Labor force Occupation	Agriculture	2				Labor force Occupation	Agriculture	1.1				Labor force Occupation	Agriculture					9-9
	Industry	24					Industry	28.2					Industry					
	Services	74					Services	70.70					Services					
Switzerland			GDP composition by sector			Switzerland			GDP composition by sector			Switzerland			GDP composition by sector			
	98/95		Agriculture	Industry	Services		06/09		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			2.8	31.1	66.1				1.2	27.5	71.2							
Labor force Occupation	Agriculture	4.6				Labor force Occupation	Agriculture	3.8				Labor force Occupation	Agriculture					9-9
	Industry	26.3					Industry	23.9					Industry					
	Services	69.1					Services	72.3					Services					
Syria			GDP composition by sector			Syria			GDP composition by sector			Syria			GDP composition by sector			
	96/97		Agriculture	Industry	Services		09/08		Agriculture	Industry	Services		3/9-9		Agriculture	Industry	Services	
			29	22	49				19	34	47							
Labor force Occupation	Agriculture	40				Labor force Occupation	Agriculture	17				Labor force Occupation	Agriculture					3\9-9
	Industry	20					Industry	16					Industry					
	Services	40					Services	67					Services					
Taiwan			GDP composition by sector			Taiwan			GDP composition by sector			Taiwan			GDP composition by sector			
	99/99		Agriculture	Industry	Services		09/08		Agriculture	Industry	Services		9-9		Agriculture	Industry	Services	
			3	33	64				1.6	29.2	69.2							
Labor force Occupation	Agriculture	8				Labor force Occupation	Agriculture	5.1				Labor force Occupation	Agriculture					9-9
	Industry	37					Industry	36.8					Industry					
	Services	55					Services	58					Services					
Tajikistan			GDP composition by sector			Tajikistan			GDP composition by sector			Tajikistan			GDP composition by sector			
	97/98		Agriculture	Industry	Services		09/09		Agriculture	Industry	Services		3-3		Agriculture	Industry	Services	
			19.8	18.1	62.1				18.9	21.9	59.2							
Labor force Occupation	Agriculture	50				Labor force Occupation	Agriculture	49.8				Labor force Occupation	Agriculture					3-3
	Industry	20					Industry	12.8					Industry					
	Services	30					Services	37.4					Services					

2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification



2002 CIA World Factbook	2012 CIA World Factbook	Growth Path	BIED-GPM Path Classification

United States			GDP composition by sector		
	00/99		Agriculture	Industry	Services
			2	18	80
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

United States			GDP composition by sector		
	09		Agriculture	Industry	Services
			1.2	21.9	76.9
Labor force Occupation	Agriculture				
	Industry				
	Services				

Uruguay			GDP composition by sector		
	**/99		Agriculture	Industry	Services
			10	28	62
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

Uruguay			GDP composition by sector		
	09/07		Agriculture	Industry	Services
			9.5	22.5	68
Labor force Occupation	Agriculture	9			
	Industry	15			
	Services	76			

Uzbekistan			GDP composition by sector		
	95/99		Agriculture	Industry	Services
			28	21	51
Labor force Occupation	Agriculture	44			
	Industry	20			
	Services	36			

Uzbekistan			GDP composition by sector		
	09/95		Agriculture	Industry	Services
			26.8	39.5	33.7
Labor force Occupation	Agriculture	44			
	Industry	20			
	Services	36			

Uzbekistan			GDP composition by sector		
	3-2 (neg)		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-2 (Neg)

Vanuatu			GDP composition by sector		
	95/99		Agriculture	Industry	Services
			20	9	71
Labor force Occupation	Agriculture	65			
	Industry	32			
	Services	3			

Vanuatu			GDP composition by sector		
	00/00		Agriculture	Industry	Services
			26	12	62
Labor force Occupation	Agriculture	65			
	Industry	5			
	Services	30			

Vanuatu			GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-3

Venezuela			GDP composition by sector		
	97/99		Agriculture	Industry	Services
			5	24	71
Labor force Occupation	Agriculture	13			
	Industry	23			
	Services	64			

Venezuela			GDP composition by sector		
	09/97		Agriculture	Industry	Services
			4	34.6	61.4
Labor force Occupation	Agriculture	13			
	Industry	23			
	Services	64			

Venezuela			GDP composition by sector		
			Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

Vietnam			GDP composition by sector		
	97/99		Agriculture	Industry	Services
			25	35	40
Labor force Occupation	Agriculture	67			
	Industry	*			
	Services	*			

