



University of Kentucky
UKnowledge

Theses and Dissertations--Public Policy and
Administration

James W. Martin School of Public Policy and
Administration

2019

THE EFFECTS OF NATURAL RESOURCE DEPENDENCE AND DEMOCRACY ON THE INCREMENTAL BUDGETING THEORY AND PUNCTUATED EQUILIBRIUM WITHIN A BUDGETARY CONTEXT

Barrak Ghanim Algharabali

University of Kentucky, barrak.algharabally@gmail.com

Digital Object Identifier: <https://doi.org/10.13023/etd.2019.050>

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Recommended Citation

Algharabali, Barrak Ghanim, "THE EFFECTS OF NATURAL RESOURCE DEPENDENCE AND DEMOCRACY ON THE INCREMENTAL BUDGETING THEORY AND PUNCTUATED EQUILIBRIUM WITHIN A BUDGETARY CONTEXT" (2019). *Theses and Dissertations--Public Policy and Administration*. 30.
https://uknowledge.uky.edu/msppa_etds/30

This Doctoral Dissertation is brought to you for free and open access by the James W. Martin School of Public Policy and Administration at UKnowledge. It has been accepted for inclusion in Theses and Dissertations--Public Policy and Administration by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

STUDENT AGREEMENT:

I represent that my thesis or dissertation and abstract are my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained needed written permission statement(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine) which will be submitted to UKnowledge as Additional File.

I hereby grant to The University of Kentucky and its agents the irrevocable, non-exclusive, and royalty-free license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless an embargo applies.

I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's thesis including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Barrak Ghanim Algharabali, Student

Dr. Dwight Denison, Major Professor

Dr. Eugenia Toma, Director of Graduate Studies

THE EFFECTS OF NATURAL RESOURCE DEPENDENCE AND DEMOCRACY ON
THE INCREMENTAL BUDGETING THEORY AND PUNCTUATED EQUILIBRIUM
WITHIN A BUDGETARY CONTEXT

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
Graduate School at the University of Kentucky

By

Barrak Ghanim Algharabali

Lexington, Kentucky

Co- Directors: Dr. Dwight Denison, Professor of Public and Nonprofit Finance

and Dr. Rajeev Darolia, Associate Professor of Public Policy

Lexington, Kentucky

Copyright © Barrak Ghanim Algharabali 2019

ABSTRACT OF DISSERTATION

THE EFFECTS OF NATURAL RESOURCE DEPENDENCE AND DEMOCRACY ON THE INCREMENTAL BUDGETING THEORY AND PUNCTUATED EQUILIBRIUM WITHIN A BUDGETARY CONTEXT

I contribute to the literature by providing additional factors that could affect the incremental budgeting theory and punctuated equilibrium theory (PET) within a budgetary context. Because of the fluctuation in the price of natural resources, I argue that dependence on natural resources could lead to less stable budgets than ones not dependent on natural resources. I also argue that democracy is another source that leads to stability in the budget, relative to countries that are not democratic. I theorize that countries with no democracy and heavy dependence on natural resources will have budgets with more volatility than the rest of the countries. Most of the extant literature focuses on countries that are democratic and not dependent on natural resources. My theory expects these to have the most stable budgets. I extend the literature by comparing the Kuwaiti National Budget (dependent on natural resources and not democratic) to the U.S. Federal Budget (democratic and not dependent on natural resources). The results of all tests are consistent with the expectations of the theory that countries with no democracy and heavy dependence on natural resources have less incremental budgets than nations that are democratic and not dependent on natural resources.

KEYWORDS: *Budgeting, Incremental Budgeting, Punctuated Equilibrium, Natural Resource Dependence, Public Policy.*

Barrak Ghanim Algharabali

4/10/2019

Date

THE EFFECTS OF NATURAL RESOURCE DEPENDENCE AND DEMOCRACY ON
THE INCREMENTAL BUDGETING THEORY AND PUNCTUATED EQUILIBRIUM
WITHIN A BUDGETARY CONTEXT

By

Barrak Ghanim Algharabali

Dwight Denison, Ph.D.

Co-Director of Dissertation

Rajeev Darolia, Ph.D.

Co-Director of Dissertation

Eugenia Toma, Ph.D.

Director of Graduate Studies

4/10/2019

TO THOSE WHO MADE THIS MILESTONE OF AN ACHIEVEMENT POSSIBLE:

*MY MOTHER, WHO DEPARTED THIS LIFE TO MOVE ON TO A BETTER ONE
DURING MY EDUCATIONAL CAREER;*

*MY FATHER, WHOSE CONSTANT PUSHING OF ME TO BE THE BEST THAT I CAN
BE ALLOWED ME TO REACH THIS POINT TODAY;*

*MY WIFE, MY NUMBER ONE SUPPORTER AND MOTIVATOR DURING THE
GRUELING JOURNEY OF MY PH.D.;*

*MY SON GHANIM, WHO BROUGHT MORE EXCITEMENT AND JOY TO OUR
WORLD WITH HIS BIRTH DURING MY 3RD YEAR IN THE PH.D. PROGRAM;*

*AND FINALLY, ALL MY INSTRUCTORS, FAMILY MEMBERS, AND FRIENDS WHOSE
SUPPORT NEVER WAVERED TO KEEP ME GOING THROUGHOUT THE WAY.*

ACKNOWLEDGEMENTS

Writing a dissertation is not an easy task. Anyone who has been in such a position knows this. However, some people in our lives can have a way of turning certain clouds into sunshine, giving any negative situation a positive spin. It is those people who make the days leading up to the completion of the dissertation much more bearable.

I would first like to offer my genuine appreciations and thanks to my wife, Basma Alwuhaib, for her enduring support throughout my Ph.D. journey. I can write a book on how she was always there for me and not even that would give her enough credit. She was the wall that kept me standing whenever I was about to fall; she was my source of motivation that kept me going whenever I was close to giving up; she was my companion that never made me feel away from my home. Basma, I do not think I would have made it without you.

I also offer my appreciation to my dissertation co-director, Dr. Dwight Denison, for the ongoing support. Dr. Denison was more than a co-chair of the committee; his care for me was like that of a father to his son; he constantly made sure that I fulfilled everything I had set my mind to fulfill and cared to see that all my needs were met in terms of academia and beyond.

I also offer my warm thanks to my dissertation co-director, Dr. Raj Darolia, whose helpful feedback and comments on every document he reviewed were invaluable to me. Incorporating Dr. Darolia's comments and feedback transformed the work significantly and brought it to a different level. I would not have been able to achieve this on my own. I feel a sense of pride whenever I read my dissertation after incorporating the feedback I received. Words could not give enough credit to Dr. Darolia's and Dr. Denison's care and support.

Furthermore, I offer my honest gratitude to J. S. Butler. I do not know where to begin in thanking him. Since my first day of math camp at the Martin School of Public Policy and Administration, and throughout my time in the Ph.D. program, J. S. was available to me and all other students, helping and supporting us in anything we needed. His office was always open to students to resolve any econometrics or mathematical issues we were facing. Never did I knock on his door to find him telling me he was busy—even though he probably was most of the time! His constant checking in on me to make sure I was okay and that I stayed on track with my work was a huge source of inspiration to keep me moving forward.

Moreover, I would also like to offer my sincere gratitude to Dr. Jenny Minier, who really helped me fall in love with economics. I had never felt that I enjoyed economics, (in fact, I disliked economics!) until I took her class. She simplified complicated concepts and taught us with 100% dedication. This changed everything for me in regards to my view of economics. She deals with her students not only like a

teacher, but also like an amazing mother who cares for everyone around her, providing ongoing support that helps to boost one's own confidence and motivation.

To all my dissertation committee members, I will forever be indebted to every single one of you.

I would further like to extend my warm thanks to all my family and friends in the United States and in Kuwait. Last, but not least, I offer my sincere appreciation to my Martin School family, including: Dr. Eugenia Toma, Dr. Edward Jennings, Dr. Merl Hackbart, Dr. Ron Zimmer, Dr. Philip Berger, Dr. David Agrawal, Dr. Nicolai Petrovsky, and all the rest of the faculty, staff members, and colleagues that helped throughout this journey.

TABLE OF CONTENTS

Acknowledgements.....	iii
List of Tables	vii
List of Figures.....	ix
Chapter One: Introduction	1
Chapter Two: Literature Review of Incremental Budgeting and Punctuated Equilibrium	6
Incremental Budgeting Literature	6
Punctuated Equilibrium Theory (PET)	15
Conditions Leading to Stability in Both Incrementalism and PET.....	27
Chapter Three: Comparison of Kuwait’s and The United States’ Budgetary Systems	29
Classification of Revenues and Expenses in both Budgets.....	29
Taxation.....	32
Taxation in Kuwait	33
Taxation at the U.S. Federal Government Level.....	39
A General Overview of both Budgets.....	41
Kuwait’s budget for Fiscal Year 2015-16	41
The U.S. Federal Budget for Fiscal Year 2014-2015	45
Budgetary Cycles	48
Kuwaiti Budgetary Cycle	49
Budgetary Cycle in Preparation of the U.S. Federal Budget.....	55
Chapter Four: Hypothesis Development and Contribution	60
Hypothesis Development	60
Contributions.....	68
Chapter Five: Data and Research Methodology	79
Data	79
Testing Methodology	81
Test One.....	81
Test Two.....	82
Test Three.....	83
Test Four.....	83
Test Five	85

Chapter Six: Results.....	87
Chapter Seven: Discussion and Conclusion	109
Overview	109
Future Research Opportunities.....	113
Appendix.....	115
References.....	117
Vita.....	124

LIST OF TABLES

Table 3.1, First Component of the Monthly Allowance Based on Level of Education....	35
Table 3.2, Second Component of the Monthly Allowance Based on Specific Features ..	36
Table 3.3, Public Sector Employment as a Share of Total Employment of Kuwaiti Citizens	36
Table 3.4, Kuwait’s revenues in FY 2015-16	42
Table 3.5, Kuwait’s Expenses in FY 2015-16	44
Table 3.6, Actual Revenues Generated by the U.S. Federal Government in FY 2014-15	46
Table 3.7, Actual Expenses of the Total U.S.Federal government in FY 2014-15	47
Table 3.8, Preparation and Approval Process of the Kuwaiti Budget	55
Table 3.9, The U.S. Federal budgetary process	59
Table 4.1, The most recent data available for the 2016 Polity Scores.....	64
Table 4.2, Natural resource revenues as a percentage of GDP in countries that have been studied thus far in the literature relative to Kuwait.....	69
Table 4.3, GCC countries’ reliance on natural resources and democracy scores	70
Table 4.4, Sample of countries that are nondemocratic and rely on natural resources....	71
Table 4.5, Matrix representing various features of countries that have been studied thus far in the PET literature.....	72
Table 4.6, Sample of countries that are nondemocratic and not reliant on natural resources	74
Table 4.7, Sample of countries that are democratic and rely on natural resources.....	74
Table 4.8, Matrix categorizing some countries based on democratic status and dependency on natural resources.	75
Table 4.9, Matrix representing the expectations of the theory for each group	76
Table 4.10, Budgetary incrementalism within the four different groups.....	78
Table 6.1, U.S. and Kuwaiti budgets’ percentage changes for the pooled variable of all subcategories of expenditures	89
Table 6.2, Descriptive statistics of the percentage changes of total expenditures in the U.S. Federal Budget and the Kuwaiti National Budget:.....	91
Table 6.3, Descriptive statistics of the percentage changes of total revenues in the U.S. Federal Budget and the Kuwaiti National Budget	92
Table 6.4, The findings of Test Two (the cutoff test)	94
Table 6.5, The cutoff test using 10% as the cutoff to distinguish among incremental and non-incremental changes.	95
Table 6.6, The cutoff test using 12% as the cutoff to distinguish among incremental and non-incremental changes.	96
Table 6.7, The cutoff test using 15% as the cutoff to distinguish among incremental and non-incremental changes.	97
Table 6.8, The cutoff test using 20% as the cutoff to distinguish among incremental and non-incremental changes.	98

Table 6.9, The cutoff test using 25% as the cutoff to distinguish among incremental and non-incremental changes.	99
Table 6.10, Lag regression test:	101
Table 6.11, Kurtosis and L-Kurtosis Tests:	102
Table A.1, The mean percentage change of both budgets for the full data and trimmed data.....	115
Table A.2, The median percentage change of both budgets for the full data and trimmed data.....	115
Table A.3, The standard deviation of the percentage change of both budgets for the full data and trimmed data.....	116

LIST OF FIGURES

Figure 3.1, Kuwait's Expenses in FY 2015-16.....	44
Figure 3.2, U.S. Federal Revenues in FY 2014-15.....	46
Figure 3.3, U.S. Federal Expenses in FY 2014-15.....	48
Figure 4.1, Fluctuations in the Kuwaiti National Budget.....	67
Figure 6.1, The distribution of the percentage changes in the U.S. Federal Budget:	104
Figure 6.2, The distribution of the percentage changes in the Kuwaiti Budget:	105
Figure 6.3, A Q-Q plot of the percentage changes of the U.S. Federal Budget:	106
Figure 6.4, A Q-Q plot of the percentage changes of the Kuwaiti Budget.....	106
Figure 6.5, A K-Density plot of the percentage changes of the U.S. Budget.....	107
Figure 6.6, A K-Density plot of the percentage changes of the Kuwaiti Budget.	107

CHAPTER ONE: INTRODUCTION

This research project focuses on filling some gaps in the literature by considering additional factors that could affect the incremental budgeting theory and the punctuated equilibrium theory (PET) within a budgetary context. The two factors that I focus on in this dissertation are: (a) dependence on natural resources and (b) democracy. I argue that higher dependence on natural resources and the lack of democratic institutions could lead to less stable budgets. All papers in the literature that assessed PET from a budgetary side focused on developed, democratic countries. My theory in this dissertation goes beyond that and considers what PET might look like in other regions where democracy does not exist or in economies that are highly dependent on natural resources. In one of the sections in this dissertation, I test the theory on the Kuwaiti budget and argue that it is driven less by incremental changes and more by punctuations/shocks, potentially of higher magnitudes when compared to the American federal budget. I further argue that this is due to the lack of democracy in the Kuwaiti political system and to the high reliance on natural resources in the Kuwaiti economy. A study of PET in Kuwait is another contribution to the literature, as papers in the literature have not covered any country with political and economic characteristics similar to Kuwait.

Several explanations assist in understanding how the budgetary process works. For example, Aaron Wildavsky is known for incremental budgeting, a core theory that helps explain the budgetary process (Schick, 1983). Another well-known theory in the budgeting literature is the punctuated equilibrium framework, which is very similar to the incremental budgeting theory. White (1994) indicates that incremental budgeting builds on the previous year's budget. In other words, last year's budget marks the baseline for

the next year's budget, and therefore only the deviations from last year's budget need to be justified. Incremental budgeting makes the process simple for politicians, which is why it is a realistic budgetary option for decision makers.

On the other hand, PET indicates that policy making in general (including budgetary policy) is a stable process with incremental changes most of the time. However, changes in leadership or agenda cause shocks and punctuations to periodically interrupt this incremental process. Although PET primarily started within the policy process literature, budgeting authors found it interesting and realistic, spurring them to adopt PET as a budgeting theory as well. PET is very similar to incremental budgeting with one notable exception: PET provides a more realistic framework, allowing a margin for shocks and penetrations within the system.

This research project provides more elements that could influence the incremental budgeting theory and PET within a budgetary context beyond Western democracies. My theory in this dissertation argues that dependence on natural resources could lead to less stable budgets, because fluctuations in the price of the natural resources that the country relies on could lead to fluctuation in the budget itself. The other argument of the theory is that democracy is one of the sources that leads to more stability in the budget. This is because the level of accountability and availability of tools for the legislators in democratic systems assist in avoiding big changes or shocks in the budget. Thus, my theory categorizes countries into four different categories: (a) countries that are democratic and not dependent on natural resources, (b) countries that are not democratic and not dependent on natural resources, (c) countries that are democratic and dependent on natural resources, and (d) countries that are not democratic and dependent on natural

resources. I argue that the fourth group would have the least stable budget given that they are non-democratic countries that depend on natural resources. The current papers in the literature focus on only one side of the theory, namely, countries that are democratic and not dependent on natural resources. The expectation of the theory is that those countries would have the most stable budgets. Chapter Four presents this theory in detail.

My work in this dissertation further compares the Kuwaiti National Budget to the American federal budget. This comparison is vital, as I am comparing a country that is not democratic and dependent on natural resources to a country that is democratic and not dependent on natural resources. I chose Kuwait because of its distinct nature and political system. Furthermore, studies of Kuwait are not present within the current literature, and adding one could provide new insights. I obtained budgetary data about the country to assess whether the Kuwaiti budget would provide results similar to the countries that the literature has studied thus far. I chose the U.S. Federal Budget as a comparison benchmark, as most studies in the incremental budgeting and PET literatures are based on the United States (whether at the federal level or the local level).

My new theory in this dissertation (Chapter Four) is the main contribution to the literature, as it sheds light on factors that the literature has not yet covered. These newly included factors seem to show that the existing findings within the PET literature might not apply to every country. Testing incrementalism and PET on the Kuwaiti budgetary system is another contribution to the literature, as the context within the Kuwaiti system significantly differs from what the literature has covered thus far. The main difference in the Kuwaiti system is the fact that the Kuwaiti system is not a democratic one. This is important because the checks and balances of a democratic system lead to fierce

competition among decision makers, which could lead to incrementalism. The second significant difference is due to the Kuwaiti budget being heavily reliant on oil revenue as nearly the sole source of income. Unlike Kuwait, all countries that the literature has covered so far are countries that have diversified budgets. Testing PET and incrementalism on Kuwait would help answer questions pertaining to whether these theories have any implication in countries that are not democratic or whether a high reliance on one source of income might change the implications of these theories.

Building on the foundations of incremental budgeting and PET, and upon the theory presented within this research, I argue that the Kuwaiti National Budget is going to be less incremental than the American budget while also having higher rates of punctuation. This suggests that the annual percentage change in the Kuwaiti budget could be much higher than the American budget. It also suggests that the Kuwaiti budget will have more punctuations and budgetary shocks.

The findings of all tests included in this research support the theory that the Kuwaiti National Budget is a less stable budget than the U.S. Federal Budget. The descriptive tests (means, medians, and standard deviations) show that the U.S. Federal Budget is more incremental than the Kuwaiti budget. The cutoff tests that distinguish whether a change is incremental or not also show that the U.S. Federal Budget is more incremental than the Kuwaiti National Budget. The lag regression also confirms that there is higher stability in the U.S. Federal Budget than the Kuwaiti National Budget. The kurtosis and L-kurtosis also show that the Kuwaiti National Budget has bigger tails, which indicates that the Kuwaiti budget has more punctuations/shocks than the U.S. Federal Budget. All normality tests also confirm that the distribution of the U.S. Federal

Budget is closer than the Kuwaiti budget to a normal distribution, which indicates that the U.S. budget is more incremental than the Kuwaiti budget.

The monograph is organized as follows: Chapter Two presents two famous theories in policy dynamics and budgeting, namely incrementalism and PET based on a thorough literature review of the theories. Chapter Three compares the American budgetary cycle to the Kuwaiti budgetary cycle in detail. The main purpose of investigating the differences in the two budgetary cycles is that it has helped to provide the foundations that support the hypothesis of this research. Chapter Four presents my theory thoroughly, and as such is the main contribution of this dissertation. Chapter Five provides the systematic methodology in which I intend to take a step further by looking at PET within the Kuwaiti system. Chapter Six provides the results of the PET tests comparing the Kuwaiti system to the U.S. Federal system. Chapter Seven concludes the research by summarizing the main findings of the study and the contributions to the literature along with a general discussion and future research opportunities.

CHAPTER TWO: LITERATURE REVIEW OF INCREMENTAL BUDGETING AND PUNCTUATED EQUILIBRIUM

Incremental Budgeting Literature

The attention towards the theory of incremental budgeting, or incrementalism, increased after the writings of Aaron Wildavsky (Schick, 1983). White (1994) has provided a compilation of what the term incremental budgeting means. Incrementalism is the idea of a budgetary process using last year's budget as the baseline, requiring justification only for new modifications from last year's budget (Mikesell, 2013; Wildavsky, 1997). In other words, any money spent on a program in accordance with the previous year's budget does not need to be justified again for the current year's budget. This makes it clear that incremental budgeting is not a utopian concept or a way to achieve more efficiency or optimization of resources. However, that does not exclude incrementalism as a useful budgetary theory to understand budgeting.

Many budgetary theories always try to answer one fundamental question: "On what basis shall it be decided to allocate x dollars to activity A instead of Activity B?" (Key, 1940, p. 1138). This is a resource allocation question, and incremental budgeting does not provide a good answer for it because incremental budgeting relies on last year's numbers which are not necessarily based on the best allocation of resources. This is why White (1994) stated that incrementalism is not perfect, and it does not ensure that you are doing the right thing. However, it is a very useful budgetary method because it is a realistic option for politicians, and it assists them in reducing errors. White (1994) also stated that we can see the usefulness and importance of incrementalism when we consider how most other budgetary theories that tried to rationalize the budgetary decisions have

all failed. Examples of theories that try to rationalize budgetary decisions include: (a) zero-based budgeting, (b) performance budgeting, and (c) planning, programming and budgeting. Most of them failed because they face challenges such as the need for investments in human capital and information systems, the requirement of having input from all stakeholders who are part of the process, and the demand for collaboration from all levels of government (McNab & Melese, 2003).

The issue with many of the rational budgetary programs is that it is not easy for many of them to account for all political constraints that prevent decision makers from taking the best course of action. For instance, Lauth (2014) has provided a good overview of ZBB, which originated during the Carter administration in the state of Georgia. The idea of ZBB is to justify every single dollar within the whole budget annually. In order to achieve that in Georgia, the politicians had to increase the use of information to make decisions. The main problem with ZBB is that it makes the budgetary process unending (Pyhrr, 2003). Thus, politicians started to gradually ignore the requirement of using information, giving less attention to ZBB and eventually allowing it to diminish away completely. White (1994) also claimed that ZBB is not very useful because it ignores the past.

The ideas of incremental budgeting also trace back to a famous paper by Charles E. Lindblom, "The Science of Muddling Through," (Lindblom, 1959). Lindblom argued that because of the bounded rationality of decisions makers and the ongoing politics in the U.S. system, most changes would end up being incremental. He argued that decision makers will always prefer new policies that are not very different from the current ones. He also argued that decision makers always try to simplify the decision-making process,

so they look at a limited number of alternatives to current policies. Additionally, Lindblom claimed that most political changes occur incrementally because of the democratic nature that leads to competition among different parties, which can then lead to ongoing negotiations and compromises. Therefore, the nature of democratic systems and their checks and balances support incrementalism.