Vietnam			GDP composition by sector		
	09/09		Agriculture	Industry	Services
			20.7	40.3	39.1
Labor force Occupation	Agriculture	51.8			
	Industry	15.4			
	Services	32.7			

Vietnam			GDP composition by sector		
	3-2 (neg)		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-2 (Neg)

Virgin Islands			GDP composition by sector		
	99/**		Agriculture	Industry	Services
			*	*	*
Labor force Occupation	Agriculture	1			
	Industry	20			
	Services	79			

Virgin Islands			GDP composition by sector		
	03/03		Agriculture	Industry	Services
			1	19	80
Labor force Occupation	Agriculture	1			
	Industry	19			
	Services	80			

West Bank			GDP composition by sector		
	96/99		Agriculture	Industry	Services
			9	28	63
Labor force Occupation	Agriculture	13			
	Industry	21			
	Services	66			

West Bank			GDP composition by sector		
	08/08		Agriculture	Industry	Services
			5	14	81
Labor force Occupation	Agriculture	12			
	Industry	23			
	Services	65			

West Bank			GDP composition by sector		
	9-9		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

9-9

World			GDP composition by sector		
	**/99		Agriculture	Industry	Services
			4	32	64
Labor force Occupation	Agriculture	*			
	Industry	*			
	Services	*			

World			GDP composition by sector		
	09/07		Agriculture	Industry	Services
			6	30.6	63.4
Labor force Occupation	Agriculture	37.5			
	Industry	22.1			
	Services	40.4			

Zambia			GDP composition by sector		
	**/99		Agriculture	Industry	Services
			18	27	55
Labor force Occupation	Agriculture	85			
	Industry	6			
	Services	9			

Zambia			GDP composition by sector		
	09/04		Agriculture	Industry	Services
			19.2	31.3	49.5
Labor force Occupation	Agriculture	85			
	Industry	6			
	Services	9			

Zambia			GDP composition by sector		
	3-3		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

3-3

2002 CIA World Factbook					
Zimbabwe			GDP composition by sector		
	96/97		Agriculture	Industry	Services
			28	32	40
Labor force Occupation	Agriculture	66			
	Industry	10			
	Services	24			

2012 CIA World Factbook					
Zimbabwe			GDP composition by sector		
	09/96		Agriculture	Industry	Services
			19.1	23.9	56.9
Labor force Occupation	Agriculture	66			
	Industry	10			
	Services	24			

Growth Path					
Zimbabwe			GDP composition by sector		
	3-3		Agriculture	Industry	Services
Labor force Occupation	Agriculture				
	Industry				
	Services				

BIED-GPM Path Classification
3-3

Appendix F: Axial Coding Results

Axial Coding Number	Axial Coding Results	BIED-GPM PATH
1	Afghanistan	1-3
2	Albania	1-3
3	Algeria	9-8 (neg)
4	Armenia	1-3
5	Australia	3-9
6	Austria	3-9
7	Azerbajian	9-8 (neg)
8	Bahamas	9-9
9	Bangladesh	3-3
10	Barbados	9-9
11	Belgium	9-9
12	Belize	3-9
13	Bhutan	1-3
14	Brazil	9-9
15	Bulgaria	9-9
16	Burma	1-1
17	Cameroon	1-3
18	Cayman Islands	3-9
19	Chile	9-8 (neg)
20	China	2-2
21	Colombia	9-9
22	Costa Rica	9-9
23	Cuba	9-9
24	Cyprus	9-9
25	Czech Republic	9-9
26	Denmark	9-9
27	Dominica	3-3
28	Dominican Republic	9-9
29	Ecuador	9-9
30	Egypt	9-9
31	El Salvador	9-9
32	Estonia	9-9
33	Ethiopia	1-1
34	France	9-9
35	French Polynesia	9-9
36	Gabon	2-2
37	Gambia, The	3-3
38	Georgia	3/9-3
39	Germany	9-9
40	Ghana	3-3

Axial Coding Number	Axial Coding Results	BIED-GPM PATH
41	Greece	9-9
42	Grenada	9-9
43	Guadeloupe	3-3
44	Haiti	3-3
45	Honduras	9-9
46	Hungary	9-9
47	Iceland	9-9
48	India	3-3
49	Indonesia	3-2 (neg)
50	Iran	9-9
51	Ireland	9-9
52	Italy	9-9
53	Jamaica	9-9
54	Japan	9-9
55	Jordan	9-9
56	Kazakhstan	9-9
57	Korea, South	9-9
58	Kyrgyzstan	1/3-3
59	Latvia	9-9
60	Liberia	1-1
61	Libya	8-8
62	Lithuania	9-9
63	Malta	9-9
64	Mauritania	3-2 (neg)
65	Mexico	9-9
66	Micronesia, Federated States of	9-9
67	Moldova	8-9
68	Morocco	3-3
69	Mozambique	1-3
70	Namibia	3-9
71	Nepal	1-3
72	Netherlands	9-9
73	Netherlands Antilles	9-9
74	New Caledonia	9-9
75	New Zealand	9-9
76	Nicaragua	9-9
77	Niger	3-3
78	Nigeria	1/2-2
79	Norway	9-9
80	Pakistan	3-3