The work of Lindblom was about the decision-making process in general, so it was not specifically about governmental budgeting. Additionally, the ideas of Lindblom were theoretical and without empirical support. Davis, Dempster, and Wildavsky (1966) authored one of the first papers that connected the ideas of incrementalism into governmental budgeting within an empirical framework. The findings of the paper evidenced politicians and decision makers preferring simple budgetary methods to complex ones. The paper also found that most changes within the American federal budget are incremental in nature. Following the path and ideas that Lindblom listed, Davis, Dempster, and Wildavsky argued that the main reason behind incrementalism could be the fact that decision makers have bounded rationality and limited time. Another reason could be the ongoing negotiations and politics wherein each party tries to defend its own interests and agendas (Natchez & Bupp, 1973).

Berry (1990) highlighted a very important issue within the literature of incremental budgeting that existed at that time. He pointed out that there were more than 12 different definitions for the word “incrementalism” and argued that they did not all logically correlate with each other. Reviewing those definitions is beyond the scope of this research, but the point remains that the meaning of incrementalism was not 100% clear to all scholars even as late as 1990. The goal of Berry (1990) was to allow scholars

to understand what was meant by incrementalism so that they could test it properly. The author concluded the paper by providing the best techniques at that time that would allow a scholar to assess how to test for incrementalism within the budget.

The idea of citing bounded rationality as one of the main reasons why we have incremental budgets also relates to the work of Herbert Simon (1985) and his arguments about unbounded rationality being unrealistic. Simon stated that individuals always look for tools and resources that allow them to accomplish their tasks appropriately. Simon saw agents with bounded rationality for several reasons. First, the complex nature of the environment in which agents function amidst conflicting goals and rigid hierarchies makes it difficult for these agents to behave rationally. Second, scarce resources and time lead to agents having insufficient time and capacity for proper functioning. Third, the mental proficiencies of the decision makers do not allow them to comprehend everything going on around them. A good example of the cognitive limits follows: suppose that you are a member of Congress and you see millions of dollars in the federal budget allocated to funding academic research. How would you decide if these funds are too much or too little? Such hard questions face the politicians who might not have any background in researching scientific ways to optimize the budget. Simon argued that all of these reasons combined explain the reasons why agents have bounded rationality.

Baumgartner, Jones, and Mortensen (2014) also claimed that perceiving the rationality of agents as bounded is realistic because decision makers are subject to intellectual limits that push them to look for side help and aids. One of the main aids that humans use is a reliance on routine, which assists in avoiding complexity and unpredictability. This reliance on routine significantly contributes to the incremental

nature of the budget. Baumgartner et al. (2014) also argued that, due to cognitive limits and complex environment, agents would end up avoiding problems and delaying taking actions rather than solving the problems, which could in turn lead to the stable nature that incrementalism predicts.

Wildavsky (1964) also provided ideas that correlate with the works of Lindblom and Simon. Wildavsky believed in incrementalism. Even though incremental budgeting traces back to older scholars, scholars today usually associate the theory with Wildavsky because he was the first person to test it empirically (Citi, 2013). He provided a model that used Y_t (where Y could be expenditure at time t) as the dependent variable and Y_{t-1} as the independent variable. He assumed that the value of Y_t depends on the lag plus an error term. His model is: $Y_t = a + B Y_{t-1} + e_t$

The “a” in the equation stands for the constant term, with “B” as the slope of the lag variable (usually positive because most budgets tend to increase steadily). One can test how this year’s budget relates to last year’s by assessing the value of R^2 . The higher the R^2 , the more incremental the budget or the budget line item becomes in this classical way of testing incrementalism.

Wildavsky, along with Dempster and Davis, published a paper that used the incrementalism equation to assess the budgets of 116 U.S. Federal agencies between 1947 and 1963. They assessed the incremental changes in the agencies’ budgetary requests and the congressional appropriations. The main findings of their paper correlate with incrementalism. They also acknowledged that some changes were not incremental, though they stated that these should be considered exceptions (Davis et al., 1966). These

exceptions could represent the punctuations or shocks that the punctuated equilibrium theory talks about.

The same three authors published another paper some years later that also tested incrementalism of the American budget. However, they decided this time to include some control variables in their model in order to allow them to identify variables that could affect incrementalism in the budget. They controlled for 18 different political, economic, and social variables (e.g., change in leadership, economic downturns, the congressional majority, etc.) that they assumed were exogenous variables. They examined the budgets of 53 agencies. The main finding of this paper also confirmed that most changes in the American budgets appear to be incremental (Davis, Dempster, & Wildavsky, 1974). They also found that one of the main variables that affect the size of the budget is the political orientation of the government leadership (whether it is Democratic or Republican). Democrats tended to have more spending than Republicans.

Cowart, Hansen, and Brofoss (1975) authored another paper related to incremental budgeting that showed support for the theory generally. The authors focused on the case of Norway. They argued that it is hard to generalize the findings that support incrementalism applying to all countries, as most papers in the literature at that time focused on the United States. The authors argued that the U.S. system is unique in that it is a presidential system, which is different from most European countries that follow a parliamentary system. The authors used data from the municipal government of Oslo that covered approximately 19 years. The authors almost mimicked the research methods that Davis et al. (1966) used when they tested incrementalism in the United States. The results of their work showed support for incrementalism within the Norway context.

Danziger (1976) contributed to the literature by assessing if the incremental budgeting theory holds true in the United Kingdom. Danziger also worked on trying to find better ways to test the degree to which an incremental a budget is incremental. The paper's data are based on British municipal governments at the county level. The author included all counties having a total population of 150,000 or higher. He used the expenditure data of those counties from 1958 to 1969 and performed approximately 150 interviews with decision makers for those counties. These interviews helped him in the theoretical part in order to understand how decision makers make those budgetary decisions. One of the ways this paper tested incrementalism is by calculating this formula: $\Delta Allocation = Allocation_t / Allocation_{t-1}$

Danziger used calculated cutoffs to distinguish between whether a budget's change was *incremental* ($\Delta Allocation$ is from 1.05 to 1.15), *relatively incremental* ($\Delta Allocation$ is from 1.16 to 1.30), or *non-incremental* ($\Delta Allocation$ greater than 1.30 or smaller than 0.9). The findings indicated almost 70% of all changes fell within the incremental boundaries, and most of the rest remained within the relatively incremental boundaries. Very few cases were outside these boundaries, falling into the non-incremental regions. Danziger also ran lag regression tests using ordinary least squared to see how big the R^2 was going to be. The findings of this section showed that most R^2 values the paper reported were above 0.9, and many of them were around 0.99, showing strong support for incrementalism. Danziger also ran several additional tests to make sure that the findings were accurate. Most of the tests the author conducted support incrementalism.

Bunce and Echols III (1978) contributed to the literature by going beyond developed, democratic countries. Several scholars within the incrementalism literature have argued that one of the reasons why most changes are incremental is the nature of the checks and balances within any democratic system. Thus, the authors were interested to see how budgetary incrementalism would look like in a non-democratic setting. The authors of this paper assessed how budgetary incrementalism would look in four different communist systems at that time: The Soviet Union, Poland, The German Republic, and Romania. They also looked at four Western, democratic countries for comparison. The four democratic countries included: The United States of America, Sweden, Great Britain, and The Federal Republic of Germany. The paper's data covered budgets from these countries between 1950 and 1973. The paper focused on four main categories of expenditures: total expenditures, education, welfare spending, and health expenditures.

Although the study tested the theory in a communist system, the authors still expected to see incrementalism for three main reasons. First, they argued that there is not much innovation in such a system where the regime had specific goals it was trying to achieve, which would lead to stability and incrementalism. Second, even in a communist system, the authors argued, such government does not necessitate a lack of political constraints to hinder radical changes. Third, the authors argued that decision makers are still bounded in their rationality in the Soviet Union, so they would still suffer from personal constraints (i.e., cognitive limits). These three arguments pushed the authors to assume that the Soviet Union's budget would be incremental and similar to a Western, democratic budget. The main test that the paper used to assess budgetary incrementalism is a lag regression, which allowed them to see how high the R^2 would be: higher R^2

values would indicate higher levels of incrementalism within the budget. The findings of that test showed that the communist system had budgets very similar to those in Western democracies in terms of their incrementalism. The second test that this paper employed involved calculating the average percentage change of each of the four expenditure components. Again, the results showed no significant difference among communist systems and Western democracies in terms of budget incrementalism. All countries within their sample had an average percentage change smaller than 10% in all four categories being studied.

Bunce and Echols III (1978) also ran additional tests to ensure that the findings were robust and consistent among all tests. The authors concluded the paper by indicating that communist systems' budgetary changes were no different than budgetary changes in Western democracies.

There has developed a consensus regarding the idea of incrementalism within the literature. However, a fundamental question remains: What can be considered as an incremental change in the budget, and what cannot? Shull and Franklin (1978) used a cutoff of $\pm 10\%$ to distinguish whether a percentage change was incremental. They considered any change, whether positive or negative, within the 10% range as an incremental change. They also argued that any cutoff between 5% and 15% could work as incremental, which was similar to Danziger's (1976) range of incrementalism of anything below 15%, as previously discussed. Citi (2013) similarly accepted a $\pm 10\%$ cutoff. These cutoffs could serve as helpful guidelines for what defines a change as incremental. The most common cutoff found in the literature was a 10% cutoff, and no authors within the literature used a cutoff smaller than 10%. However, this does not mean

10% is the perfect cutoff. It may be prudent to use more than one cutoff as in Danziger's (1976) study, starting at 10% and then using bigger cutoffs (e.g., 15% or 30%) for lesser degrees of incrementalism.

Punctuated Equilibrium Theory (PET)

The Punctuated Equilibrium Theory asserts that the general norms of policy processes remain stable. However, this status quo (equilibrium) is interrupted (punctuated) periodically by significant changes or crises. Typically, these changes reflect shifts in attention, alteration of political agendas, economic shocks, or environmental disasters, any of which may cause leadership to alter their plans. When such happens, the normal equilibrium with incremental changes is punctuated by occasional crises. In response, PET functions as an extension of incrementalism, incorporating its elements while also expecting punctuations or shocks to interrupt the overall stasis. Accordingly, PET features another component in addition to those within incrementalism: the factor of periodic shocks. Baumgartner et al. (2014) argued that the principal contribution that has made PET an influential model in several studies within the literature is that the theory includes elements of both stability and crisis in one model. Previous theories focused only on one of the two factors, according to the authors.

The concept of PET originated in the biological sciences (Sabatier & Weible, 2014). Baumgartner and Jones (1991) introduced PET to the public policy literature as an agenda-setting mechanism and a general framework describing public policy processes in the U.S. Baumgartner et al. (2014) stated that one of the main arguments PET relies on is the idea of bounded rationality. Several classical theories (including incremental budgeting) evolved from the idea that decision makers exhibit bounded rationality, which

can lead to stability (Davis et al., 1966). This means that politicians and decision makers have cognitive limits, which makes the decision-making process more complicated. Moreover, public servants generally serve in rigid, hierarchical environments that can make decision-making even more difficult. Time limits comprise another factor, as decision makers are busy, and therefore, have a limited time to make budgetary decisions (White, 1994). These factors combined push decision-makers to look for any source of help that can simplify the process. Thus, many of them resort to budgets from previous years as references, which can lead to budgets that reflect incremental changes from the previous year.

Jordan (2003) also mentioned several reasons why incremental changes are more common than punctuations. She stated that small changes are more attractive because they draw less attention from the public and the opposition. Further, she argued that incremental changes are much easier to reverse if things go wrong. Such small changes also help because they leave room for negotiations with the other parties in the future.

Another less common argument in PET revolves around the idea that American political institutions are designed in a way that encourages small and conservative changes. The argument is that competition among the different political parties makes it difficult for politicians to pass decisions that lead to significant changes. Further, the fact that the decision/bill has to pass in both the House and the Senate can reduce the magnitude of changes because politicians may have to make two compromises. This aspect was hardly mentioned in the theory when Baumgartner and Jones first developed it. However, more recent empirical papers have given it more credence, as they have begun to compare the way different democratic systems lead to different outcomes (Jones

et al., 2009). Thus, decision makers' bounded rationality and the democratic institutional design are two common arguments in the literature used to explain why stability/incrementalism is the norm.

On the other hand, PET lists several elements that could lead to shocks/punctuations. Baumgartner et al. (2014) built on Herbert Simon's work and the idea of bounded rationality to argue that organizations in general function like humans, in that they address issues serially most often. This does not guarantee that there will be a punctuation when the issue is discussed in the political arena. However, new pieces of important information, public pressure, and the image of the policy itself are crucial factors that could lead to punctuations by shifting decision makers' attention towards a specific, potentially shocking issue. The authors referred to a long-lasting policy that has a single, positive image as a "policy monopoly," which is another source of stability.

However, those policy monopolies can collapse and lead to punctuations. For example, (Baumgartner & Jones, 1991) helped establish that PET provides an excellent example of the importance of policy image and the way it can result in shocks. In their paper, they described the case of nuclear power and the way it began as a civilian industry. However, environmentalists used several venues and sources to increase public awareness of the dangers of nuclear power, which led to a significant breakdown of the industry in general.

Baumgartner et al. (2014) also talked about the different roles negative and positive feedback play in stability and shocks. They argued that positive feedback is an element that can lead to shocks. They built on the idea of an earthquake to make their argument. Earthquakes may begin with tiny shifts of tectonic plates, but those tiny

changes can accumulate to precipitate large earthquakes. On the other hand, the authors argued that the negative feedback associated with a specific innovation is a source of stability because it pushes decision makers to stop whatever they are trying and stay with the status quo.

The theoretical literature has focused on the importance of policy image and the way it can lead either to stability or shocks. The dominance of a specific image could mean a successful policy monopoly, which is difficult to change. However, it is possible to redefine the policy if the individuals introduce new pieces of information and use available sources and venues properly (Baumgartner et al., 2014). Wood and Vedlitz (2007) provide a good example of the way individuals process and make decisions by using a filter that they form based on their personal knowledge, cues, and experiences. This filter leads individuals to adhere to their opinions, which can be a source of stability. However, the introduction of new information can motivate individuals to change their opinions if the new information is significant. To summarize the policy image aspect, a single, dominant image leads to stability and ongoing negative feedback supports that stability, while positive feedback and new information can lead to punctuations and shocks in the policy process.

Several scholars started to test and use PET in the public financial management literature. It seems that the PET framework appealed to budgeting scholars because it offers a more complete picture of both stability and punctuations than the incrementalism theory. Baumgartner et al. (2014) provide evidence that supports PET at the U.S. national level. They used historical budgetary data from the Office of Management and Budget (OMB) to calculate the percentage change in the budgeted amount of 60 different sub-

functions. Their data covered from 1947 to 2012. They tested their calculations by looking at the distribution of the annual percentage change.

The way to calculate the annual percentage change for a budget requires: (a) the current year's value of a specific budgetary line item and (b) last year's value of the same budgetary line item. This is the formula to calculate it:

$$\text{Change}_t = (Y_t - Y_{t-1}) / Y_{t-1}$$

For example, Y could be the expenditures on education. In order to calculate the percentage change of education expenditures in 2017, one would need education expenditures from 2016 and 2017 to use as the variables in the formula above. The expenditures of 2016 would take the position of Y_{t-1} in the formula and the expenditures of 2017 would take the position of Y_t .

After calculating the percentage change of each sub-function, Baumgartner et al. (2014) pooled them all together in order to test the theory by looking at the distribution. The closer to a normal distribution the percentage changes are, the closer they are to the expectations of incrementalism. On the other hand, PET holds true if the distribution is leptokurtic and the fat tails become the expected punctuations. The findings of their work have provided evidence that the American federal budget follows the expectations of PET with a clearly leptokurtic distribution (Baumgartner et al., 2014). True, Jones, and Baumgartner (1999) have also provided evidence that confirms that the U.S. Federal Budget level exhibits the expectations of PET.

Breunig and Koski (2006) assessed whether the expectations of punctuated equilibrium would hold for the United States at the state level. The paper covered data for all 50 states across 10 different budgetary components for 18 consecutive years between

1984 and 2002, providing them with approximately 8,500 observations. They used data from *State Government Finances*, which provides budgetary information for all U.S. states. Following what most papers in the literature have been doing, the authors calculated the annual percentage changes of each budgetary expenditure in the data, then they pooled those changes into one variable and created a separate variable for each U.S. state to run their tests. This allowed the authors to run typical distribution and kurtosis tests. Based on the pooled variable comprising all data from every state, their first test conveyed that the distribution of their dataset followed the expectations of PET. They also ran normality tests, kurtosis tests, and L-kurtosis tests to confirm what the visual test displayed, and the results matched where the tests showed that the data were not normal. Upon testing each state alone, the findings continued to show that all U.S. states tend to follow the PET expectations. However, it is clear from their findings and tables that states represent the prospects of PET to varying degrees. The main takeaway from Breunig and Koski (2006) is that U.S. state budgets do not seem to differ significantly from the U.S. Federal Budget regarding the annual budgetary percentage changes. The authors concluded their paper by arguing qualitatively that states that with more flexible governmental institutions and lower transaction costs would have fewer punctuations and shocks in their budgets than the others.

Jordan (2003) expanded the latitude of the literature towards applying the theory to local U.S. governments. She worked on understanding if local governments' expenditures follow the expectations of PET. Her paper showed that punctuation frequencies vary among different types of governmental functions. She tested whether the PET expectations held by focusing on the distribution of the percentage changes in the

expenditures of six different functions: police, fire, sanitation, parks and recreation, public buildings, and highways. The study covered the 27 consecutive years from 1966 to 1992. The sample of the paper consisted of 38 cities in the United States with a population over 300,000 each, providing her with approximately 6,000 observations. The author used a kurtosis test to distinguish whether the distribution was leptokurtic. She used a kurtosis value of 3.0 as the cutoff, so any kurtosis value above 3.0 would be identified as a leptokurtic distribution in support of PET. She concluded by stating that there is support for the PET on the local level and across different expenditure functions.

Robinson (2004) contributed to the PET literature by assessing whether the budgets of U.S. school districts would show differing results when compared to the existing literature. The dataset consisted of all K-12 school districts in Texas. The study covered only two years of budgetary data, meaning the author had only one year of percentage changes. This provided the author with 1,059 observations. Instead of using total expenditures or the values of some subcomponents of the budgets, the author used instructional spending per pupil for each school district. The general finding showed that change in the average spending per pupil followed the expectations of PET. The author then extended the discussion by separating the data into two categories, one bureaucratized, and the other non-bureaucratized. The idea behind this classification was to test whether bureaucracy leads to more inertia and stability. The author argued that school districts with higher spending on central administration, campus administration, and professional support were more bureaucratized; a state with higher than 8% of spending on those three budgetary components out of all spending would be classified as bureaucratized. The findings showed that more bureaucratized school districts had a

much smaller kurtosis than both the non-bureaucratized sample and the aggregate sample. The bureaucratized sample conveyed a normal distribution representing the expectations of incrementalism rather than PET. The author tied the findings to a classic debate between Max Weber and Robert Merton, where the author claimed that Merton's point was correct when he said bureaucracy would lead to more inertia and less flexibility to adapt to ongoing changes in the environment. However, it remains unclear if the findings of the paper can be generalized on all U.S. school districts. Furthermore, it is not obvious why Robinson used this technique to classify school districts into bureaucratized and non-bureaucratized school districts, nor why the author used the 8% as a cutoff.

The literature shows that there is support for the expectations of PET in the United States across the different levels of government. John and Margetts (2003) contributed to the PET literature by extending the scope of the literature, going beyond the United States and investigating a new case in Europe. The authors assessed whether the United Kingdom (UK) would show results similar to the U.S. budgets. The study covered from 1951 to 1996. The authors were limited to those years because of reported changes in budget preparation and classification, in 1951 and then again in 1996. The authors used expenditures of nine different governmental departments. Like most papers in the literature, the authors calculated the percentage changes of each department, then pooled them all together into one variable allowing them to run normality and distribution tests. The authors also used a Shapiro-Wilk test to assess normality and a Kolmogorov-Smirnov test to assess how leptokurtic the data were. The main takeaway from the paper is the finding that UK budgets show the same pattern as U.S. budgets, as most percentage changes were centered on zero with some fat tails, closely representing

the expectations of PET. The authors also found that UK governmental departments have varying degrees of conformity with the expectations of PET. The Department of Defense was the most leptokurtic case (the case that most represents PET's projections), and the Department of Agriculture was the closest to a normal distribution (closest to incrementalism, but not in itself incremental).

More and more studies of budgets in different European countries have begun to emerge in the literature over the past 15 years. Breunig (2006) takes a deeper look at whether PET hold true for the budgets of Denmark, Germany, the United Kingdom, and the United States. The paper was designed in a comparative way that covers all four countries from 1963 to 1989. The paper relied on several sources of data, such as The International Monetary Fund, The Organization for Economic Co-operation and Development, and the official budgets of each country. The author started by assessing what the distribution of annual percentage changes in the four budgets looked like. The distribution of annual percentage changes for all four countries supported the PET predictions.

One of the main points that Breunig (2006) made is that it could be problematic to rely on kurtosis tests by themselves, given that they are subject to being distorted if the data have extreme outliers. Thus, the author argues that the use of L-kurtosis is more appropriate because it fixes the issue of outliers. The L-kurtosis score ranges from zero to one, where the closer the score is to one, the more punctuated the budget would appear. The author argued that the value 0.123 of L-kurtosis represents a perfectly normal distribution. The results of the distributional tests and L-kurtosis tests indicated that the budgets of the four countries represent the expectations of PET. This indicates that no

matter what type of democratic system exists, the PET still holds true for the national budget. The United States had the highest L-kurtosis score among the four countries (United States 0.49, Denmark 0.47, Germany 0.42, and UK 0.37), which indicates that the United States had the most punctuated budget.

Breunig (2006) paper also tried to understand how the different political systems of each country in their sample could lead to different outcomes. Each of the four countries had a different type of democracy. The author ran a time-series lag regression test controlling for some control variables representing governmental institutions. The paper concluded by arguing that the structure of the public institutions and the political system is an essential component of the PET literature because it affects the distribution of the budget.

Baumgartner, Foucault, and François (2006) contributed to the literature by investigating whether the French budget would follow along with all other countries that the literature had investigated thus far. The authors argued that the French system grants more powers to the executive branch than in the United States, given that the French system is a parliamentary system. Thus, they wanted to assess whether PET would hold in the French context. They used a large budgetary dataset containing budgetary info dating back to the 1800s. However, because older data can suffer from various issues, the researchers created a separate sub-sample for data from 1946 to 2002. They ran the typical distributional test for the annual percentage changes, and the results showed strong support for the expectations of PET. The punctuated histogram of percentage changes was present in every case at the total national expenditures level and the ministerial expenditures level, even when attempting different aggregation levels. They

also used an L-kurtosis test to confirm the findings of the distributional tests. The L-kurtosis for the French government ranged between 0.50 and 0.60 (depending on the aggregation level). In contrast with Breunig (2006) paper that examined four different countries (UNITED STATES, UK, Denmark, and Germany), France had the highest L-kurtosis, but it did not significantly differ from the other three countries. The authors attributed that difference to the different governmental structures.

Jones et al. (2009) contributed to the literature by trying to understand whether one could generalize the PET expectations on most governmental budgets. Thus, they designed their paper in a comparative setting of seven different nations: the United States, Great Britain, Denmark, Belgium, France, Germany, and Canada. Their dataset was based on multiple sources covering a varying number of years for each country (dependent upon data availability). They ran the typical distributional and L-kurtosis tests for the annual percentage changes of each country separately. The findings of the paper indicated that all countries within their sample tended to follow the expectations of the PET. The distribution of annual-expenditure percentage changes was highly centered on zero with some fat tails representing a highly leptokurtic distribution. This shape of distribution was present on the national level and lower levels of government within their study. The L-kurtosis tests confirm the support for the PET predictions. These findings allowed the authors of the paper to conclude that the PET is the general budgetary law mostly among western democracies (Jones et al. (2009).

Caamaño-Alegre and Lago-Peñas (2011) provided yet another contribution to the budgetary incrementalism and PET literatures from Europe. The paper focused on the case of Spain, which the authors argue has a distinct nature given that it is a Latin-

European country. The goal of the paper differed from most others, as the authors wanted to identify factors that could lead to more or less incrementalism in the budget. They used data from Spain's Ministry of Finance from 1984 to 2009. They first confirmed that the distribution conformed to the expectations of the literature: a highly centered distribution around zero with some fat tails (a leptokurtic distribution). They also confirmed that the data failed normality tests, which provided further support for PET's expectations. The factors that they found essential for explaining factors affecting the volatility in the budget were: (a) the party that controls the government, (b) inflation rates, and (c) population growth.

Pauw (2007) contributed to the literature by testing the theory in a context beyond both North America and Europe. His study tested the applicability of incrementalism and PET within South Africa. The author used official data published by South Africa's National Treasury covering a short period of only five fiscal years, from 2003 to 2007. The findings of the paper provided support for the PET literature. The distribution of annual percentage changes of the budgetary line items that the study covered was leptokurtic. The author also ran a kurtosis test, which conveyed that South Africa has a much larger kurtosis than the average within the literature. However, the author did not run an L-kurtosis test.

Citi (2013) published a more recent study that assessed PET and incrementalism on the budget of the European Union (EU). The author combined both theories into one paper covering data from 1984 to 2011. The paper tried to assess whether the EU budgets followed an incremental nature or a PET nature. The data that the paper used came from the *Official Journal of the European Union*, which publishes the official budget of the

EU. Following what the literature has done, Citi evaluated the distribution of the annual percentage change in all of the expenditure categories in the EU budget. However, he decided to assign each source of expenditure into six, different, broad categories. This led the author to have a smaller number of observations (162) than what was common throughout most of the literature. If the budget could be deemed mostly incremental, then its distribution should have looked somewhat normal. However, if some fat tails (either negative or positive) emerged, then this would be evidence that supported PET, where the fat tails represent sporadically punctuations.

The author found evidence that EU budgets exhibited the expectations of PET. The distribution of the annual percentage changes of the data was leptokurtic with most data points centered on zero and some fat tails. The tests of kurtosis and L-kurtosis also supported the ocular test. The paper reported a kurtosis value of 6.2, which further supported the PET. Additional support for the PET came from the L-kurtosis value of 0.28. Citi also ran two normality tests: a visual test and a statistical test. The visual test involved a Q-Q plot, which showed that the data were close to normal but not quite normal. The statistical test involved a Shapiro-Wilk test, which showed that the annual percentage changes reject the null of being normally distributed. Each of these tests provided support for the theory that the annual percentage changes in the EU budget follow the expectations of the PET.

Conditions Leading to Stability in Both Incrementalism and PET

I conclude this literature review on incremental budgeting and PET by restating the main conditions and factors that scholars believe are the sources of incrementalism and stability in PET: (a) the bounded rationality of politicians and decision makers and

(b) the nature of the democratic system and the checks and balances that lead to fierce competition. The nature of the budget and its revenue diversification also affect incrementalism. I add to them the argument that the budgetary cycles play a significant role as well, as they represent the way budgetary decisions are made (i.e., centralized vs. decentralized decision making). The hypothesis development in the chapter below elaborates on these points to make them even more clear.

Note that the idea of the bounded rationality of decision makers has functioned as the chief cornerstone forming the foundation of both the theory of incremental budgeting and PET. However, I am not going to focus much on the bounded rationality factor in this paper, because both the Kuwaiti and the American systems share this nature. Instead, I will focus more on the differences in the two systems and how those differences play a role in creating different outcomes.

CHAPTER THREE: COMPARISON OF KUWAIT'S AND THE UNITED STATES' BUDGETARY SYSTEMS

The goal of this chapter is to provide a general overview of what the budgets of the two countries look like and the process of preparing those budgets. This serves as the foundation on which Chapter Four will build to develop the hypothesis. Chapter Three starts with an explanation of the classification of revenues and expenditures in the budgets, followed by an explanation of the taxation system in both countries. Following this, the chapter provides a general overview of the general format and the preparation process of the two budgets. Finally, the chapter concludes by looking at the budgetary cycles of both countries.

I chose Kuwait because the literature does not reflect any country that has a political or budgetary system similar to Kuwait's. I chose the U.S. Federal Budget as a benchmark because it is common amongst most scholars in the punctuated equilibrium literature, and its political and economic system (fully democratic and not dependent on natural resources) is similar to most countries that the literature reflects.

Classification of Revenues and Expenses in both Budgets

Jacobs, Héris, and Bouley (2009) published an International Monetary Fund paper that indicated the importance of budgetary classification in that it allows consumers of the budget to read the budget easily and to understand the procedure used to record it. The authors also indicated that classification is important because it helps legislators understand how to read the budget, which will help them make better decisions. The authors listed three principles of a sound, budget classification system: (a) comprehensiveness, (b) unity, and (c) internal consistency.

The Kuwaiti Ministry of Finance tried to achieve certain goals when they developed their budget classification. First, the classification had to be suitable for the nature of the business. Second, it needed to achieve certain goals, in terms of accountability and control. Third, they called for a convenient manner to present the results in. Fourth, they required the classification system to be compatible with the constant development of technology (Al-Muzaini, 2005).

The classification system of the Kuwaiti budget has developed over the years, beginning with the publication of the first budget in 1955. At that time, the budget was simple and included no revenue, reflecting only each ministry's and state department's expenses. That era lasted four years. There was a new wave of budgetary reforms in 1960 that helped modernize the Kuwaiti budget classification system. More budgetary reforms followed in 1977, and the current budgetary classification system is part of the 1982 budgetary reforms.

The sources of revenue are the bases for their classification. The Kuwaiti classification system developed eight possible revenue sources for the country, and the current budget still relies on them. These sources include: oil, income tax, property tax, fees on corporations, customs and duty fees, revenue from services, miscellaneous fees, and capital revenues. The following sections list the elements comprising each revenue category.

The Kuwaiti budget includes different classifications for expenses. The primary expense classification is the *subjective classification*. This classifies the budget into five broad categories: (a) salaries; (b) commodity and service requirements; (c) transportation,

equipment, and supplies; (d) construction projects, maintenance, and acquisitions; and (e) various expenses and transfer payments (Al-Muzaini, 2005).

The *administrative classification* is the second classification of expenses in the Kuwaiti budget. This classifies expenses based on the ministry or state department that incurs them. Accordingly, there are many categories in the administrative budget because there are several ministries and state departments. Each of the ministries is subject to contributing 10% of its revenue to the Future Generations Fund. The ministries and state departments in Kuwait include: (a) Finance, (b) Interior, (c) Defense, (d) Planning, (e) Education, (f) Higher Education, (g) Health, (h) Public Works, (i) Commerce and Industry, (j) Communications, (k) Oil, (l) Electricity and Water, (m) Social Affairs and Labor, (n) Information, and (o) Islamic Affairs. Other departments include: (a) the Kuwait National Guard, (b) the State Audit Bureau, (c) the Central Statistical Bureau, (d) the Civil Service Commission, (e) Kuwait General Administration of Customs, (f) Council of Legal Advice and Legislation, (g) Council of Ministers, (h) National Council of Culture and Letters, and (i) the *Amiri Diwan*, or the Kuwaiti Royal Council.

On the other hand, the official U.S. Federal Budget classification published by the Congressional Budget Office (CBO) categorizes revenues and expenses very broadly. Revenues are categorized as: (a) Individual Income Tax, (b) Social Insurance, (d) Corporate Income Taxes, and (e) Other Revenues. The only category that has sub-categories is Other Revenues, which includes the subcategories of (a) Excise, Estate, and Gift Taxes; (b) Federal Reserve Earnings; (c) Customs Duties; and (d) Other Miscellaneous Receipts.

The categories of expenses in the U.S. budget include Mandatory Spending, Discretionary Spending, and Net Interest. However, the budget also includes more details if an individual wishes to obtain additional information about the federal budget. The expense portion of the federal budget reflects several categories under mandatory spending: (a) Social Security, (b) Medicare, (c) Medicaid, (d) Other Spending, and (e) Offsetting Receipts. Discretionary Spending includes both defense and nondefense spending.

Taxation

Taxes are a fundamental means by which governments raise revenues, allowing them to function. There are some principles to which the tax system attempts to adhere. Those are adequacy of the revenues, equity and fairness, economic efficiency, cost of administration, and transparency (Denison & Facer, 2005). Adequacy refers to the fact that the government must be able to fund necessary government services. Fairness and equity include two concepts, horizontal equity and vertical equity. Horizontal equity indicates that similar taxpayers should be treated equally. Vertical equity refers to the ability to pay, in which different taxpayers receive differential treatment. Economic efficiency and neutrality refer to the fact that the tax system should interfere as little as possible with market decisions. Thus, the tax system should try to avoid introducing distortions as much as possible. Ease of administration refers to the fact that governments need to minimize the cost for taxpayers to comply with the system, and for the government to collect the taxes. Finally, the transparency principle refers to the accountability of the system, in which people must be able to understand the system and perceive that it is fair.

Taxation in Kuwait

Unlike most countries in the world, Kuwait has a small tax structure that generates few government revenues overall. The main reason why it generates so little revenues from taxes is that the tax bases of the few government-imposed taxes are narrow because the government can meet most of its expenditures with oil revenues. The only types of taxes that exist in Kuwait are corporate and property taxes. Different corporations are subject to taxes that vary based on the company's ownership. The next paragraphs provide further details on the way in which those taxes function.

Corporate taxes on foreign companies

All companies not incorporated in the State of Kuwait are subject to an annual corporate tax. It does not matter where those companies are incorporated; they are subject to this tax whenever they conduct business in Kuwait. Accordingly, all foreign companies, whether they have franchises or contracts in Kuwait, or perform or render any type of service in Kuwait, are subject to a corporate tax. For all companies, this is a fixed tax rate of 15% of the company's net profit from all business done in Kuwait.

The companies that pay the tax can deduct from their taxable income several components of the expenses that helped them generate profits in Kuwait. Companies also can deduct losses the following year if the company suffered a loss in the previous fiscal year. This reflects the fact that local companies in Kuwait have an advantage over foreign companies. Unfortunately, this tax is referred to as "income tax" in Kuwait, even though it is a corporate tax, which could be confusing. At the same time, if the company has Kuwaiti partners as part of the franchise agreement, those Kuwaiti partners are not

subject to the 15% tax rate. Thus, only foreign investors pay this 15% tax rate, which makes it clear that the base of this tax is narrow.

Taxes on local companies to support national manpower for non-government agencies

Although local companies are not subject to the 15% corporate tax rate that foreign investors pay, some local companies still are subject to taxes. All Kuwaiti corporations listed in the Kuwaiti Stock Exchange Market (excluding limited liability corporations, sole proprietorships, and partnerships) are subject to a 2.5% tax rate on their net profits. However, the revenue generated from this tax is earmarked for a governmental fund providing extra cash benefits for all Kuwaiti workers within non-governmental agencies. The next paragraphs will discuss why local companies pay this tax on their profits.

Kuwait has experienced an extremely high employment rate of its citizens in the public sector, with approximately 87% of all Kuwaitis working in the public sector (Statistical Bureau of Kuwait, 2015). Additionally 58% of unemployed Kuwaiti citizens prefer to remain unemployed rather than work in the private sector. There are several reasons for this phenomenon. Jobs in the public sector in Kuwait have shorter work hours, less challenging duties, and better job security because they cannot be fired. Furthermore, the percentages reflect overemployment in the public sector, so a job that requires one person might have more than one person assigned to it.

The Manpower and Government Restructuring Program is a public program that has the responsibility to employ more Kuwaiti citizens in the private sector. One of its biggest initiatives in Kuwait is law 19/2000, which provides high monthly cash

allowances to all workers in the private sector in addition to their monthly salaries. The allowances vary based on the employee’s level of education, field of study, and marital status. The amounts begin at approximately \$1,499 USD monthly for a single individual with less than a middle-school diploma, and can be as high as \$3,446 USD for a married person with a Ph.D. in one of three fields: medicine, engineering, and pharmacology. This amount is in addition to the monthly salary that the person receives from his job in the private sector, as detailed in Tables 3.1 and 3.2 below.

In the first example above the lowest allowance a person working in the private sector would receive is the sum of benefits for a single individual with lower than middle school diploma from Table 3.1 (\$1,335) and the specific feature benefit from Table 3.2 (\$164) for a total of \$1,499 per month. The second example above reflects the maximum monthly allowance. A married person with a Ph.D. degree in medicine, engineering, or pharmacology would receive the base incentive for a married person with a Bachelor’s Degree from Table 3.1 (\$1,868), plus the specific field incentive from Table 3.2 (\$1,085), plus the Ph.D. benefit from Table 3.2 (\$493), for a total of \$3,446 per month.

Table 3.1, First Component of the Monthly Allowance Based on Level of Education

Level of Education	Allowance if Single	Allowance if Married
Bachelor’s Degree and Above	\$1,513	\$1,868
Two-Year Diploma	\$1,444	\$1,753
High School + One Year of College Study	\$1,418	\$1,720
High School	\$1,371	\$1,638
Middle School	\$1,352	\$1,612
Below Middle School	\$1,335	\$1,592

Table 3.2, Second Component of the Monthly Allowance Based on Specific Features

Type	Level of Education	Monthly Allowance
1	A Bachelor's degree in either Pharmacology, Engineering, or Medicine	\$1,085
2	A Bachelor's Degree in any of the following fields: Law, Accounting, Management Information Systems, Statistics, Economics, Nursing, Financial Management, Insurance, International Business, Banking, or Finance	\$920
3	Bachelor's Degree in all other majors	\$756
4	A Ph.D. in any field (in addition to other benefits)	\$493
5	A Master's Degree in any field (in addition to other benefits)	\$247
6	Two-Year Diploma	\$625
7	High School	\$460
8	Middle School	\$328
9	Below Middle School	\$164

The intent of the Manpower and Government Restructuring Program was to play a role in increasing private sector salaries, which would hopefully attract more Kuwaitis to work there. The program succeeded in attracting more Kuwaiti citizens to the private sector, but it did not solve the problem of high employment in the public sector.

Table 3.3, Public Sector Employment as a Share of Total Employment of Kuwaiti Citizens

Year	1990	2000	2006	2008
Public sector employment as a percentage of total employment of Kuwaiti citizens	42%	75%	87%	86%

The percentage of Kuwaitis working in the public sector as provided by the Central Statistical Bureau of Kuwait correlates highly with Baldwin-Edwards (2011) findings, which have also provided rich information on labor markets in Kuwait. His findings have made it clear that citizens in Kuwait rely strongly on employment in the public sector. His study indicated that the percentage of Kuwaitis in the public sector has increased during the period between 1990 and 2008 (Table 3.3). Baldwin-Edwards argued that the reason for the preference to work in the public sector stems from the fact that most Kuwaitis lack the skills required to be good workers. According to him, a large part of this relates to the poor education system in the country. The author also indicated that a cultural barrier exists that makes Kuwaitis prefer not to work in the service sector in particular.

To put things in perspective, the 2.5% tax rate that is earmarked to support the Manpower and Government Restructuring Program is not a typical tax. Essentially, companies pay this to the government because the government helps them indirectly by paying part of the monthly salary for their Kuwaiti employees. Thus, this tax has a somewhat broader base compared with the 15% corporate tax rate imposed on foreigners. However, all of its revenues fund Kuwaitis who work in non-governmental agencies. Because of all this, the systems design seems flawed. The government enacted this initiative to encourage more people to take jobs in the private sector. However, one cannot yet ascertain whether the private sector has responded by reducing its salaries, given that the government pays those employees a non-trivial amount of cash. This could provide a valuable research opportunity if such data exist.

Zakat¹ and the contribution of public and closed shareholding companies in the Kuwaiti tax system

All closed, public shareholding companies in Kuwait are subject to a one percent annual corporate tax on their net profits. Closed public shareholding companies are those that have more than five owners who hold all shares of the company, and do not offer shares to the public. However, those companies have the right to ask the government to allocate their tax payments to any public service they wish to fund. At the same time, the company also can notify the government that they want those tax payments to be part of their *Zakat*, which obliges the government to spend the money for the needy and poor people in the society. Thus, this is a way for the government to enable all companies to pay at least some part of their annual *Zakat*, which is supposed to be an obligatory payment in Islam, even though the Kuwaiti government does not oblige anyone to do so. If the company does not ask the government to allocate its tax payments for a specific service, then the Ministry of Finance has the right to use the money in any way it prefers. All companies the government owns are exempt from those taxes.

Property taxes

Although the Kuwaiti government collects what it refers to as *property taxes*, these taxes differ from those paid in other countries. Most people in Kuwait never pay property taxes even if they own properties. The people who do pay property taxes are those who live in properties the government owns. These do not include typical houses people live in. The government offers some of their buildings as large investments, or as

¹ The general definition of Zakat is an annual contribution to help the poor and needy, and is one of the five pillars of Islam. It is supposed to be obligatory for every adult Muslim of sound mind.

incentives to those who might invest in Kuwait. For example, the government sometimes offers some of its buildings without requiring the companies to buy the property; instead, they only have to pay the annual rent. This rent constitutes the so-called *property tax* in Kuwait.

This practice is not limited to businesses. The government owns hundreds of beach houses that many Kuwaitis rent for weekend retreats. The rent for those houses also counts as *property tax* revenue. However, this makes it clear that the base of that tax is extremely narrow, given that it includes only those who rent units from the government.

Taxation at the U.S. Federal Government Level

Governments rely on different sources of taxes to raise sufficient revenues, allowing them to provide adequate services. One of the main types of taxes that funds the U.S. Federal government is the personal income tax. Income taxes were prohibited in the U.S. until 1913 upon ratification of the 16th amendment to the constitution (Lee Jr, Johnson, & Joyce, 2012). Since then, income tax has become the most significant source of revenue for the U.S. Federal Government. Calculating income tax is a complicated process that begins by calculating the adjusted gross income, which helps identify the general base for the income tax. However, people can take advantage of various exemptions and deductions that reduce their taxable income. Tax rates apply to the adjusted gross income after deductions and exemptions have been subtracted from the total income. In 2012, ten percent was the marginal tax rate, which would increase gradually until reaching 35%, the maximum marginal tax rate (Burman & Slemrod, 2013; Lee Jr et al., 2012; Slemrod & Bakija, 2008).

The tax rates reflect the fact that the U.S. income tax is a progressive system, which plays a role in achieving the vertical equity principle. However, the deductions and exemptions also play a role in reducing the progressivity of the system. After applying the tax rates, the next step is to ensure whether the person is entitled to tax credits. After finishing the tax credit step, the final step is to determine whether the person has to use the normal tax calculation or the *Alternative Minimum Tax*, which is a system designed to ensure that those with high incomes pay sufficient taxes (Burman & Slemrod, 2013). These steps illustrate how long and complex of a process this can be. Burman and Slemrod (2013) indicated that the U.S. tax system is very complex and that the total cost of complying with the system was approximately \$215 billion in 2012.

The second type of tax that the U.S. Federal Government relies on is the corporate tax. This tax uses corporations' earnings as the main tax base. However, taxes apply only to net earnings after the deduction of all operating expenses. Like individuals, corporations have the opportunity to take advantage of several deductions that reduce their taxable income, such as charitable contributions. The corporate tax system is also progressive, given that its lowest marginal tax rate is 15%, and it increases gradually until it reaches the highest marginal tax rate of 35%. However, most companies pay 35%, because only corporations are subject to these taxes, and most are large enough to bear the highest rate (Burman & Slemrod, 2013). These tax rates have changed recently when President Donald Trump introduced different tax rates for the corporate tax system.

The third source of federal government revenues is the payroll tax. Payroll taxes are similar to income taxes, but the difference is that they achieve specific objectives. Furthermore, payroll taxes apply only to wages and salaries, not all income that the

individual earns. Payroll tax revenues do not fund governmental services; instead, they provide benefits for those people who are paying the taxes. Those benefits come back to payroll taxpayers in the form of Social Security payments and Medicare services. Social Security provides benefits for the elderly after they retire and benefits for the disabled who cannot work. Medicare is a program that provides health insurance for the elderly. There are several other forms of taxes, such as those on property, wealth, sales, excise, and use (J. Mikesell, 2013). This paper does not cover the many other forms of taxes because most make only a tiny contribution to the federal budget.

A General Overview of both Budgets

Kuwait's budget for Fiscal Year 2015-16

This section provides an overview of the Kuwaiti budget's revenues and expenses based on the closing budget for the State of Kuwait for Fiscal Year 2015-16 (FY 15-16). The term *closing budget* refers to the actual numbers of the budget at the end of the year rather than on the initially estimated ones.