Axial Coding Number	Axial Coding Results	BIED-GPM PATH
81	Panama	9-9
82	Poland	9-9
83	Portugal	9-9
84	Romania	3-9
85	Russia	9-9
86	Saint Lucia	9-9
87	Saint Vincent and the Grenadines	9-9
88	Saudi Arabia	9-8 (neg)
89	Seychelles	9-9
90	South Africa	9-9
91	Spain	9-9
92	Sri Lanka	9-9
93	Sudan	3-3
94	Sweden	9-9
95	Switzerland	9-9
96	Syria	3/9-9
97	Taiwan	9-9
98	Tajikistan	3-3
99	Thailand	3-2 (neg)
100	Togo	1-1
101	Tonga	3-9
102	Tunisia	3-9
103	Turkey	3/9-9
104	Turkmenistan	2-3
105	Uganda	1-3
106	Ukraine	9-9
107	United Arab Emirates	9-9
108	United Kingdom	9-9
109	Uzbekistan	3-2 (neg)
110	Vanuatu	3-3
111	Venezuela	9-9
112	Vietnam	3-2 (neg)
113	West Bank	9-9
114	Zambia	3-3
115	Zimbabwe	3-3

Appendix G: Axial Coding Analysis

Behavioral International Economic Development-Growth Path Model (BIED-GPM)
New Path Classification Chart

1-3	1/2-2	1/3-3	1-1	2-2	2-3	3-3	3/9-3 (neg)	3-2 (neg)	3/9-9	3-9	8-8	8-9	9-8 (neg)	9-9	
Afghanistan	Nigeria	Kyrgastan	Burma	China	Turkmenistan	Bangledesh	Georgia	Indonesia	Syria	Australia	Libya	Maldova	Algeria	Bahamas	South Korea
Albania			Ethiopia	Gabon		Dominic		Maritania	Turkey	Austria			Azerbajan	Barbados	Latvia
Armenia			Liberia			Morocco		Thailand		Belize			Chile	Belgium	Lithuania
Bhutan			Togo			India		Uzbekistan		Cayman Islands			Saudi Arabia	Brazil	Malta
Camaroon						Haiti		Vietnam		Nambia				Bulgaria	Mexico
Mozanbique						Guatemala				Romania				Columbia	Federated States of Micronesia
Nepal						Ghana				Tonga				Costa Rica	Netherlands
Uganda						Gambia				Tunisia				Cuba	Netherlands Antilles
						Niger								Cyprus	New Caledonia
						Pakistan								Czech Republic	New Zealand
						Sudan								Denmark	Nicaragua
						Tajikistan								Dominican Republic	Norway
						Vanuatu								Ecuador	Panama
						Zambia								Egypt	Poland
						Zimbabwa								El Salvador	Portugal
														Estonia	Russia
														France	St. Lucia
														French Polynesia	St Vincent & Grenadines
														Germany	Seychelles
														Greece	South Africa
														Grenada	Spain
														Honduras	Sri Lanka
														Hungary	Sweden
														Iran	Switzerland
														Iceland	Taiwan
														Italy	Ukraine
														Ireland	United Arab Emirates
														Jamaica	United Kingdom
														Japan	Venezuala
														Jordan	West Bank
														Kazikstan	

Appendix H: Theoretical Selective Coding Data

(BIED-GPM) Path Cluster Chart

I. Non Transistional (Steady) States					
1-1	2-2	3-3	8-8	9-9	
Burma	China	Bangledesh	Libya	Bahamas	South Korea
Ethiopia	Gabon	Dominic		Barbados	Latvia
Liberia		Morocco		Balgium	Lithuania
Togo		India		Brazil	Malta
		Haiti		Bulgaria	Mexico
		Guatemala		Columbia	Federated States of Micronesia
		Ghana		Costa Rica	Netherlands
		Gambia		Cuba	Netherlands Antilles
		Niger		Cyprus	New Caledonia
		Pakistan		Czech Republic	New Zealand
		Sudan		Denmark	Nicaragua
		Tajikistan		Dominican Republic	Norway
		Vantuatu		Ecuador	Panama
		Zambia		Egypt	Poland
		Zimbabwa		El Salvador	Portugal
				Estonia	Russia
				France	St. Lucia
				French Polynesia	St Vincent & Grenadines
				Germany	Seychelles
				Greece	South Africa
				Grenada	Spain
				Honduras	Sri Lanka
				Hungary	Sweden
				Iran	Switzerland
				Iceland	Taiwan
				Italy	Ukraine
				Ireland	United Arab Emirates
				Jamaica	United Kingdom
				Japan	Venezuala
				Jordan	West Bank
				Kazikstan	