As mentioned above, there are eight categories of revenues according to the general classification of the Kuwaiti budget: (a) oil, (b) income and property taxes, (c) fees on corporations, (d) customs and duty fees, (e) revenues from services, (f) miscellaneous fees, and (g) capital revenues. Oil revenues include all revenues that Kuwait generates from selling crude oil, natural gas, and other oil services. Income tax revenues include all revenues the country generates from all companies listed in the Kuwaiti Stock Exchange Market. Property tax revenue is based on rent the country receives from all capital owned by the government. It also includes services that relate to changing ownership of any capital. Fees on corporations include all of the fees that a

corporation must pay to finish the process of incorporating its business or renewing its business license. Customs and duty fees include all revenue the country generates from imports and exports. Revenue from services includes the total amount the government generates from the services it offers (e.g., revenue from water and electricity, as the government administer them). Miscellaneous fees include all revenues that do not fall in any of the other eight categories. Capital revenues include all those that the government generates from the sale of any land or infrastructure it owns. The majority of Kuwait's revenues come from one source, and some sources generate very little revenue. Table 3.4 below is the simplest way to summarize the sources of revenue.

Table 3.4, Kuwait's revenues in FY 2015-16

Category	Revenues in USD	Percentage of Total Revenues
Oil	\$39,607,379,937.47	88.57%
Income Tax	\$465,251,344.54	1.04%
Property Tax	\$52,057,640.33	0.12%
Fees on Corporations	\$33,074,553.50	0.07%
Customs and Duty Fees	\$1,043,595,515.43	2.33%
Revenue from Services	\$2,490,230,238.73	5.57%
Miscellaneous Fees	\$1,021,694,374.16	2.28%
Capital Revenue	\$5,914,015.48	0.01%
Total Revenue	\$44,719,197,619.63	100%

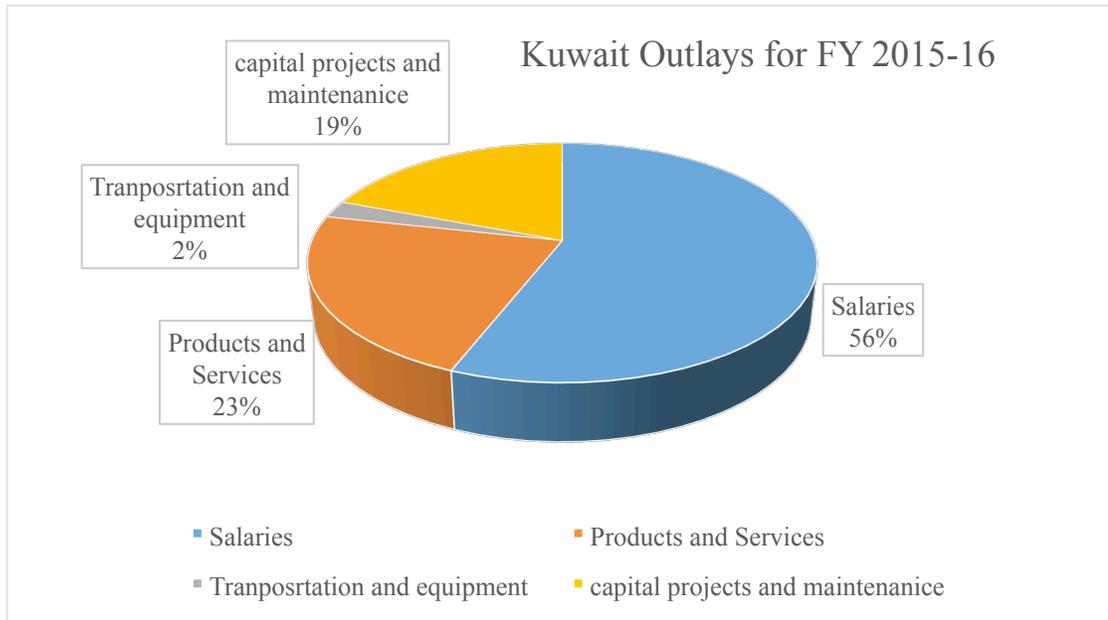
Note: The numbers are based on the actual numbers of the Kuwaiti official budget

Table 3.4 shows that the Kuwaiti budget relies almost entirely on oil revenue, while the contribution of taxes to the annual governmental revenue is minimal. The second component that plays some role in generating revenues for the government is “revenues from services,” which constitute approximately 5.6% of all Kuwait’s revenues.

With respect to governmental expenses, they are classified generally in five categories: (a) salaries; (b) commodity and service requirements; (c) transports, equipment, and supplies; (d) construction projects, maintenance, and acquisitions; and (e) various expenses and transfer payments. Salaries include the monthly wages received by all employees working in the public sector. The *commodity and service requirements* include all expenses that the government generates to provide services and achieve its goals. The *transports, equipment, and supplies* category includes all government expenses used to fund capital projects. The *construction projects* category includes new infrastructure projects and maintenance of existing projects. The *various expenses and transfer payments* category includes all transfers from the government to subordinate authorities and independent authorities. It also includes external transfers to other countries, mostly poor ones. However, the final category is not a general expense category, given that it represents the transfers of money.

Figure 3.1 below presents the percentages of Kuwait’s expenses. Kuwait’s largest source of expenses is *transfers* to independent and subordinate governmental bodies. However, given the unique nature of transfers, they were not included in the figure because they represent all money transferred to every independent governmental agency and subordinate body. Thus, the largest source of expenses for the Kuwaiti government is the *salaries* category. Following this, Table 3.5 below reflects expenses and transfers.

Figure 3.1, Kuwait's Expenses in FY 2015-16



Note: The numbers are based on the actual numbers of the Kuwaiti official budget.

Table 3.5, Kuwait's Expenses in FY 2015-16

Category	Expenses in USD	Percentage of total Expenditures
Salaries	\$17,910,545,229.09	29.93%
Products and Services	\$7,192,860,461.14	12.02%
Transportation and Equipment	\$741,188,214.37	1.24%
Capital Projects and Maintenance	\$6,154,437,790.49	10.28%
Various Expenses and Transfer Payments	\$27,847,409,189.27	46.53%
Total Expenses	\$59,846,440,884.36	100%

Note: The numbers are based on the actual numbers of the Kuwaiti official budget.

Typically, salaries are not the largest source of expenses in most countries. Kuwait, on the other hand, over employs citizens in the public sector, thus, it has become burdensome for the government to fund their salaries. In the past, it was not difficult for the government to do so because of the large annual surpluses that the country was achieving. This is discussed in further in further detail in the sections below.

The U.S. Federal Budget for Fiscal Year 2014-2015

This section provides an overview of the U.S. Federal Budget's revenues and expenses for FY 2014-15. There are four primary categories of revenues according to the general classification of the U.S. Federal Budget: individual income tax, social insurance, corporate tax, and other revenues. The category of *other revenues* includes five different subcategories: excise tax, estate and gift tax, Federal Reserve earnings, customs duties, and other miscellaneous revenues.

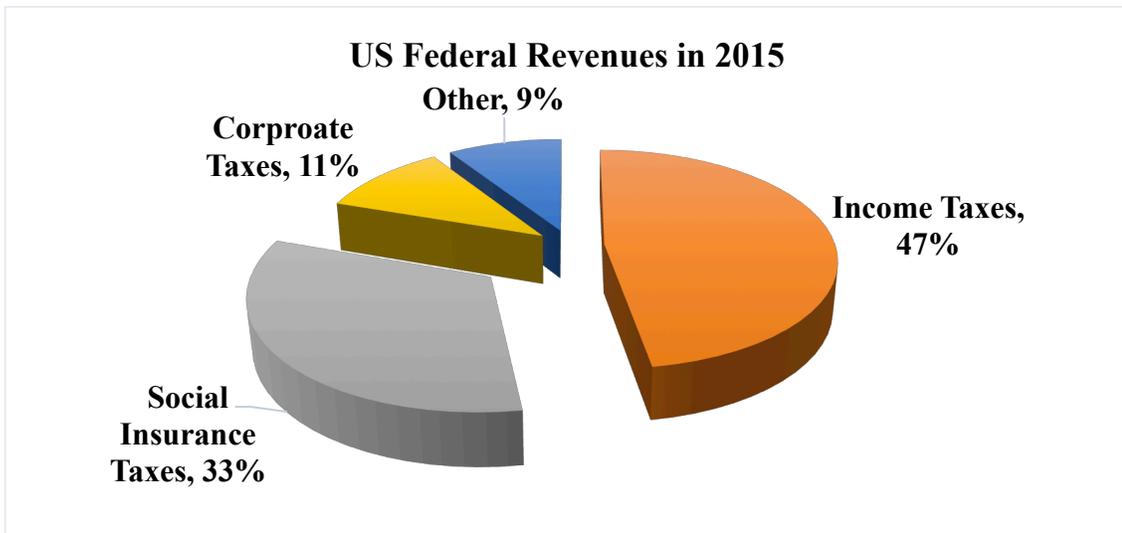
Table 3.6 and Figure 3.2 below show the numbers and percentages of each source of federal revenue for the 2015 U.S. Federal Budget. These percentages allow for comparisons between the U.S. Federal Budget and the Kuwaiti National Budget. The primary point here is that the U.S. Federal Budget relies less on one source of income than does the Kuwaiti budget. The greatest source of revenue for the U.S. Federal Budget is income tax, which generated approximately 47% of the U.S. total revenues in 2015, and is much lower than the 89% reliance on oil revenues in the Kuwaiti budget. Social insurance tax revenue is the second largest component, which constitutes approximately 33% of the federal budget. The third largest component is the corporate tax revenue, which constitutes approximately 11% of the total federal revenues. The fourth component is the "other" category, which constitutes approximately 9% of the entire revenues.

Table 3.6, Actual Revenues Generated by the U.S. Federal Government in FY 2014-15

Category	Revenues in Billion USD	Percentage of total Revenues
Individual Income Tax	\$1,541	47%
Social Insurance Tax	\$1,065	33%
Corporate Tax	\$344	11%
Excise Tax	\$98	3%
Estate and Gift Tax	\$96	3%
Federal Reserve Earnings	\$35	1%
Customs Duties	\$19	1%
Other Miscellaneous Receipts	\$50	2%
Total Revenue	\$3,248	100%

Note: All numbers reflect the CBO’s Budget and Economic Outlook: 2016 to 2026, which reflects the actual numbers for FY 2015.

Figure 3.2, U.S. Federal Revenues in FY 2014-15



Note: All numbers reflect the CBO’s Budget and Economic Outlook: 2016 to 2026, which reflects the actual numbers for FY 2015.

With respect to governmental expenses, the general classification of the U.S. Federal Budget includes the following three primary components and subcategories. The primary components are: mandatory spending, discretionary spending, and net interest. The sub-categories under mandatory spending are Social Security, Medicaid, Medicare, other mandatory spending, and offsetting receipts. The subcategories under discretionary

spending are defense and non-defense spending. Table 3.7 below illustrates the federal expenses in billion USD for the different categories.

Table 3.7, Actual Expenses of the Total U.S.Federal government in FY 2014-15

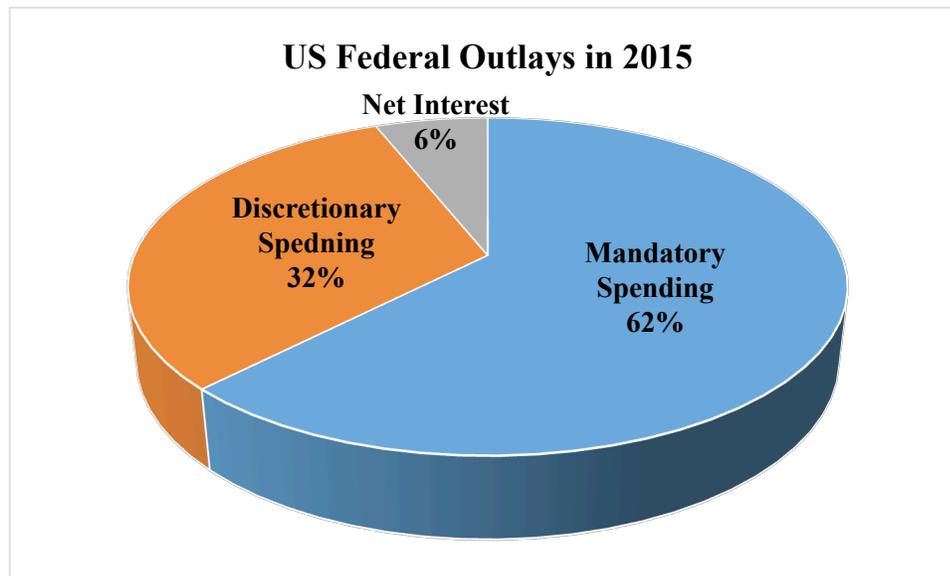
Expenses	2015 Expenses in Billion USD	Percentage of Total Expenses
Total Mandatory Spending	\$2,300	63%
Social Security	\$882	24%
Medicare	\$634	17%
Medicaid	\$350	9%
Other Spending	\$690	19%
Offsetting Receipts	-\$256	-7%
Total Discretionary Spending	\$1165	32%
Defense	\$582	16%
Non-Defense	\$583	16%
Net Interest	\$223	6%
Total Expenses	\$3,688	100%

Note: All numbers reflect the CBO's Budget and Economic Outlook: 2016 to 2026, which reflects the actual numbers for FY 2015.

Table 3.7 and Figure 3.3 present a general picture of the way in which the U.S. Federal government spends its funds. It is important to note that the government does not have a great deal of control of mandatory spending, as any person who fulfills the criteria is entitled to those benefits (Ippolito, 1993; J. L. Mikesell & Mullins, 2011; White, 1998). Those entitlements represent approximately 62% of the total federal expenses. The net interest rate of 6% is an obligation that the federal government has to fulfill as well, thus, there is little flexibility in this category because of its basis on past actions. This leaves only 32% of federal expenses over which the government has direct control.

Approximately 50% of all discretionary funds are spent on defense, which leaves only approximately 16% for non-defense discretionary spending. This 16% has a cash value of \$583 billion. This is somewhat problematic, given that the U.S. Federal Budget typically carries an annual deficit. While the country suffers from high deficits, there is not much that the United States can do to address this situation, given that it does not have direct control of the largest expenses in the federal budget.

Figure 3.3, U.S. Federal Expenses in FY 2014-15



Note: All numbers reflect the CBO's Budget and Economic Outlook: 2016 to 2026, which reflects the actual numbers for FY 2015.

Budgetary Cycles

The differences among the budgetary cycles of the United States and Kuwait provides for the development of the hypothesis of this dissertation. The governmental budgetary process involves many participants. They work together to achieve the optimal goal of budgeting, which is allocating scarce resources in ways that achieve the government's goals. Because the process requires inputs from several constituents, it also

requires a budget cycle. One definition of a budgetary cycle is a "...period of time in which the budget has to be prepared and executed" (Menifield, 2017, p. 37). He also added that the budget cycle provides better accountability for the system and for decisions. The cycle usually contains several phases. The first phase is the preparation stage, which is typically initiated by the executives. After that, the legislators conduct the approval stage. After approval of the budget, the budgetary cycle finally reaches the stage of implementation. An evaluation and audit stage may follow the execution stage. Lee Jr. and his colleagues defined the budget cycle in their book as the "...timetable for the system to absorb and respond to new information, therefore, allows government to be held accountable for its actions" (Lee Jr et al., 2012, p. 117). They also indicated that most budgetary systems proceed through four main steps: preparation and submission, approval, execution, and audit and control.

Kuwaiti Budgetary Cycle

The Kuwaiti Ministry of Finance defines the public budget cycle as "...the stages from the preparation stage until the finalization of the closing account of the state" (Al-Muzaini, 2005, p. 61). The Kuwaiti budgetary cycle has an additional step compared with what (Lee Jr et al., 2012) indicated. The fifth step in the Kuwaiti budgetary cycle, the preparation of closing accounts, comes at the end of the process, following the audit and control step. The following sections describe what takes place in each of the five steps in the cycle.

Step One: Preparation of the national budget

The preparation stage starts with a committee, typically led by the Minister of Finance and by representatives from the Ministry of Planning and the Civil Service Commission. The role of the committee is to confirm and clarify the procedures to which all governmental agencies must adhere, and to confirm the guidelines for preparing the estimates of revenues and expenses. They also provide specific guidelines for preparing tables and the figures to accompany the budget. The committee has to produce this official statement by June of each fiscal year. Each ministry and state department must create its own committee to prepare and draft its part of the budget. The civil services' role primarily focuses on estimating the *salaries* component, given that this is the government's largest expense. The Ministry of Planning provides the estimates for the construction and maintenance projects that will take place.

An essential task in preparing any budget is revenue forecasting, as this is part of financial planning and can indicate the capacity of the government agency (Wang, 2014). The nature of revenue forecasting in Kuwait is different than usual forecasting techniques, given that most of the Kuwaiti budget's revenue is from oil. The method for revenue forecasting is based on four components: (a) the quota specified by the Organization of the Petroleum Exporting Countries (OPEC), (b) the average price of a barrel during the year for which the budget is prepared, (c) the U.S. dollar exchange rate, and (d) the number of days in the fiscal year. The final step entails subtracting the production costs.

Based on FY 2005-06, Al-Muzaini (2005) provided an excellent example of how to calculate the expected oil revenues. The production quota at that time was two million

barrels per day. The price per barrel was \$21 USD, and the exchange rate was approximately 1.00 USD to 0.295 Kuwaiti Dinar (KWD). The fiscal year was based on 365 days, given that oil production is continuous. The production costs were 608,300 KWD. The final number represents the estimates of the oil revenues.

Production Quota * Price per Barrel = \$42,000,000
42,000,000 * The Exchange Rate (0.295) = 12,390,000 KWD per day
12,390,000 * 365 days = 4,522,350,000 KWD annually
4,522,350,000 – Production Costs = 3,914,050,000 KWD

Forecasts also are made for non-oil sources of revenues and associated expenses. Those rely more on an incremental basis, except when there are new proposals or projects that could increase the expense. If a ministry or public authority misses the deadline for submitting its budget, the Ministry of Finance takes the responsibility to make assumptions and estimations based on the previous year's budget to make an estimate for the authority. This concludes the first step of the budget cycle.

Step Two: Approval of the national budget

The approval stage includes three main components: (a) approval of the Ministries Council, (b) approval of the Kuwaiti National Assembly, (c) and approval of the Kuwaiti *Amir*. After finalizing the draft of the budget, the Minister of Finance is responsible for presenting the budget draft to the Ministers Council and discussing all of its details. When the council approves the draft, it proceeds to legislation in the National Assembly.

Unlike most its peers in the region, Kuwait includes some aspects of a democratic system (Alnajjar, 2000). The National Assembly represents the legislators in the Kuwaiti political system. These are the officials elected by the Kuwaiti population. After the

Ministers Council's approval, the National Assembly should receive the draft at least two months before the beginning of the new fiscal year to allow time to review and potentially revise it.

The National Assembly itself has a committee that analyzes the budgets thoroughly. Their job is to provide comments, make modifications as required, and ensure that the draft adheres to all legal requirements. After finishing their review, the National Assembly invites the officials from the Ministry of Finance, Ministry of Planning, and Civil Service Commission to a hearing to discuss all of the comments and suggestions. At the end of the hearing, there is a vote on each chapter of the budget until the National Assembly ultimately approves it.

The final step in the approval of the public budget is presenting it to Kuwait's *Amir*. The *Amir*'s approval transforms the budget draft into official law. If this does not take place before the deadline of the new fiscal year, the country will still work from the previous budget. This differs somewhat from the system in the US, where, if the budget is not approved in time, a partial government shutdown usually occurs (Kosar, 2004), as has happened more than once in recent years. This concludes the second step in the Kuwaiti budget cycle.

Step Three: Implementation of the national budget

After the budget is approved, it becomes an official law that the Minister of Finance must implement. The Minister is responsible for notifying all government bodies of their new budgets and execution rules. These include rules that relate to: (a) the limits and procedures concerning what the ministries and public agencies can spend money on, (b) providing procedures for contracting, and (c) situations where the agency needs extra

appropriations and transfers; along with many more (Al-Muzaini, 2005). During the implementation stage, each ministry and public agency must prepare monthly and quarterly documents for accounting purposes and submit them to the Minister of Finance. This implementation cycle continues until the end of the fiscal year.

Step Four: Control and audit of the national budget implementation

The control stage and the implementation stage occur simultaneously. Al-Muzaini (2005) listed some of the objectives of the control stage in Kuwait. The objectives include: (a) verifying the accounting standards and ensuring correct preparation of the financial documents, (b) assessing governmental authorities' compliance with the laws and estimated forecasts, and (c) evaluating the government's performance in achieving the financial goals listed in the budget.

More than one type of control allows them to achieve those goals. The first is an accounting control. This relates to the first objective, in which they take the responsibility to ensure that each government agency is issuing all of the necessary accounting documents and following the Kuwaiti government's accounting rules. It also includes verification of all financial documents that the government provides (e.g., monthly reports, and fiscal year closing accounts).

The second type of control is an economic control. It focuses primarily on evaluating the performance of governmental bodies and programs. This includes assessing their effectiveness and efficiency, and ensuring that each one meets its own deadlines in delivering services. The economic control also assesses the effects of governmental spending on the economy and society, which is similar to an assessment of the budgetary outcomes. The third type of control is administrative. This refers to on-

going evaluation and verification that all public agencies are following the administrative laws and procedures imposed upon them.

Several governmental bodies work together simultaneously on these control functions. The first is the Ministry of Finance, which must form a control team to assist in the process. Furthermore, the ministry's accounting office plays a role in the control process. The Kuwaiti National Assembly also plays a significant role in this stage, approving transfers and modifications to the official budget. Moreover, each candidate in the Parliament has the right to pose questions for the Ministry of Finance during implementation and control of the budget. Finally, the approval of the fiscal year closing account takes place in the National Assembly.

The final and primary participant in the control stage is the State Audit Bureau, an independent governmental body subordinate to the National Assembly. The Kuwaiti Audit Bureau has a role similar to the U.S. Government Accountability Office (GAO). The State Audit Bureau sends representatives to all governmental bodies and agencies to conduct on-going reviews and provide comments regarding their work and performance. The bureau also reviews all of their closing accounts before their final submission.

Step Five: Preparation of budgetary closing accounts

The last stage in the Kuwaiti budgetary cycle is preparing the closing accounts. This includes preparation of the final account for each ministry, the subordinate governmental bodies, and the independent public authorities. All of those accounts together constitute the final account for the country's national budget. Then, during a hearing in the presence of the government, the National Assembly is responsible for approving the accounts' closure.