II. Positive Transition States			
1-3	2-3	3-9	8-9
Afghanistan	Turkmenistan	Australia	Maldova
Albania		Austria	
Armenia		Belize	
Bhutan		Cayman Islands	
Camaroon		Nambia	
Mozanbique		Romania	
Nepal		Tonga	
Uganda		Tunisia	

III. Split Transitional States		
1/2-2	1/3-3	3/9-9
Nigeria	Kyrgastan	Syria
		Turkey

IV. Negative Transitional States		
3/9-3 (neg)	3-2 (neg)	9-8 (neg)
Georgia	Indonesia	Algeria
	Maritania	Azerbajan
	Thailand	Chile
	Uzbekistan	Saudi Arabia
	Vietnam	

Curriculum Vitae

KENNETH T. DAVIS

U.S. Embassy, Kabul, Afghanistan

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**** Development Advisor * Defense Advisor * Diplomacy/Political Advisor****

Kenneth is an Executive Professional with diverse international experience, including a high profile Foreign Service Advisor position in Afghanistan. He has strategic, operational, & tactical experience in all three national security strategy priorities (Development, Diplomacy, & Defense) and is currently promoting United States international trade exporting.

PROFESSIONAL EXPERIENCE

UNITED STATES TREASURY DEPARTMENT 2014 – PRESENT
WASHINGTON, D.C.
Budget Examiner in the Office of Performance Budgeting

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID), 2010 – 2013
U.S. EMBASSY KABUL, Afghanistan
Foreign Service Officer FP 02 (04 backstop-Financial Management)
Finance Senior Advisor detailed to NATO Training Mission-Afghanistan (NTM-A)
Afghan Public Protection Force (APPF) Advisory Group (AAG)

THE UNITED STATES MARINE CORPS (USMC)
2001– 2009
Financial Management Officer, Okinawa, Japan
Financial Management School, Academics Officer (school administrator)
Combat Tour, S1, Operation Al Faher, the Battle for Fallujah, Iraq

Ashford University 2009 – 2013
Adjunct Faculty and Associate Professor

EDUCATION

Philosophy Doctorate in Public Administration & Public Policy (PhD) 2014
WALDEN UNIVERSITY, MINNEAPOLIS, MINNESOTA 55401, with honors and research in Behavioral International Economic Development Growth Path Models (BIED-GPM)

Master's in Public Policy (MPA), 2006
University of Oklahoma, Norman, Oklahoma 73019
Public Policy (with research in Chinese Energy Policy)

Bachelor of Science (BS), 1996
Western Michigan University, Kalamazoo, Michigan 49008
Asian Political Structures

FELLOWSHIPS

Asia Pacific Center for Security Studies (APCSS), WAIKIKI, HAWAII 2009

Presidential Management Fellow (PMF) Finalist 2013

CERTIFICATIONS, TRAINING, & AWARDS

DEPARTMENT OF STATE (DOS) ***DIPLOMACY***

- Coordinator for Reconstruction & Stabilization (CRS) Whole of Government: Level One Strategic Planning (National Defense University-NDU)
- Foundations of Interagency Reconstruction and Stabilization Operations-RS500 (FSI)
- State Department Foreign Affairs Counter Threat (FACT) (FSI)
- State Department – Afghanistan Familiarization (FSI)

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)
DEVELOPMENT

- USAID Programming Foreign Assistance
- USAID Economic Growth
- USAID Title II
- USAID Food for Peace Programing

UNITED STATES MARINE CORPS (USMC) (DOD) ***DEFENSE***

- Command and Staff College (CSC), Expeditionary Warfare School (EWS)
- Financial Management School (FMS), Curriculum Administrator (KHX)
- Navy and Marine Corps Commendation Medal (2nd Award), Combat Action Ribbon, Sea Service Deployment Ribbon (4th Award), Global War on Terrorism Service Medal, Global War on Terrorism Expeditionary Medal, National Defense Service Medal, Navy Meritorious Unit