The closing account process begins when the Ministry of Finance sends information to all governmental bodies regarding the preparation of closing accounts. This information includes the assurance that all governmental bodies pay any third parties their dues before the end of the fiscal year. It also reminds them to prepare a memo explaining all objectives, both achieved and unachieved, with justifications for all of those unachieved. If the difference between forecast and closure is significant, the memo must also include an explanation as to why the actual numbers do not match the estimated forecasts. The National Assembly's approval of all chapters in the closing account marks the end of the budgetary cycle in Kuwait. Table 3.8 summarizes the cycle:

Table 3.8, Preparation and Approval Process of the Kuwaiti Budget

June	<ul style="list-style-type: none"> The rules for preparing the draft budget estimates are circulated to government authorities
July – August	<ul style="list-style-type: none"> All government bodies prepare their draft budgets
September	<ul style="list-style-type: none"> Government agencies submit their draft budgets to the Ministry of Finance
October – December	<ul style="list-style-type: none"> The Ministry of Finance conducts on-going examination and evaluation of the draft budgets Preparation of the national budget
January	<ul style="list-style-type: none"> Discussion and approval of the budget by the Council of Ministers Draft budget submitted to the National Assembly
February – March	<ul style="list-style-type: none"> National Assembly discusses the national budget, which becomes law after approval by the Amir

Budgetary Cycle in Preparation of the U.S. Federal Budget

Step One: Preparation and submission of the U.S. Federal Budget

While preparation of the budget in Kuwait begins with the Ministry of Finance, the U.S. President is in charge of preparing and proposing the federal budget to the legislature. Similarly, in the parliamentary system, the Prime Minister is in charge of

preparing the draft of the budget. However, the proposed budget usually faces ongoing modifications that make it entirely different from the version proposed.

The federal budget is a very long document that reflects the financial plan for the entire country. Thus, it is not a simple responsibility. Hence, the President needs a team to help him/her draft one. This is the role of the OMB. The Budget and Accounting Act of 1921 established the OMB, which was referred to at the time as the Bureau of Budget (Berman, 2015) until President Richard Nixon changed the name in 1970. The OMB office is essential in helping the President prepare the draft of the federal budget.

Lee Jr et al. (2012) indicated that budget preparation begins approximately a full year (and sometimes more) before the budget year. All governmental agencies calculate their estimates of the expenditures they anticipate. The President's team also evaluates the revenues expected, and the President is responsible for issuing an annual document that reflects the guidelines all agencies and programs must adhere to when they build their budgets. Those budgets are to be ready in late summer. The OMB then has the responsibility to review them during the fall. This includes ongoing hearings with the President and the agencies. The process of preparing the annual draft of the federal budget concludes around February, at which time the President submits the proposed budget to Congress.

Step Two: Approval of the U.S. Federal Budget

After the executive body submits the draft budget, the legislature is responsible for reviewing the executive draft and recommendations. They hold various hearings and sessions, each of which focuses on a different goal; some focus on expenses, others on reviewing the revenue forecasts, and so on. Furthermore, there are special hearings and

sessions that address specific agencies and public programs, largely when there are recommendations for increased appropriations.

A significant part of the process is political, in that each agency does its best to ensure they receive the amount needed. Thus tensions and conflict—largely between the Congress and the Presidential budgetary team—arise during this process. The tensions increase when the country faces financial shocks, as they might have to shut down some programs or look for new sources of revenue, which can be difficult because imposing new taxes is not an easy job.

The approval process concludes when the legislature signs the final document that reflects the appropriations and any new bills, whether in the form of taxes or otherwise. However, the U.S. president has veto power that allows him/her to send some documents back for further discussion and consideration before finally receiving approval. Once the executive and legislative branches agree, the approval process ends, and the execution step begins.

Step Three: Execution of the U.S. Federal Budget

The execution process marks the beginning of the U.S. fiscal year, in which the OMB plays the most fundamental role. When this step begins, all agencies must submit a new plan stating the way in which they intend to use the appropriated funds. This is required on a quarterly basis. The goal of the OMB is to ensure that each agency does not use the majority of its funds before the fiscal year ends. If this happens, they would then need additional or supplemental appropriations, which would be undesirable.

The President has some authority to refuse or reduce an appropriation by what is referred to as an *impoundment*. This form of veto gives the President power to reduce

appropriations or even refuse to release some of the funds. However, impoundments are rare, because they indicate that the President is not cooperating with the legislative body (Lee Jr et al., 2012).

There also are ongoing, so-called *pre-audits* in the process of executing the budget. These are designed to ensure that all funds are used in approved ways and for approved goals and purposes. Furthermore, by working to ensure that the proposed expenditure is realistic the pre-audits ensure that the agency has the capacity to commit the expenditure they proposed. The ongoing pre-audits can take place on either a monthly or quarterly basis. All of these submissions to the OMB, as well as the pre-audits, take place throughout the execution step until the end of the fiscal year, at which time the cycle repeats itself with the new appropriations.

Step Four: Audit and control of the U.S. Federal Budget

The fourth step, the audit and control, is the last step in the U.S. budgetary cycle. One of the primary goals of this step is to ensure that all agencies comply with the appropriated bill that was signed at the beginning of the fiscal year. Other goals include ensuring that there is no wasteful spending, which is accomplished through the on-going audits and checks of each agency's financial books. The goals also include assessments of the effectiveness and efficiency of each governmental program and agency, which can be a sizable responsibility, as it is not easy to assess the effectiveness and efficiency of some agencies' broad and vague goals.

The main responsibility for this process lies with GAO. The Budget and Accounting Act of 1921 helped form the office, which serves as an audit tool outside the executive branch helping Congress assess and audit how agencies are controlling their

funds. In 2004, the name of the GAO officially changed to the U.S. Government Accountability Office (Lee Jr et al., 2012).

The President typically proposes the head of the GAO, whom the Senate then confirms to a 15-year term. Congress can remove the head of the GAO, although this has never happened (Lee Jr et al., 2012). The functions of the GAO include: (a) accounting audits to ensure that agencies are following governmental accounting standards, (b) offering Congress expert advice and legal opinions about public agencies' practices, (c) resolving bid offerings for governmental contracts, and (d) assessing the effectiveness of government programs and agencies.

The previous explanation provided a brief overview of what takes place in each step of the budgetary cycle. There are additional details that this paper does not discuss, as the focus here is on a general overview of the budgetary cycles to compare those of Kuwait and the US. Menifield (2011) offers a concise summary of the budgetary cycle in the US. Table 3.9 below reflects his summary:

Table 3.9, The U.S. Federal budgetary process

From the 1st Monday in January until the 1st Monday in February	The President prepares and submits the budget to Congress
The Following Six Weeks	Congressional committees report budget plans and estimates to budget committees
April 15th	Action is completed on congressional budget resolution
June 15th	Action on reconciliation is completed
June 30th	Action on appropriations is completed
July 15th	The President's team reviews the budget again and revises the estimates for the final time
October 1st	The fiscal year begins and the cycle repeats

CHAPTER FOUR: HYPOTHESIS DEVELOPMENT AND CONTRIBUTION

Hypothesis Development

The previous section (Chapter Three) provided a brief background on the process by which Kuwait and the United States prepare their annual, national budgets. The discussion of both the sources of revenues and the budgetary cycles served as the foundation supporting the hypothesis development. The primary question examined in this dissertation is whether nondemocratic countries with wealth dependent upon natural resources have budgetary stability with patterns of interruption similar to countries the PET and incremental budgeting literature have shown thus far? Using the budget of Kuwait, and of the United States as a benchmark for comparison, this section addresses several secondary questions that together could help answer the question of what incrementalism looks like in nondemocratic countries whose primary wealth comes from natural resources.

These secondary questions include: are the annual changes in the Kuwaiti budget similarly incremental to those in the U.S. budget? Does PET hold in Kuwait, given that two of the three conditions that lead to incrementalism and stability in PET are not present in Kuwait (i.e., lack of checks and balances and high reliance on one source of income)? Answers to these questions will contribute to the literature, in that a new theory will develop by examining a country that has different characteristics than those examined in the previous literature. This could further our understanding of whether PET and incrementalism hold in oil-rich countries and/or nondemocratic states.

I argue that both reliance on natural resources and the level of democracy are essential factors that affect the level of incrementalism in the budget. Therefore, based on

this argument, I assert that the annual changes in the Kuwaiti National Budget may not be incremental, and budgetary shocks might be of greater magnitude. I used two principal factors to support this argument: (a) the Kuwaiti public sector and the legislators' power have an institutional design that dissuades intense politics to be involved in the preparation of the Kuwaiti National Budget, and (b) the different nature of Kuwait's revenue source, in that the country relies almost entirely on one source of income. The first reason that the Kuwaiti budget might be less incremental than the U.S. budget relates to the different institutional design of Kuwait's public sector. As the previous sections have indicated, two main parties prepare the Kuwaiti National Budget—the legislators in the Kuwaiti parliament and the Ministry of Finance representing the Kuwaiti government. In contrast, in the U.S. system, three different parties are involved in the process: the House of Representatives, the Senate, and the President and his advisors.

Such differences in institutional design make a significant difference. Fewer parties are involved in the Kuwaiti budget process, which results in fewer voting members, fewer negotiations, and fewer politics. There are 535 total voting members between the U.S. House and Senate, while the Kuwaiti Parliament consists of only 50 members. Further, each Kuwaiti minister can vote on issues in the parliament. These ministers are not elected officials; the prime minister selects them, and he also is not elected but is chosen instead by the *Amir*. In this way, the Kuwaiti system grants much higher authority to the executive than to the legislative branch.

In contrast, the fact that three constituents are involved in the preparation of the U.S. national budget makes a significant difference, because the House may be pro-government, while the Senate may be pro-opposition, or vice versa, as often happens

given the famous checks and balances in the U.S. system. In summary, Kuwaiti legislators have fewer opportunities to oppose what the government passes, including the national budget.

One of the explanations for why some budgets are incremental is the ongoing politics among the different parties involved in the process that make the national budget stable (True, Jones, & Baumgartner, 1999). The Kuwaiti budget cycle begins with the process of preparing the national budget and ends when the *Amir* approves it. Thus, the system grants the *Amir* the power to reject the budget or modify it in accordance with his agendas, which usually represent the executive branch's preferences. The *Amir* has the power to approve or veto the national budget even if the majority of the Kuwaiti Parliament members approved them previously.

However, the *Amir* does not use these extra powers regularly. Still, this potential power may be one of the main reasons for punctuations in the budget. For example, the PET claims that one of the possible sources of punctuations is a change in leadership that results in changes in priorities (Baumgartner, Jones, & Mortensen, 2014). This is because new appointees always are enthusiastic about changing the status quo. This underscores the point that the leadership and power play a major role in producing punctuations. Thus, the extra power the executive branch in Kuwait wields could be a source of these punctuations, which would support this paper's argument that the Kuwaiti National Budget will be less incremental and demonstrate a higher frequency of punctuations than with the U.S. budget.

The International Monetary Fund published a working paper that ranks countries according to how much accountability their legislators have over the executives (Lienert,

2005). The study's sample was moderately small, having only 28 countries. Although the study included the United States, it did not include Kuwait. The study ranked the United States first with respect to the accountability that legislators have over the executive branch. Evidence of this includes periodic governmental shutdowns in the United States, often attributed to disagreements about the national budget and ongoing politics. The Kuwaiti system has less politics because of the smaller number of parties involved in the budgetary preparation process and the executive branch's extra power. Such a system lacks competition between the executive and legislative branches. These differences between Kuwait and the United States support the hypothesis that the Kuwaiti budget will be less incremental and have a higher frequency of punctuations.

This section is intended to provide a general theory that relates to nondemocratic economies dependent on natural resources. The case of Kuwait serves as a perfect example that could help support the theory, and the Polity IV index can help generalize the theory and clarify the point. Polity IV is a dataset political scientists often use. Some of the components of the Polity IV scale include measures of competitiveness in political participation, constraints on the chief executive, and the openness of executive recruitment (Marshall & Jaggers, 2002). Political scientists use Polity IV to measure the level of democracy within different countries (Haber & Menaldo, 2011; Ross, 2001; Treisman, 2010). The index includes three main variables: (a) *Democ*, which measures a country's level of democracy; (b) *Autoc*, which measures a country's level of autocracy, and (c) *Polity*, which combines both variables and is the primary variable that scholars use to measure democracy levels.

Democ and Autoc both range in scale from 0 to +10, in which higher values indicate higher levels of democracy and autocracy, respectively. The polity variable combines both, and thus ranges from -10 to +10, in which a higher value indicates a more democratic regime. The Polity IV also provides ranges that help researchers assign countries to three categorical variables. Countries that receive a polity score of -10 to -6 are considered autocracies; those that score -5 to +5 are considered anocracies, and those that score +6 to +10 are considered democracies. I will use the Polity IV to help put things into perspective with respect to the way the PET literature has considered only one side of the story (the positive side of modern, democratic countries). Table 4.1 below displays Kuwait's Polity IV scores alongside a list of those from all the countries that the PET literature has investigated to date.

Table 4.1, The most recent data available for the 2016 Polity Scores

Country	Kuwait	U.S.	Canada	UK	Germany	Denmark	France	Belgium	Spain	South Africa
Democracy Score	0	8	10	10	10	10	9	8	10	9
Autocracy Score	7	0	0	0	0	0	0	0	0	0
Overall Polity Score	-7	8	10	10	10	10	9	8	10	9
Regime Type	A	D	D	D	D	D	D	D	D	D

Note: Values represent the official scores assigned by the Polity IV project. A stands for Autocracy, D for democracy.

Scholars have investigated several cases in Europe and compared them with the United States to determine whether the European countries showed results similar to the

United States with respect to their budgets meeting the expectations of PET. Further, scholars have tried to understand whether the different types of political institutions among those countries would lead to different outcomes. For example, several papers (e.g., Baumgartner, Foucault, & François, 2006; and Baumgartner et al., 2009) attempted to determine whether having a parliamentary system, as is the case in most European countries, leads to different outcomes than having a presidential system, as in the United States

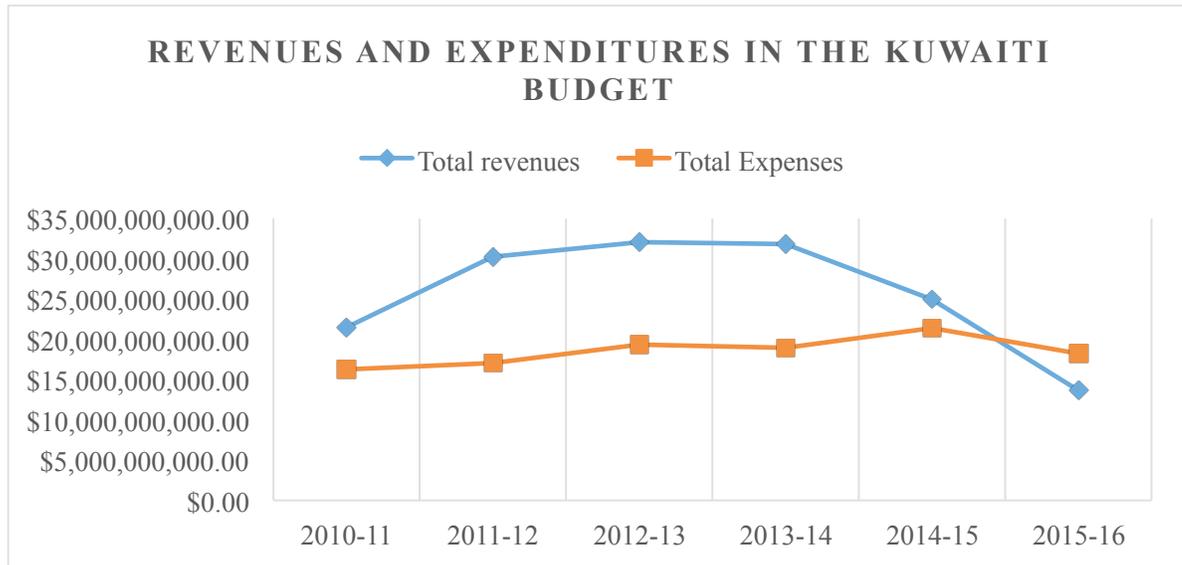
By discussing the way the lack of democracy and a strong dependence upon natural resources can affect the stability of a country's budget, this dissertation helps to extend the discussion beyond those countries on which these theories have shed light. Table 4.1 above indicates that all the cases that have been investigated thus far have been democracies and have very similar scores in the Polity IV index. However, the Polity IV index categorizes Kuwait as an autocratic country. As such, studying these theories on Kuwait would help shed light on the way a different type of regime affects incrementalism in the national budget. Further, the discussion in Chapter Three of both Kuwait's and the United States' budgetary cycles has also demonstrated that the decision-making process is much more centralized in the Kuwaiti system than in the United States. A logical inference follows that the Kuwaiti system also differs significantly from the other countries that the PET and incremental budgeting literatures have covered so far.

The second factor that supports this paper's argument is the different nature of revenues in countries dependent on natural resources. Unlike the U.S. budget, which derives revenues from several sources (Gruber, 2005; Lee Jr, Johnson, & Joyce, 2012; Mikesell, 2013), the Kuwaiti budget relies almost entirely on one—oil revenues

(Cordesman, 2018; Herb, 2014). The more diversified the revenue sources in a budget, the more stable it should be, given the fact that if one source of revenue declines, others can still support the budget (Carroll, 2009). However, reliance on one source of income puts a country's budget at greater risk because of the possible fluctuations and volatility of that lone source of income. For example, a reduction in the oil barrel price affects Kuwait's economy drastically, given that more than 85% of all its revenues are oil revenues. However, the effects of such on the economy of Norway, another major oil producer, are not as great, given that less than 50% of its total revenues derive from oil. Norway also has a sound tax system that accompanies its oil revenue stream.

The volatility and fluctuations in oil prices (or any natural resource prices) could be a major argument that supports the hypothesis of this dissertation. As stated above, the Kuwaiti budget shows that the government generates nearly 90% of its revenues from oil. Therefore, any fluctuation in the price of oil could result in large changes to the budget. The revenue forecasting procedure that the Kuwaiti government follows depends on the price of oil per barrel, while the forecasting of everything else follows a regular incremental pattern that factors in previous annual trends. Figure 4.1 below clarifies this point. Within only two fiscal years, the Kuwaiti budget lost over half of its total revenues. Total revenues were approximately 31.8 billion Kuwaiti Dinar in FY 2013-14 and decreased to 13.6 billion in FY 2015-16. This plunge was associated with the decrease in oil prices in general. Had the Kuwaiti budget not been reliant solely on oil revenues, the decrease would not have had such a significant effect.

Figure 4.1, Fluctuations in the Kuwaiti National Budget



Note: Numbers are based on the Kuwaiti official budgets, and are in Kuwaiti Dinars.

Norway is a good example, as it is wealthy in natural resources, but has a wise and stable budgetary management (Anderson, Curristine, & Merk, 2006). Although it is a major producer of oil, it does not rely on oil as its main source of income, and has several taxes that generate more revenues for the government than oil does. Based on World Bank data, Norway did not witness a dramatic decrease in total revenues when oil prices decreased. The country generated approximately 1.45 trillion USD in FY 2013-14, which increased to 1.47 trillion in FY 2014-15, followed by a decrease to approximately 1.45 trillion in FY 2015-16. The point here is that strong reliance on a sole source of income leads to high volatility in the budget overall.

The operating definition of a punctuation in this dissertation is a budgetary shock. This definition serves as a bridge that allows testing whether annual changes follow the expectations of the incremental budgeting theory or the PET theory. The two theories are very similar, with the exception that incremental budgeting lacks a component that could

account for budgetary shocks. On the other hand, PET argues that a policy process that includes budgetary fluctuations would exhibit incremental changes most of the time, but also that shocks would periodically interrupt such stability.

The different political system of Kuwait, different design of its public sector, and different nature of its budget all combine in support of the argument that the Kuwaiti National Budget will be less incremental and exhibit a higher frequency of punctuations than the U.S. Federal Budget. However, this argument could hold in all countries that lack democratic checks and balances and/or those that are highly reliant on natural resources. Thus, I would argue:

Hypothesis 1: Countries with lower levels of democracy and economies that depend highly on natural resources will have less incremental budgets with a higher frequency of punctuations relative to Western and European countries.

Contributions

The work of this dissertation also contributes to the budgeting, PET, and Incrementalism literatures. First, it tests the theories in a new context. As discussed in the previous section, Kuwait differs from all other countries in the literatures as both the PET and incrementalism theories so far have investigated only modern, democratic states. The lowest score for a country among those in the literature was +8 on a scale from -10 to +10. Such a high score among all studied countries is understandable, as data allowing scholars to test the theory are typically unavailable in non-democratic systems due to a lack of transparency. In contrast to these countries, Kuwait is not a fully democratic country (Alnajjar, 2000), and Polity IV gave it a score of -7, which categorizes it as an autocracy. The lack of democracy could lead to very different budgetary outcomes, likely

affecting incrementalism in the budget. This is why several papers in the PET literature have focused on understanding the way different political systems within the countries studied thus far would lead to different outcomes with respect to budgetary incrementalism. Thus, the first contribution this research provides is testing PET in a new context.

Table 4.2, Natural resource revenues as a percentage of GDP in countries that have been studied thus far in the literature relative to Kuwait

Country	Kuwait	U.S.	Canada	UK	Germany	Denmark	France	Belgium	Spain	South Africa
Natural Resources Percentage of GDP	56.9%	<1%	2.5%	<1%	<1%	1.2%	<1%	<1%	<1%	6.8%

Note: these numbers are based on World Bank Data for the year 2013.

Kuwait differs from the other countries studied thus far in more than just its political system. Table 4.2 demonstrates that the Kuwaiti budget differs entirely from that of all countries that the PET literature has addressed to date. Most countries rely on taxes as their main source of income, which is why all countries in the PET literature have a low value for natural resource revenues as a percentage of GDP. However, natural resources constitute more than 50% of the entire Kuwaiti GDP.

It should be noted: Kuwait here serves as just one case amongst a significant number of countries that share the same characteristics. Thus, the relevance of this theory is not unique to Kuwait. Rather, it pertains to many other countries that are nondemocratic and largely dependent on natural resources. For example, all countries

within the Gulf Cooperation Council (GCC) have the same issues. Natural resource revenues make up more than 20% of the GDPs of Saudi Arabia, the United Arab Emirates, Qatar, Bahrain, and Oman. However, it is not simple to obtain those countries' detailed budgetary data at this point, and thus it remains difficult to assess budgetary incrementalism and PET. Table 4.3 below focuses on GCC countries, all of which are nondemocratic. Moreover, all countries in the GCC are autocratic based on the Polity IV index.

Table 4.3, GCC countries' reliance on natural resources and democracy scores

Country	Kuwait	Saudi Arabia	United Arab Emirates	Qatar	Oman	Bahrain
Natural Resources Percentage of GDP in 2013	56.90%	46.37%	24.56%	36.11%	38.58%	24.60%
Democracy Score in 2016	0	0	0	0	0	0
Autocracy Score in 2016	-7	-10	-8	-10	-8	-10
Overall Polity Score in 2016	-7	-10	-8	-10	-8	-10
Regime Type in 2016	A	A	A	A	A	A

Note: Numbers are based on World Bank Data and the Polity IV index. Values represent the official scores assigned by the Polity IV project. A stands for autocracy.

All GCC countries are located in the Persian Gulf, but countries in different regions of the world also share the same characteristics. For example, Uzbekistan is located in central Asia, and approximately 21% of its GDP in 2013 derived from natural resources. Its democracy score, based on the 2016 Polity index, was -9, which categorizes it as an autocracy. Gabon is another example. Gabon’s 2016 Polity score was -7, which also categorizes it as an autocracy, and natural resources accounted for approximately 43.87% of the country’s GDP in 2013. Table 4.4 below provides additional cases that have no or low levels of democracy and high reliance on natural resources.

Table 4.4, Sample of countries that are nondemocratic and rely on natural resources

Country	Chad	Algeria	Angola	Iran	Mauritania	Turkmenistan
Nat. Resources Percentage of GDP in 2013	27.47%	28.27%	32.71%	28.35%	44.21%	32.02%
Democracy Score in 2016	1	3	2	0	0	0
Autocracy Score in 2016	3	1	4	7	2	8
Overall Polity Score in 2016	-2	2	-2	-7	-2	-8
Regime Type in 2016	AN	AN	AN	A	AN	A

Note: Values represent the official scores assigned by the Polity IV project. A stands for Autocracy. AN for anocracy.

As shown in Table 4.5 below, all countries in the literature to date are democratic and not dependent on natural resources. Thus, the second contribution this research makes is attempting to theorize whether PET holds in nondemocratic countries. At the same time, the PET literature does not refer to the nature of the revenue sources and the way they can affect a budget's incrementalism. As the literature review indicates, the two primary arguments in the literature are: (a) decision makers demonstrate bounded rationality, and (b) the checks and balances in democratic systems. Thus, this theory will focus on the nature of revenues on which the country relies and the way this could affect incrementalism in the budget. In summary, offering a more complete theory of PET that sheds light on the different nature of revenue sources, and tests PET in a different context (one that is nondemocratic and relies highly on natural resources) are contributions that this research will provide to the PET literature.

Table 4.5, Matrix representing various features of countries that have been studied thus far in the PET literature

	Not Natural Resource Dependent	Natural Resource Dependent
Democratic	U.S., UK, France, Germany, Canada, Belgium, Denmark, Spain, and South Africa.	-
Nondemocratic	-	-

Table 4.5 creates four different groups with characteristics of countries theorized to affect incrementalism in the budget. All countries studied so far in the PET literature have been in group one: democratic and not dependent on natural resources, while most

countries that discussed earlier in the chapter are nondemocratic and dependent on natural resources. Those include the GCC countries, Uzbekistan, Turkmenistan, Chad, Angola, Mauritania, and Iran, among others. These all fit in the fourth category within the matrix. The theory developed in this dissertation suggests that countries without a democratic system and heavily reliant on natural resources will have less incremental budgets and a greater frequency of budgetary punctuations/shocks.

There remain two groups yet to be discussed: (a) countries that are nondemocratic but not reliant upon natural resources, and (b) countries that are democratic but highly reliant upon natural resources. For example, Cuba scored -7 on the 2016 Polity index, which categorizes it as an autocracy. However, natural resources constitute only approximately 3.2% of Cuba's GDP. Morocco is another example; it has a score of -4 on the Polity index, making it an anocracy, and natural resources contribute only 3.25% to its GDP. Table 4.6 below provides more examples of the second group in the matrix: countries that are nondemocratic and not reliant on natural resources.

The third group in the matrix represents countries that are democratic but dependent on natural resources. It was the smallest group, and only a few countries fit within this group: Trinidad and Tobago, Solomon Islands, Guyana, Liberia, and Mongolia. They all have polity scores above 5, which categorizes them as democracies. Further, natural resources constituted more than 20% of their GDPs in 2013. Table 4.7 below provides more details about each of the five countries.

Table 4.6, Sample of countries that are nondemocratic and not reliant on natural resources

Country	Turkey	Thailand	Singapore	Jordan	Gambia
Nat. Resources Percentage of GDP 2013	<1%	3.94%	<1%	1.53%	6.5%
Democracy Score in 2016	0	0	2	2	0
Autocracy Score in 2016	4	3	4	5	5
Overall Polity Score in 2016	-4	-3	-2	-3	-5
Regime Type in 2016	AN	AN	AN	AN	AN

Note: Values represent the official scores assigned by the Polity IV project. AN stands for anocracy.

Table 4.7, Sample of countries that are democratic and rely on natural resources

Country	Trinidad and Tobago	Solomon Islands	Guyana	Liberia	Mongolia
Nat. Resources Percentage of GDP 2013	26.87%	35.8%	21.16%	27.96%	22.57%
Democracy Score in 2016	10	9	8	7	10
Autocracy Score in 2016	0	1	1	1	0
Overall Polity Score in 2016	10	8	7	6	10
Regime Type in 2016	D	D	D	D	D

Note: Values represent the official scores assigned by the Polity IV project. D stands for democracy.

Table 4.8 below provides a more complete picture of the matrix. The literature has investigated only countries that are democratic and not dependent on natural

resources. This is not surprising, because it is understandable that the data might not be available for all other countries. However, this indicates that the picture is still incomplete. One of the papers in the PET literature claimed that the PET is the general law of budgets (Jones et al., 2009), which could be an exaggeration, given that there still is much to cover in the literature before one make such a statement. However, the authors also acknowledged that such a pattern is found among western democracies.

Table 4.8, Matrix categorizing some countries based on democratic status and dependency on natural resources.

	Not Natural Resource Dependent	Natural Resource Dependent
Democratic	U.S., UK, France, Germany, Canada, Belgium, Denmark, Spain, and South Africa	Trinidad and Tobago, Solomon Islands, Guyana, Liberia, and Mongolia
Nondemocratic	Turkey, Thailand, Singapore, Gambia, Jordan, Morocco	Kuwait, Saudi Arabia, Qatar, Bahrain, Oman, United Arab Emirates, Uzbekistani, Turkmenistan, Chad, Gabon, Iran

This paper argues that (a) if nondemocratic countries dependent upon natural resources are expected to have less incremental budgets than those that are democratic and less dependent on natural resources, then (b) countries lacking only one of these two factors should fall in the middle of the spectrum. In such a case, one would expect, for example, Kuwait to have a budget that is less incremental than those of Mongolia (democratic but dependent on natural resources) and Singapore (nondemocratic and not dependent on natural resources). At the same time, I expect that the budgets of Singapore

and Mongolia would be more volatile than that of the United States. Table 4.9 below summarizes the expectations of the theory.

Table 4.9, Matrix representing the expectations of the theory for each group

	Not Natural Resource Dependent	Natural Resource Dependent
Democratic	Most stable/incremental	Intermediate
Nondemocratic	Intermediate	Least stable/Incremental

Because of the difficulty in obtaining data for many other countries, Table 4.10 below includes more countries in group one than in all other groups. This section will provide some initial insights about the way those democratic countries and those countries not reliant upon natural resources differ significantly with respect to budgetary incrementalism. The table presents averages and medians based on the World Bank data regarding total expenses for each country. The purpose of this variable is to calculate the average and median percentage changes for a total of 11 fiscal years (10 years of percentage changes). However, several countries either do not have information for this variable, or have very few observations. While this is not a formal test of the theory—as the data are insufficient for reaching any solid conclusion—it is an initial, descriptive analysis that helps clarify the point.

Table 4.10 below shows the average percentage change in group one as significantly smaller than those of all other groups. No country among those in group one in the table has a mean or median greater than 5%. On the other hand, group four

represents the other extreme, in which the lowest mean value among the countries in the table is 15%, which is the average percentage change for Kuwait.

Groups two and three fall between the two extremes. However, countries that are democratic and dependent on natural resource have slightly greater means and medians, which may indicate that natural resource dependence has a much greater effect than whether or not the country is democratic. Again, given the limited data in the table, this is not a strong conclusion, but rather an initial assessment in the process of developing this theory.

The criterion for classifying a country as dependent on natural resources was based on the World Bank's variable, *natural resource rents as a percentage of GDP*. Under the operating definition of this study, if a country had more than 15% of its GDP derived from natural resources, it was classified as natural resource dependent. Per the Polity index, a country having a value of six or higher was considered democratic.

Table 4.10, Budgetary incrementalism within the four different groups.

Group 1: Democratic and not nat. resource dependent		Group 2: Democratic and nat. resource dependent		Group 3: Nondemocratic and not nat. resource dependent		Group 4: Nondemocratic and nat. resource dependent	
U.S.		Trinidad and Tobago		Thailand		Kuwait	
Average	4%	Average	15%	Average	8%	Average	15%
Median	3%	Median	12%	Median	7%	Median	7%
UK		Chile		Jordan		Oman	
Average	3%	Average	11%	Average	10%	Average	16%
Median	3%	Median	11%	Median	9%	Median	13%
Denmark		Burkina Faso		Singapore		Iran	
Average	4%	Average	11%	Average	9%	Average	27%
Median	4%	Median	9%	Median	9%	Median	27%
Germany		Nigeria		Bhutan		Algeria	
Average	2%	Average	16%	Average	15%	Average	17%
Median	3%	Median	14%	Median	13%	Median	14%
France							
Average	3%						
Median	3%						
Canada							
Average	3%						
Median	4%						
Belgium							
Average	3%						
Median	3%						

Note: Numbers are based on the last 11 years of data available for each country in the table. A country was characterized as natural resource dependent if natural resource revenues totaled more than 15% of the country's annual GDP. A country was characterized as democratic if its Polity index score was +6 or greater.

CHAPTER FIVE: DATA AND RESEARCH METHODOLOGY

The previous chapters have provided a general background about the PET literature and how this research project contributes to it. This chapter focuses on the data upon which the hypothesis of this research was tested and the systematic testing of the hypothesis that provide the basis for the formulation of the theory.

Data

The official Kuwaiti National Budgets, provided by the Kuwait Ministry of Finance, served as the dataset for Kuwait in this research project. Due to transparency issues, it is difficult to obtain data on Kuwait's budget for many years and as such, a complete dataset in excess of 25 years is unavailable. The available data for the Kuwaiti National Budget covers 19 fiscal years starting from FY 1997-98 and continuing until FY 2015-16. As discussed in Chapter Three, two main classifications comprise the Kuwaiti budget: one provides broad revenue and expenditure categories, and the second classification categorizes the budget by ministries and state agencies. I used the *administrative classification*, that is, the classification categorizing revenues and expenditures by ministry (e.g., ministry of education, ministry of health, etc.). The classification allowed for the calculation of the annual percentage change for each ministry.

The administrative classification contains 27 line items, as there is a corresponding number of ministries and state departments. The ministries comprising the budget include the: (a) Ministry of Finance, (b) Ministry of the Interior, (c) Ministry of Defense, (d) Ministry of Planning, (e) Ministry of Education, (f) Ministry of Higher Education, (g) Ministry of Health, (h) Ministry of Public Works, (i) Ministry of

Transportation, (j) Ministry of Commerce and Industry, (k) Ministry of Communication, (l) Ministry of Oil, (m) Ministry of Electricity and Water, (n) Ministry of Social Affairs and Labor, (o) Ministry of Information, (p) Ministry of Justice, and (q) Ministry of Islamic Affairs. The state departments include the: (a) Kuwait National Guard, (b) State Audit Bureau, (c) Central Statistical Bureau, (e) Civil Service Commission, (f) Kuwait General Administration of Customs, (g) Kuwait *Awqaf* Public Foundation, (h) Council of Ministers, (i) Civil Aviation Authority, (j) National Council of Culture and Letters, and finally, (k) the *Amiri Diwan*, the Royal Council. Each of the ministries is subject to contributing 10% of its revenues to the future generations' fund.

As Chapter Two indicated, scholars test PET and Incrementalism by calculating the percentage change for each line item for all the years that the study covers, pooling the percentage changes of all budgetary line items together into one variable, and running tests on that pooled variable. The 19 years of data for the Kuwaiti budget, provides 18 years of percentage changes. With 27 different line items in the administrative classification, the number of observations for this study was supposed to be $18 * 27 = 486$. However, some budgets had missing numbers for some ministries, and thus the actual number of observations was 469.

The total number of observations for the U.S. case was comparable. Following Baumgartner et al., (2014) this study utilized the OMB historical data, which provides data about the U.S. Federal Budget since the 1940s. The OMB tables have categorized the U.S. Federal Budget into 15 different functions allowing for the calculation of the percentage changes for each of these functions. These functions include: (a) national defense; (b) education, training, employment, and social service; (c) health; (d) Medicare;

(e) income security; (f) Social Security; (g) veterans benefits and services; (h) natural resources and environment; (i) transportation; (j) international affairs; (k) general science, space, and technology; (l) agriculture; (m) administration of justice; (n) general government; and (o) net interest. Using data from 32 fiscal years from the U.S. Federal Budget provided for 31 years of percentage changes; thus, the total number of observations for the U.S. case is $15 * 31 = 465$.

Testing Methodology

Test One

I started my systematic evaluation by finding descriptive evidence of how incremental both budgets are. I began by providing the average percentage change, median percentage change, and the standard deviation for the pooled variables for both the U.S. Federal Budget and the Kuwait budget. The pooled variable was to represent the expenditure side of the budget. I also provided snapshots of both total revenues and total expenditures for the United States and Kuwait for the years that the study covered. To form a basic idea of the annual incremental changes, I provided the average percentage change, the median percentage change, and the standard deviation of total revenues and total expenditures for both countries over the study's period. Following what most papers in related literature have done, I focused my observations on expenditures to test the hypothesis. Nevertheless, I provided the numbers for total revenues as well, because one of the arguments supporting the hypothesis that the Kuwaiti budget would be less incremental than the U.S. budget involved the volatility in the Kuwaiti total revenues due to reliance on one source of income. This only served as an initial test for the hypothesis. The next sections describe further testing of the hypothesis.

Test Two

I categorized each percentage change into two groups: incremental and non-incremental changes. As the literature review made clear, there is no consensus as to what the cutoff value should be for classifying a change as incremental. Shull and Franklin (1978) argued for a $\pm 10\%$ cutoff distinguishing a change as incremental. Citi (2013) also deemed the $\pm 10\%$ cutoff as appropriate. Since there is no agreement on the appropriate cutoff, I used a series of cutoffs, starting with the $\pm 10\%$ cutoff to evaluate the percentage changes of expenditures for Kuwait and the United States. This served as a way to assess how many incremental changes the United States and Kuwait had in my data. The significance of incrementalism in a country's budget corresponds to the percentage of budget changes that could be distinguished as incremental. I applied this test on the pooled variable of both countries. The expectation was to have more non-incremental changes in the Kuwaiti budget.

Following this, I ran sensitivity analyses trying different cutoffs around the 10% cutoff to further investigate the hypothesis, using 12%, 15%, 20%, and 25% cutoff values to distinguish between an incremental change and a non-incremental change. The sensitivity analyses with varying cutoff values helped ensure the means and medians that Test One provided were not driven by extreme values in the data, but rather by the norm in the budget itself, so as to confirm whether the natures of both budgets were incremental or non-incremental. For instance, having many percentage changes greater than the 25% cutoff could indicate that the budget has many extreme outliers. Additionally, if the majority of the budgetary changes were less than the 10% cutoff, this would indicate that this budget is incremental.

Test Three

I ran the classical incrementalism regression equation on the pooled variables of both budgets. The equation is: $Y_t = a + B Y_{t-1} + e_t$

This is the main test that several classical papers have run to test the theory of incrementalism (Davis et al., 1966). I ran two regressions here: one for the pooled variable of the Kuwaiti National Budget and one for the pooled variable of U.S. Federal Budget. The incrementalism of the budget depends on the size of the model's R^2 , which is measured by the amount of variation in the Y_t variable that is explained by the Y_{t-1} variable. A higher R^2 would mean that the lag of total expenditures explains a higher degree of our model. For results to be consistent with my hypothesis, that the Kuwaiti budget is less incremental than the U.S. budget, the R^2 of the U.S. lag regression should be larger than the R^2 of Kuwait's lag regression. I also ran a lag regression with a time variable to make sure that the results were not driven by a time trend.

Test Four

The next test was the main test that several papers in the literature used, which required looking at the distribution of the annual percentage changes. Citi (2013), Breunig and Koski (2006), Baumgartner et al. (2009), Jones et al. (2009), John and Margetts (2003), Baumgartner et al. (2006), Caamaño-Alegre and Lago-Peñas (2011), Pauw (2007), and more papers in the literature have run the distribution tests to test the PET. I followed the same pattern of the literature and ran the distribution test, as it is the main test for determining the incremental nature of the budget. If the budget is incremental, then the distribution of annual percentage changes would appear normal, as

they should be centered on zero. If the distribution displays fat tails on either side, this would indicate many shocks in the budget.

I started by visually evaluating the normality of the distribution through a histogram. I also ran a Shapiro-Wilk test to evaluate the normality of the two distributions. The Shapiro-Wilk test served to examine whether the sample was drawn from a normally distributed population. Rejecting the null of the Shapiro-Wilk test would indicate that the distribution is not normal, representing a non-incremental budget. Using statistical tests to assess normality is important, as they are more precise than graphical tests, given that the statistical tests go beyond the ocular tests and provide probabilities regarding of the normality of the distribution is. Some statisticians have done comparison papers among the different normality tests and concluded that the Shapiro-Wilk is the best test to assess normality (Razali & Wah, 2011; Shapiro, Wilk, & Chen, 1968). I continued testing the normality visually by running a normal Q-Q plot where the dots should follow the line of a normal distribution. I also provided K-density plots to visually assess the normality of the distribution. In sum, the closer the distribution is to normal, the closer the budget is to incrementalism.

On the other hand, the distribution should look leptokurtic if the budget exhibits the expectations of the PET. Most papers in the literature have found support for a leptokurtic distribution in the U.S. budget. Thus, I am not expecting the U.S. Federal Budget to look perfectly normal. However, the main goal of this research project involved assessing incrementalism and PET on the Kuwaiti budget. The U.S. numbers have served as benchmarks for comparisons.

Test Five

Most papers that have run the distribution tests to examine the PET have also run kurtosis and L-kurtosis tests to assess how leptokurtic the distribution of percentage changes are. The kurtosis and the L-kurtosis tests were important to confirm the results from the ocular examination of the distribution tests. The kurtosis tests were essential because they focused on the tails of the distribution to signal the expected punctuations/shocks of the PET. I used a kurtosis value of three as the cutoff to decide whether the distribution was leptokurtic or not. However, some papers have argued that the kurtosis test by itself might not be sufficient, as it might provide inaccurate results if there are outliers in the data (Breunig & Koski, 2006). This is why several papers have also provided the L-kurtosis, which is a standardized kurtosis value upon which outliers in the data have an insignificant influence. The L-kurtosis is a value that runs from zero to one. The closer the value is to one, the more leptokurtic the distribution becomes. Breunig (2006) also argued that an L-kurtosis value of 0.123 represents a perfectly normal distribution, thus having a value closer to it indicates a more normal distribution. I ran the kurtosis and L-kurtosis tests for the pooled variables of both countries.

By running all five of these tests, I would be able to conclude whether there was support for my hypothesis. The five tests complemented each other, as one was a descriptive test, some were ocular tests, and some were statistical tests. Some of the tests were distributional tests focusing on the overall distribution of the percentage changes, while other tests focused on the tails of the distribution. The expectation was that *countries with lower levels of democracy and higher dependence on natural resources would have less incremental budgets with a higher frequency of punctuations than those*

of Western and European countries. Thus, I expected the U.S. Federal Budget to be more incremental, and to have a lower frequency of punctuations than the Kuwaiti National Budget.

CHAPTER SIX: RESULTS

The theory presented in Chapter Four predicted that the Kuwaiti National Budget would be less incremental than the U.S. Federal Budget, and that the Kuwaiti National Budget would be more leptokurtic, with more punctuations than the U.S. Federal Budget. The hypothesis predicted this would be due to two primary factors: (a) the high reliance on natural resources in the Kuwaiti budget, and (b) the lack of democracy in the Kuwaiti system. Testing should show that both factors would lead to a less stable budget. This chapter provides the results of the empirical tests determining whether Kuwait has a less stable budget than the United States. The chapter includes the results of several tests that, when combined together, help prove the theory. The findings of the tests in this dissertation all supported the theory that Kuwait would have a less stable budget than the US.

The first comparison of the incrementalism between the two budgets assessed their average percentage changes. However, outliers in the data could have easily distorted this average. The PET has argued that the budgetary process is stable most of the time but becomes interrupted by periodic shocks. These shocks could be outliers. Most papers in the literature have shown that most outliers are positive ones, typically having a fat right tail on the distribution. Logic would dictate a comparison of the median percentage changes as well, because these are less vulnerable to outliers than the mean percentage changes. The standard deviation is another measure for assessing the dispersion of the data. Analyzing the standard deviation helped in assessing whether the data were concentrated around a specific point.

The average percentage change of the Kuwaiti National Budget was 18.0%. This average was based on 469 observations representing the pooled variable of all annual percentage changes for each ministry included in the Kuwaiti National Budget. Several papers have argued that 10% is an acceptable cutoff to distinguish incremental percentage changes (Citi, 2013). If relying on this 10% cutoff, then the average percentage change in the Kuwaiti National Budget would be much higher than the cutoff. However, this average change could have been very high due to an extreme outlier, so it was necessary to confirm the finding by examining the median percentage change.

On the other hand, the average percentage change for the U.S. Federal Budget was much smaller than that of Kuwait, as displayed in Table 6.1 below. The mean percentage change for the U.S. budget was 5.0%, indicating an average percentage change for the Kuwaiti budget more than three times higher than the U.S. budget. If relying on the 10% cutoff, one would conclude that the average percentage change for the U.S. budget is incremental and much smaller than the cutoff. This initial finding—based on the averages—supported the expectations of the theory. However, further testing was required to make such a statement.

The median percentage change of the Kuwaiti National Budget was also much larger than the U.S. budget's median percentage change, also reflected in Table 6.1. The median percentage change of the Kuwaiti budget was 8.4%. This was much smaller than the Kuwaiti average percentage change, potentially indicating large outliers in the Kuwaiti percentage changes. The median percentage change for the U.S. Federal Budget was 4.4%. This resulted in a Kuwaiti median percentage change approximately twice that

of the U.S. Federal Budget. This also supported the expectations of the theory, which is the argument that the Kuwaiti budget would be less stable than the U.S. budget.

The standard deviation of the Kuwaiti percentage changes was 0.745. This was around six times the size of the standard deviation of the U.S. percentage changes, 0.126. This indicated that the dispersion of the Kuwaiti dataset was higher than the dispersion of the U.S. data set. The U.S. percentage changes were much more centered on the mean. Table 6.1 below highlights all of the main points by providing the mean, the median, the standard deviation, and the number of observations for both the United States and Kuwait. As shown, the U.S. budget was much more incremental, than the Kuwaiti budget. The same findings held even after trimming some of the outliers from both budgets (see Appendix).

Table 6.1, U.S. and Kuwaiti budgets' percentage changes for the pooled variable of all subcategories of expenditures

	Percentage Change in The Pooled Variable of U.S. Expenditures	Percentage Change in The Pooled Variable of Kuwait Expenditures
Mean	5.06%	18.05%
Median	4.42%	8.36%
Standard Deviation	0.126	0.745
Observations	465	469

Note: The Kuwaiti numbers are based on 18 years of percentage changes derived from the available 19 years of data available for the annual percentage changes. The U.S. numbers are based on 31 years of percentage changes derived from the available 32 years of data of the percentage changes.

Table 6.1 reflects the results based on the pooled variable that included the percentage changes of the subcomponents of the national budgets, which pooled all of the subcategories together into one variable. The pooled variable was a reasonable method for assessing the incrementalism of the budget, as the focus on total expenditures by itself may not have been entirely accurate. However, the results of the total expenditures were similar to the ones using the pooled variable. The mean, median, and standard deviation of the total expenditures showed that the U.S. Federal Budget was more incremental than the Kuwaiti National Budget.

The average percentage change for total expenditures of the Kuwaiti budget was 12.25%. If relying on the 10% cutoff to distinguish a change as incremental, one would have concluded that the average percentage change for total expenditures of the Kuwaiti budget was not incremental, as it was greater than the cutoff. Conversely, the average percentage change for total expenditures of the U.S. Federal Budget was 4.58%. The difference between the two averages was 7.67%, a considerable difference. This also supported the argument that the Kuwaiti budget was less incremental than the U.S. budget.

The median percentage change for Kuwaiti total expenditures was 7.08%. The median percentage change for U.S. total expenditures was 4.00%. The difference between the two medians was 3.08%. The Kuwaiti median was larger than the U.S. median, but the difference here was not as great. However, it still supported the argument that the Kuwaiti budget would be less incremental than that of the United States. The standard deviation of the percentage changes of Kuwaiti total expenditures was 0.294. This was around eight times the size of the standard deviation of the percentage changes

of U.S. total expenditures, which was 0.038. This indicated that the dispersion of Kuwaiti total expenditures was higher than the dispersion of the U.S. total expenditures. The U.S. percentage changes were much more centered on the mean.

Table 6.2 below reflects the mean, median, and standard deviations of total expenditures for both the U.S. Federal Budget and the Kuwaiti National Budget. They all showed support for the main argument of my theory, that the U.S. Federal Budget would be much more incremental than the Kuwaiti National Budget. The number of observations for total expenditures was much smaller than the pooled variable because each fiscal year reflected only one observation when dealing with total expenditures. The numbers of the Kuwaiti budget were based on 19 fiscal years and 18 years of percentage changes. The results served as another test for the theory.

Table 6.2, Descriptive statistics of the percentage changes of total expenditures in the U.S. Federal Budget and the Kuwaiti National Budget:

	Annual Percentage Change in U.S. Total Expenditures	Annual Percentage Change in Kuwait Total Expenditures
Mean	4.58%	12.25%
Median	4.00%	7.08%
Standard Deviation	0.038	0.294
Observations	31	18

Note: The Kuwaiti numbers are based on 18 observations derived from the available 19 years of data available for the annual percentage changes. The U.S. numbers are based on 31 observations derived from the available 32 years of data of the percentage changes.

One of the arguments of my theory (Chapter Four) was that the high reliance on natural resources as a source of revenue could lead to this volatility in the expenditures. An assessment of the fluctuations in the revenue sources of both countries served as a test for this argument. Table 6.3 below reflects the mean, median, and standard deviation for total revenues of both budgets.

Table 6.3, Descriptive statistics of the percentage changes of total revenues in the U.S. Federal Budget and the Kuwaiti National Budget

	Annual Percentage Change in U.S. Total Revenues	Annual Percentage Change in Kuwait Total Revenues
Mean	5.02%	11.58%
Median	6.43%	10.98%
Standard Deviation	0.063	0.303
Observations	31	18

Note: The Kuwaiti numbers are based on 18 observations derived from the available 19 years of data available for the annual percentage changes. The U.S. numbers are based on 31 observations derived from the available 32 years of data of the percentage changes.

The mean percentage change of Kuwaiti total revenues was 11.58%. The mean percentage change of U.S. total revenues was 5.02%. The difference between the two means was 6.56%, a substantial difference. The mean of the percentage changes of Kuwaiti total revenues was more than double the size of the mean of U.S. total revenues. The Kuwaiti mean of total revenues exceeded the 10% cutoff, while the U.S. mean remained under the cutoff.

The median percentage change of Kuwaiti total revenues was 10.98%, which was much greater than the median percentage change of U.S. total revenues. The median of

the U.S. percentage changes of total revenues was 6.43%. The standard deviation of U.S. total revenues was 0.063, also much smaller than the standard deviation of Kuwaiti total revenues. As indicated in Table 6.3 above, the standard deviation of Kuwaiti total revenues was 0.303. All three of these measures helped indicate a higher volatility in Kuwaiti total revenues than U.S. total revenues.

The previous tables (Table 6.1, 6.2, and 6.3) reported on the first round of testing the theory of the paper. The second test was the cutoff test. I tested the incrementalism of both budgets by using some cutoffs to assist in distinguishing whether a given percentage change was incremental. For instance, using a 10% cutoff and a given percentage change of 11.6%, then the change would be non-incremental, as it would be greater than the cutoff. The test helped count the number of both incremental and non-incremental observations in the pooled variable for both countries.

As stated in Chapter Five, the literature has not yet reached a consensus on what the most appropriate cutoff should be to distinguish an incremental change. Thus, I decided to use more than one cutoff, and I have provided the results for each one. Using cutoff values of 10%, 12%, 15%, 20%, and 25%, I assessed how many changes within both budgets were incremental and how many were not. A budget with a higher frequency of incremental changes would be more incremental in nature. Thus, the expectation of the theory was that the Kuwaiti budget would have more occurrences of non-incremental changes. Test two confirmed that the U.S. Federal Budget is much more incremental than the Kuwaiti budget. Table 6.4 below summarizes these findings. The next few paragraphs provide additional details about each cutoff.

Table 6.5 below reflects the frequency of changes that were incremental and non-incremental for both countries, based on the 10% cutoff. Based on this test, the U.S. budget was clearly more incremental than the Kuwaiti budget. As many as 276 changes in the Kuwaiti budget were non-incremental changes greater than 10%, out of the 469 total changes. This means that 58.8% of the percentage changes in the Kuwaiti National Budget were non-incremental changes. The other 193 percentage changes in the Kuwaiti National Budget were incremental changes. Thus, 41.2% of the percentage changes in the Kuwaiti budget were incremental, based on a 10% cutoff.

Table 6.4, The findings of Test Two (the cutoff test).

<i>10% cutoff</i>		<i>12% cutoff</i>		<i>15% cutoff</i>		<i>20% cutoff</i>		<i>25% cutoff</i>	
U.S.									
Greater	144	Greater	111	Greater	83	Greater	46	Greater	28
Smaller	321	Smaller	354	Smaller	382	Smaller	419	Smaller	437
Kuwait		Kuwait		Kuwait		Kuwait		Kuwait	
Greater	276	Greater	246	Greater	200	Greater	161	Greater	115
Smaller	193	Smaller	223	Smaller	269	Smaller	308	Smaller	354

On the other hand, the U.S. budget had 144 percentage changes greater than the 10% cutoff, out of a total of 465 observations. This means that 31% of the percentage changes of the U.S. budget were non-incremental changes. Most of the percentage changes (321) in the U.S. budget were incremental changes under the 10% cutoff. According to these results, the majority of the percentage changes in the U.S. budget were incremental changes, as 69% of the U.S. percentage changes were smaller than

10%. Table 6.5 details the results for both the U.S. Federal Budget and the Kuwaiti National Budget regarding the 10% cutoff test.

Table 6.5, The cutoff test using 10% as the cutoff to distinguish among incremental and non-incremental changes.

	Number of cases that have budgets greater than the cutoff	Number of cases that have budgets smaller or equal to the cutoff
10% Cutoff		
Kuwait agencies	276	193
% of total observations	58.8%	41.2%
USA functions	144	321
% of total observations	31.0%	69.0%

Note: the percentage changes are rounded.

Table 6.6 below reflects the frequency of changes that were incremental and non-incremental for both countries, based on the 12% cutoff. The table shows that the number of percentage changes greater than 12% was significantly higher in the Kuwaiti budget than in the U.S. budget. The number of observations greater than 12% in the Kuwaiti budget was 246, indicating 52.4% of the total number of observations (469) were non-incremental using a 12% cutoff. The other 223 percentage changes out of the 469 total observations from the Kuwaiti budget were smaller than 12%, accounting for approximately 47.6%.

The U.S. Federal Budget was more incremental than that of Kuwait, based on the 12% cutoff test. Only 111 percentage changes out of the 465 total observations of the U.S. budget were greater than the 12% cutoff, thus 23.9% of the entire U.S. percentage changes were non-incremental. Conversely, 354 percentage changes out of the 465 total

observations of the U.S. Federal Budget were incremental, based on the 12% cutoff.

Using this cutoff indicated that 76.1% of the percentage changes in the U.S. budget were incremental. Table 6.6 above provides all of the details for both the U.S. Federal Budget and the Kuwaiti National Budget regarding the 12% cutoff test.

Table 6.6, The cutoff test using 12% as the cutoff to distinguish among incremental and non-incremental changes.

	Number of cases that have budgets greater than the cutoff	Number of cases that have budgets smaller or equal to the cutoff
12% Cutoff		
Kuwait agencies	246	223
% of total observations	52.4%	47.6%
USA functions	111	354
% of total observations	23.9%	76.1%

Note: the percentage changes are rounded.

Table 6.7 below provides the results of the test using 15% as the cutoff to decide whether the change was incremental. The percentage changes of the Kuwaiti National Budget still showed a large proportion greater than the cutoff. There were 200 percentage changes out of the 469 total observations greater than 15%, indicating around 42.6% of the percentage changes in the Kuwaiti budget were non-incremental. Inversely, 57.4% of the Kuwaiti percentage changes were smaller than 15%.

The percentage changes of the U.S. Federal Budget showed an even smaller percentage for the changes greater than the 15% cutoff. Only 83 percentage changes out of the 465 total observations for the U.S. budget were greater than 15%, which indicates

that only around 17.8% of the U.S. percentage changes were incremental. In contrast, 382 of the U.S. percentage changes were smaller than the 15% cutoff. Using the 15% cutoff, the 382 percentage changes indicated that 82.2% of the U.S. percentage changes were incremental. Table 6.7 below provides all of the details for both the U.S. Federal Budget and the Kuwaiti National Budget regarding the 15% cutoff test. Table 6.8 below reflects the frequency of incremental and non-incremental percentage changes for both the U.S. Federal Budget and the Kuwaiti National Budget, based on a 20% cutoff. The Kuwaiti percentage changes greater than 20% were still a non-trivial amount. There were 161 percentage changes greater than 20% out of 469 observations from the Kuwaiti budget. In other words, 34.3% of all Kuwaiti percentage changes were greater than the 20% cutoff. Inversely, 308 of the Kuwaiti percentage changes were smaller than the 20% cutoff, indicating 65.7% of the Kuwaiti percentage changes were incremental using the 20% cutoff.

Table 6.7, The cutoff test using 15% as the cutoff to distinguish among incremental and non-incremental changes.

	Number of cases that have budgets greater than the cutoff	Number of cases that have budgets smaller or equal to the cutoff
15% Cutoff		
Kuwait agencies	200	269
% of total observations	42.6%	57.4%
USA functions	83	382
% of total observations	17.8%	82.2%

Note: the percentage changes are rounded.

The U.S. percentage changes greater than the 20% cutoff were fewer than 10%. Only 46 percentage changes out of the total 465 observations for the United States were greater than 20%. The remaining 419 U.S. percentage changes, approximately 90.1%, were smaller than the 20% cutoff. This indicated the U.S. Federal Budget as much more incremental than the Kuwaiti National Budget. Table 6.8 below provides all of the details for both the U.S. Federal Budget and the Kuwaiti National Budget regarding the 20% cutoff test.

Further below, Table 6.9 provides the cutoff test using 25% as the cutoff to determine an incremental change. Note that the 25% cutoff was the largest cutoff used for this research. The number of percentage changes of the Kuwaiti National Budget greater than the 25% cutoff remained significant. Out of 469 observations, 115 percentage changes were greater than 25%, indicating 25% of the entire Kuwaiti percentage changes as non-incremental. The remaining 354 of the Kuwaiti percentage changes, approximately 75%, were smaller than the 25% cutoff.

Table 6.8, The cutoff test using 20% as the cutoff to distinguish among incremental and non-incremental changes.

	Number of cases that have budgets greater than the cutoff	Number of cases that have budgets smaller or equal to the cutoff
20% Cutoff		
Kuwait agencies	161	308
% of total observations	34.3%	65.7%
USA functions	46	419
% of total observations	9.9%	90.1%

Note: the percentage changes are rounded.

Table 6.9, The cutoff test using 25% as the cutoff to distinguish among incremental and non-incremental changes.

	Number of cases that have budgets greater than the cutoff	Number of cases that have budgets smaller or equal to the cutoff
25% Cutoff		
Kuwait agencies	115	354
% of total observations	25.0%	75.0%
USA functions	28	437
% of total observations	6.0%	94.0%

Note: the percentage changes are rounded.

The number of percentage changes greater than the cutoff in the U.S. Federal Budget decreased to 28 when using the 25% cutoff. The 28 observations greater than 25% comprised only 6.0% of all changes. Inversely, 437 out of the 465 total observations (approximately 94%) of the U.S. sample were incremental, based on the 25% cutoff. Table 6.9 above provides all of the details for both the U.S. Federal Budget and the Kuwaiti National Budget regarding the 25% cutoff test.

The second test that this paper relied on showed support for the theory of the paper. The U.S. Federal Budget was much more incremental than the Kuwaiti National Budget. The test relied on several cutoffs, as the literature contains no consensus on which one is the most appropriate. Compared to the U.S. budget, the Kuwaiti budget had a much higher number of observations that were greater than the cutoff for all of the cutoffs included in this paper.

The third test that helped prove the theory was the lag regression test. The expenditures were the dependent variable, and the lagged expenditures were the

independent variable. A higher R^2 value would indicate a more incremental budget. Thus, the expectation was to see the R^2 of the U.S. budget higher than the R^2 of the Kuwaiti budget.

Table 6.10 below reflects the results of the lag regression for both the Kuwaiti National Budget and the U.S. Federal Budget. The R^2 of the U.S. Federal Budget was a very high 0.9941. This indicated the lagged expenditures explaining approximately 99% of the entire variation in the dependent variable, thus providing solid support for the idea of incrementalism. On the other hand, the R^2 of the Kuwaiti National Budget was 0.7541, much smaller than the R^2 of the U.S. Federal Budget. The findings of this test correlated with the expectations of the theory, as they showed that the U.S. Budget was more incremental than the Kuwaiti budget.

To ensure a time trend in the data was not affecting the findings, I added a time variable as a second independent variable. The main goals were to check the significance of the time variable, as well as investigate how the time variable might be affecting the R^2 . According to the results, the time variable was insignificant for both, the United States' and Kuwait's regressions. Furthermore, there was almost no effect on the R^2 . The R^2 of the U.S. budget remained 0.9941, the same as before adding the time trend. The Kuwaiti R^2 was 0.7541 before adding the time variable, and it increased slightly to 0.7549 after adding it. Table 6.10 summarizes the findings of Test Three (the lag regression test). The main finding from this test was that it supported the expectations of the theory that the U.S. Federal Budget would be more incremental than the Kuwaiti National Budget.

Table 6.10, Lag regression test:

	USA	Kuwait
R² of the lag regression	0.9941	0.7541
R² of the lag regression with time trend	0.9941	0.7549
Observations	465	469

The next test involved assessing the fourth central moment: the kurtosis. The kurtosis is a statistical measure focusing on the tail of the distribution (Ruppert, 1987). A high value of kurtosis would indicate a distribution of the data with extreme values producing a fatter tail in the distribution of the data (a more leptokurtic distribution) (Balanda & MacGillivray, 1988). Hence, my theory predicted the Kuwaiti National Budget would have a higher kurtosis value than the U.S. Federal Budget.

However, the kurtosis alone would not have been sufficient for testing the theory, given that several scholars have argued that extreme outliers can easily distort kurtosis (Breunig & Koski, 2006; Hosking, 1990). As a result, some of the recent papers in the punctuated equilibrium literature have started to report the L-kurtosis in addition to the kurtosis, as the L-kurtosis is more accurate when the dataset includes some extreme cases. An L-kurtosis of 0.123 would indicate a normal distribution. Similar to the kurtosis, a higher L-kurtosis would indicate a more leptokurtic distribution, with most data centered in the middle and some extreme values potentially producing a fat tail. Thus, my theory expected the Kuwaiti National Budget to have a much higher L-kurtosis value than the U.S. Federal Budget.

Table 6.11 below shows the values of both kurtosis and L-kurtosis for the Kuwaiti National Budget and the U.S. Federal Budget. As expected, the Kuwaiti budget had a

much higher kurtosis value and L-kurtosis value than the U.S. budget. The kurtosis value of the U.S. Federal Budget was approximately 11.8, much smaller than that of the Kuwaiti budget, 126.1647. Papers in the literature have used a kurtosis value of three as a cutoff at which to distinguish whether the distribution is closer to being a normal distribution (incrementalism) or closer to a leptokurtic distribution (punctuated equilibrium) (Reiss, Thomas, & Reiss, 2007). Both the Kuwaiti National Budget and the U.S. Federal Budget had a kurtosis value above three, providing support for the punctuated equilibrium and correlating with all other papers in the literature.

Table 6.11, Kurtosis and L-Kurtosis Tests:

	USA	Kuwait
Kurtosis	11.8033	126.1647
L-Kurtosis	0.325	0.514
Observations	465	469

Note: A kurtosis value of three is the cutoff that the literature relies on to distinguish a normal distribution. An l-kurtosis value of 0.123 is the estimate that the literature relies on to assess the normality of a distribution

The L-kurtosis value of the U.S. budget was 0.325, much smaller than the L-kurtosis value of the Kuwaiti budget, 0.514. Note that the L-kurtosis is a scaled value that ranges from zero to one, with a higher value indicating a more leptokurtic distribution. As such, the difference between 0.325 and 0.514 is a significant difference. Therefore, the results of the kurtosis and the L-kurtosis tests further supported the expectations of my theory. The cutoff that the literature has been relying on for the L-kurtosis is 0.123, where the closer a value is to the cutoff, the closer a distribution is to normal. Again, both budgets were higher than the 0.123, providing support for the punctuated equilibrium.

All of the statistical tests included in this paper have supported the expectations of my theory. The following graphs served as ocular tests to assist in visualizing the difference in the distributions of both budgets. Both budgets were expected to have most of their data points centered around zero due to incrementalism. However, the Kuwaiti budget was expected to include more cases that could either be extreme or outliers.

Figure 6.1 below portrays the distribution of the budgetary changes in the U.S. Federal Budget. The shape of the distribution was similar to most histograms of the punctuated equilibrium literature. Most cases in the U.S. dataset were centered around zero, with some extreme cases on the right tail. This was similar to most budgets studied in the literature.

Figure 6.2 below shows the distribution of budgetary changes in the Kuwaiti National Budget. It was not shocking to see a visual representation of the Kuwaiti data similar to the U.S. histogram and the other histograms in the literature. However, the Kuwaiti budget had a significant amount of extreme cases. Similar to the U.S. budget, most of the extreme cases in the Kuwaiti budget were in the right tail. Most importantly, the Kuwaiti National Budget had a longer and fatter tail than the U.S. Federal Budget had on the visual test.

I also assessed the normality of the distribution of both datasets by running Shapiro-Wilk tests. The expectation was that both budgets would reject the null hypothesis of the test, having a p-value less than 0.05, thus indicating a non-normal distribution of data. Such a result would be due to both budgets meeting the expectation of having a leptokurtic distribution. The p-values of the Shapiro-Wilk test for both the Kuwaiti budget and the U.S. budget were <0.0001 , indicating non-normal distributions.

These findings conformed to the literature, where most papers in the punctuated equilibrium that have run this test have also rejected the null.

The Q-Q plots have helped to visually assess the normality of the distribution. In normal distributions, the dots of the distribution fall on the line in the middle. Both plots below the Kuwaiti budget and the U.S. budget did not appear normal. However, they were not very far away from being normal, given that some dots were quite close to the normality line. Thus, the findings of the Q-Q plots supported the Shapiro-Wilk test.

Figure 6.1, The distribution of the percentage changes in the U.S. Federal Budget:

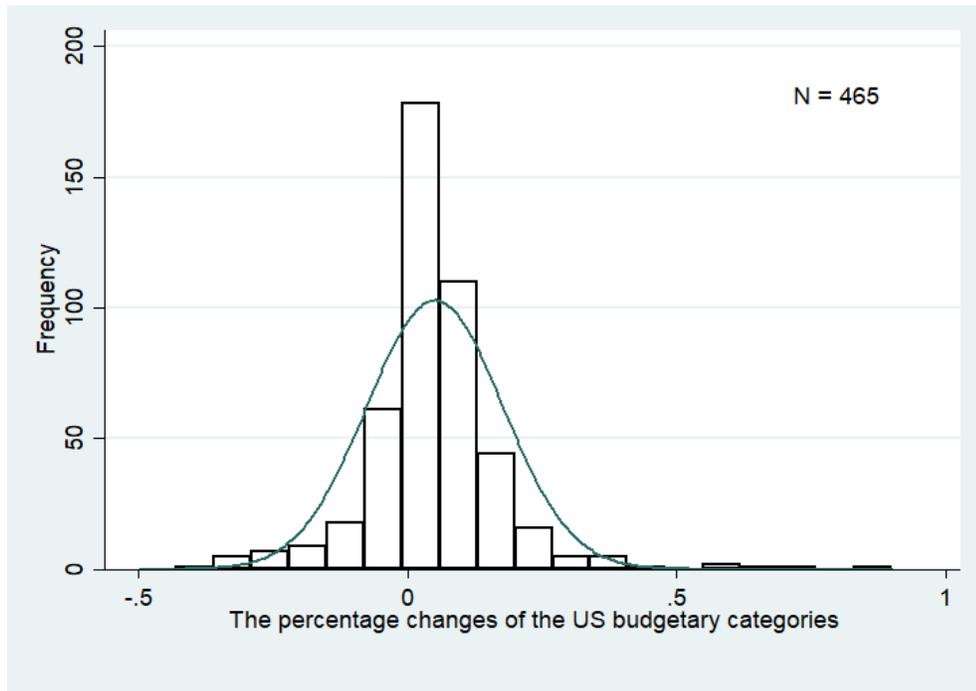
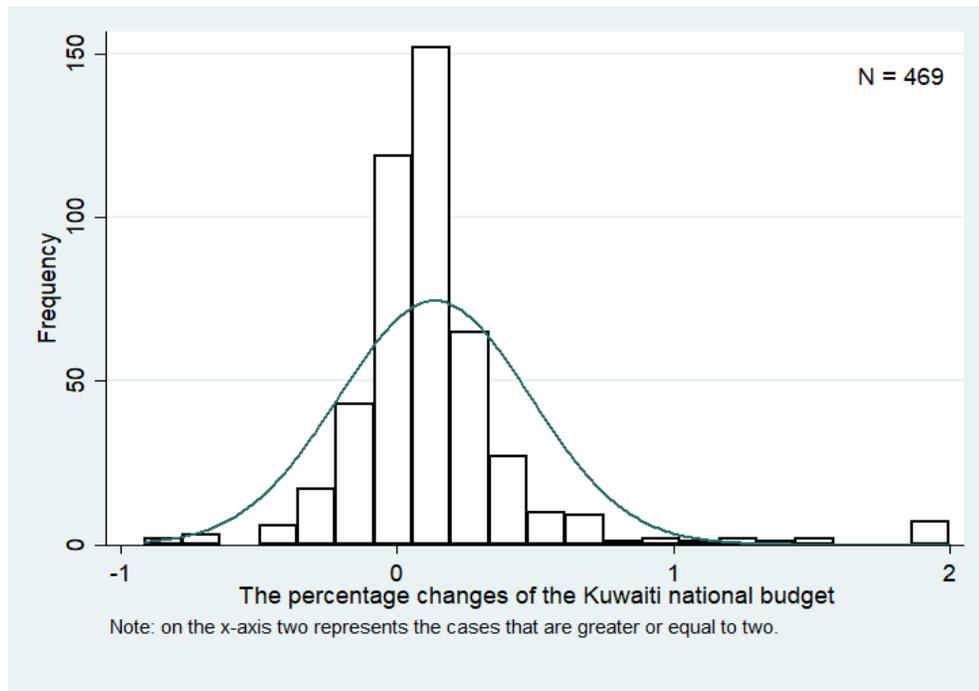


Figure 6.2, The distribution of the percentage changes in the Kuwaiti Budget:



The kernel density has been another way to visually assess the normality of the distribution. In normal distributions, the distribution creates a bell shape. But neither of the two datasets here produced the bell shape, thus supporting the findings of the Shapiro-Wilk test and the Q-Q plot. However, the kernel density graph showed that the U.S. budget was much closer to being a normal distribution, than the Kuwaiti budget. These findings added further support for my theory that the Kuwaiti budget would be more leptokurtic than the U.S. budget (see Figures 6.3, 6.4, 6.5, and 6.6 below).

Figure 6.3, A Q-Q plot of the percentage changes of the U.S. Federal Budget:

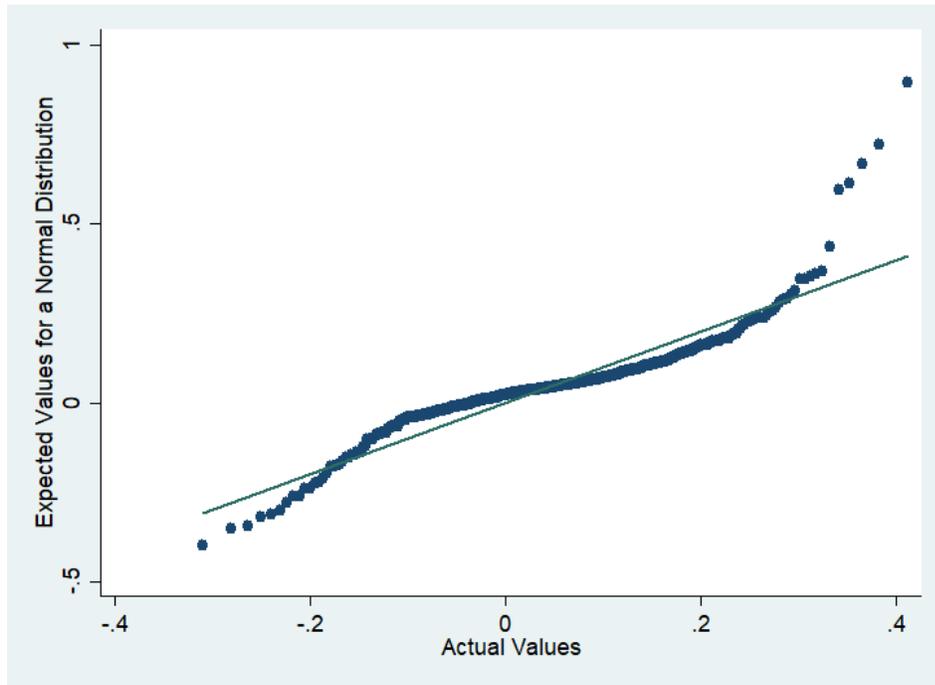


Figure 6.4, A Q-Q plot of the percentage changes of the Kuwaiti Budget.

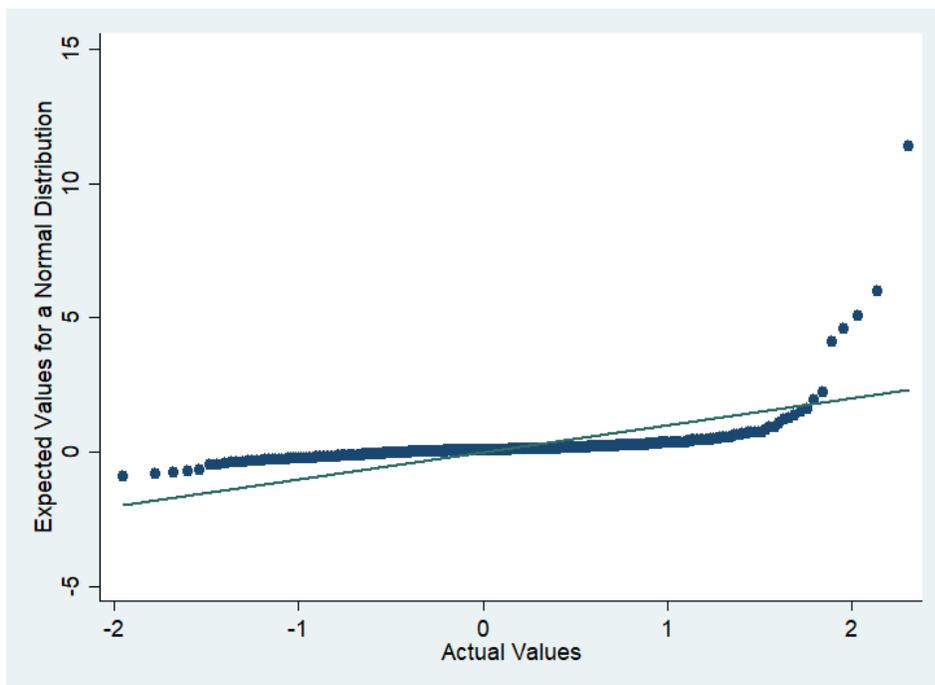


Figure 6.5, A K-Density plot of the percentage changes of the U.S. Budget.

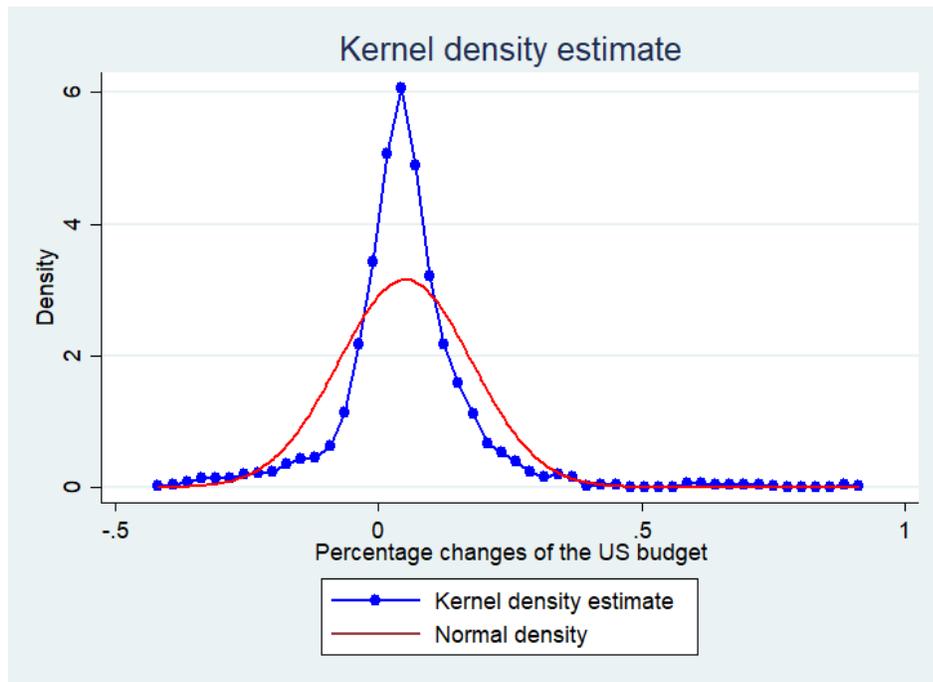
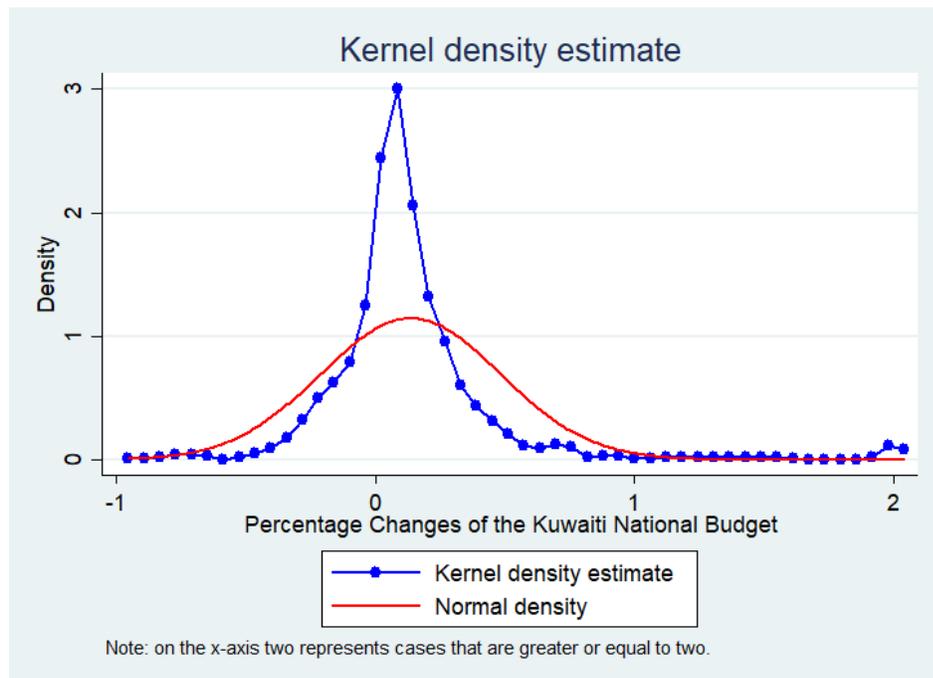


Figure 6.6, A K-Density plot of the percentage changes of the Kuwaiti Budget.



In sum, all of the findings in the results chapter have supported my theory in this dissertation. Both Kuwait and the United States have leptokurtic distributions, but Kuwait has larger changes and more extreme budgetary shocks. My theory expected countries that are less democratic and more dependent on natural resources to be less incremental, with a higher frequency of shocks in their budgets than Western and European countries. Thus, the expectation was to have a more punctuated budget in the Kuwaiti dataset than in the U.S. dataset. All of the findings above have supported this expectation. In comparison with the U.S. Federal Budget, the Kuwaiti National Budget has had: (a) a much higher mean and median percentage change, (b) a much higher number of non-incremental percentage changes in the cutoff tests, (c) a much smaller R^2 in the lag regression, (d) a much higher kurtosis and l-kurtosis, and (e) a much more leptokurtic distribution based on the visual tests.

CHAPTER SEVEN: DISCUSSION AND CONCLUSION

Overview

This dissertation provides a new perspective that was lacking in the PET and incrementalism literatures. The dissertation extends beyond the scope of the literature by hypothesizing what might happen to budgetary incrementalism in the absence of democracy. Current papers in the PET literature have only studied modern, democratic countries. As Chapter Four indicated, all countries found in the PET literature prior to today have had a minimum score of eight on the Polity scale, which assesses a country's level of democracy. The scale ranges from -10 to +10, and a score of six and higher categorizes the country as democratic. Thus, this work contributes to the literature by arguing that non-democratic countries can have more volatile budgets than democratic countries. The argument stems from the fact that the decision-making process in less democratic countries is more centralized, which often means less accountability and fewer tools to prevent sudden changes in the budget. Hence, countries that are more autocratic will have less stable budgets due to being less incremental in nature and having higher punctuations.

My second argument is that dependence on natural resources can affect the level of incrementalism in a country's budget. Countries that depend highly on natural resources can have high volatility in their budgets due to fluctuations in the price of those natural resources the country depends upon. A good example of this involves the Gulf Cooperation Council countries, including Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman, all of which rely strongly on natural resources (oil and natural gas in particular). Accordingly, those countries' economies and budgets have

been severely affected by the recent decrease in the prices of oil and natural gas. These disruptions have in turn led to significant cuts in their national budgets.

Both arguments, the absence of democracy and a high dependence on natural resources, have helped to construct a matrix theorizing the way these two factors can affect incrementalism within national budgets. The matrix categorizes countries into four different groups: (a) those that are democratic and not dependent on natural resources; (b) those that are democratic and dependent on natural resources; (c) those that are not democratic and not dependent on natural resources, and (d) those that are not democratic and dependent on natural resources. The current PET literature already includes studies of several countries in the first group (e.g., the United States, UK, Belgium, and France). The argument is that democratic countries not dependent on natural resources will have the most stable budgets compared to the other groups, while countries that are not democratic and do depend on natural resources will have the least stable budgets. The two other groups are hypothesized to fall somewhere between the two extremes.

Proving the entire theory and the expectations of the entire matrix is beyond the scope of this dissertation. Instead, this dissertation has addressed the group of non-democratic countries dependent upon natural resources. The dissertation focused on the case of Kuwait and compared it with the case of the United States. Chapter Three provided a general comparison of their two budgetary systems, which helped highlight the principal differences between the systems. The main lesson of the chapter is that the Kuwaiti financial system depends much more heavily on natural resources than the U.S. system, and that the decision-making process in Kuwait is much more centralized than in

the United States. However, the comparison in Chapter Three does not prove my theory, but rather serves only as a general comparison of the two budgetary systems.

Chapter Six presents the results from testing the theory by focusing on: a) Kuwait, a case representing non-democratic countries dependent upon natural resources, and (b) the US, a case representing countries that are democratic and not dependent upon natural resources. The tests used in this dissertation are those on which the literature relies to assess budgets' level of incrementalism. Some are visual tests that focus on assessing the distribution of the annual percentage changes in both budgets. There also are: (a) statistical tests that assess the normality of the distribution of the percentage changes; (b) kurtosis and L-kurtosis tests that assess the size of the tail of the distribution, the mean and median of the percentage changes, and the lag regressions; and (c) the cutoff tests, which count the number of observations that could qualify as incremental.

The results are consistent with the expectations of my theory, in that the Kuwaiti budget is much more volatile than the U.S. budget. The Kuwaiti case characterizes a country that is not democratic and heavily dependent on natural resources, while the United States is a democratic country not dependent on natural resources. The mean and median percentage changes in Kuwait are much higher than those in the United States. The cutoff tests also show that the frequency of non-incremental changes is significantly higher in Kuwait than in the United States. The lag regression test showed that the Kuwaiti budget is less incremental than the U.S. budget, in that the R^2 of the U.S. budget is much higher than that of the Kuwaiti budget. The lag regression findings hold even when adding a time variable, which helps ensure that there is no time trend affecting the findings. The visual tests also show that the Kuwaiti budget exhibits more extreme

changes than the U.S. budget, in that the Kuwaiti distribution had a larger tail that was visible clearly. The kurtosis and the L-kurtosis tests confirm the visual tests; the kurtosis value and L-kurtosis value are much higher in the Kuwaiti budget than in the U.S. budget. The normality tests also show that neither budget is distributed normally. The percentage changes in both budgets create a leptokurtic distribution that conforms to the PET literature, arguing that the budgetary process is stable most of the time and is interrupted occasionally by sudden shocks. As such, PET predicts that most changes in the budget will be incremental except for these periodic punctuations. To date, all studies in the PET literature that have examined budgets have conformed to the expectations of PET.

The theory and findings of this dissertation are valuable to the literature, as they serve to fill a missing gap. The literature has studied several countries, generalizing the PET expectations after all examined countries demonstrated similar results. However, the gap in the literature is that all of these countries are modern, democratic countries that are not dependent on natural resources. It is understandable that scholars have focused on modern democracies, given that it is difficult to obtain data from nondemocratic countries because of their low transparency and accountability issues. However, it is not logical to generalize the findings upon all countries. My theory in this dissertation extends the scope of PET by hypothesizing that the budgets of non-democratic countries and/or those dependent on natural resources are much more volatile. Thus, this dissertation fills in a gap in the PET and encompasses all countries around the world, not just modern democracies.

The findings in this dissertation could help in proving that the PET's theoretical arguments and incremental budgeting literature are solid because the expectations of PET hold in Kuwait. The distribution of the percentage changes in the Kuwaiti budget is leptokurtic, which conforms to the PET theory that claims most changes are incremental except for some shocks. It is true that the Kuwaiti budget is less stable than the U.S. budget, and that it suffers many more budgetary shocks. However, that does not mean that the Kuwaiti budget is not leptokurtic, which follows the expectations of PET. Thus, this brings us back to the theoretical argument of decision makers' bounded rationality potentially being responsible for this stability. Given that the PET holds in Kuwait, a completely different context than all countries studied in the literature thus far, this provides support for the theoretical argument because it is a common factor in both countries. As such, it might be the actual factor driving the PET.

Future Research Opportunities

I did not test all elements of the theory in this dissertation. I focused on non-democratic nations highly dependent on natural resources. This provides excellent avenues for future studies that could enrich the literature with new findings in different contexts. I argue that democratic countries dependent on natural resources, and non-democratic countries not dependent on natural resources, will have budgets that fall between the two extremes of the stable budgets of democratic countries not dependent on natural resources and the volatile budgets of non-democratic countries dependent on natural resources.

Future studies could investigate any country that fits into either untested group. For example, a study could focus on the budgets of either Turkey or Thailand, as both are

categorized as non-democratic countries that do not depend on natural resources. Another opportunity would be to study countries such as Trinidad and Tobago, or Mongolia, both of which are categorized as democratic countries dependent on natural resources. Those two avenues could help fill additional gaps in the literature and the theory. Furthermore, working on those countries could help test and improve the theory in this dissertation, given that it still is in its preliminary stages.

Another future opportunity is to conduct a large comparative study that includes at least one country from each of the four groups in the matrix. This avenue is somewhat ambitious, given that it would be difficult to obtain data from countries that are not democratic for the reasons mentioned above. However, conducting such research would be the best way to test the theory. Addressing all countries in one paper at least could guarantee that all would be tested in the same manner. This is essential, because when different authors address single countries, they may use different tests, which might prevent scholars from comparing the findings. Nonetheless, studying countries in all four groups would be no easy task.

The main lesson from this dissertation is the value of discussing more factors potentially leading or affecting PET other than the primary theoretical arguments contained in the PET literature, which indicate that bounded rationality and policy image lead to the expectations of PET. This does not mean that the dissertation does not give credit to those arguments; it simply is an attempt to fill in certain missing gaps and identify additional factors that could affect the arguments that inform the PET, that both dependence on natural resources and the absence of democracy affect budgets' stability.

APPENDIX

Table A.1, The mean percentage change of both budgets for the full data and trimmed data.

	United States	Kuwait
Mean without trimming	5.06%	18.05%
Mean if we trim the top 1% and lowest 1%	4.78%	12.50%
Mean if we trim the top 5% and lowest 5%	4.80%	10.28%
Mean if we trim the top 10% and lowest 10%	4.78%	9.79%
Mean if we trim the top 25% and lowest 25%	4.57%	9.13%

Note: The percentage changes are rounded. The Kuwaiti numbers are based on 18 years of percentage changes derived from the available 19 years of data available for the annual percentage changes. The U.S. numbers are based on 31 years of percentage changes derived from the available 32 years of data of the percentage changes.

Table A.2, The median percentage change of both budgets for the full data and trimmed data.

	United States	Kuwait
Median without trimming	4.43%	8.37%
Median if we trim the top 1% and lowest 1%	4.43%	8.37%
Median if we trim the top 5% and lowest 5%	4.43%	8.37%
Median if we trim the top 10% and lowest 10%	4.43%	8.37%
Median if we trim the top 25% and lowest 25%	4.43%	8.37%

Note: The percentage changes are rounded. The Kuwaiti numbers are based on 18 years of percentage changes derived from the available 19 years of data available for the annual percentage changes. The U.S. numbers are based on 31 years of percentage changes derived from the available 32 years of data of the percentage changes.

Table A.3, The standard deviation of the percentage change of both budgets for the full data and trimmed data.

	United States	Kuwait
Standard deviation without trimming	0.126	0.7450
Standard deviation if we trim the top 1% and lowest 1%	0.0991	0.2802
Standard deviation if we trim the top 5% and lowest 5%	0.0685	0.1605
Standard deviation if we trim the top 10% and lowest 10%	0.0514	0.1178
Standard deviation if we trim the top 25% and lowest 25%	0.0244	0.516

Note: The percentage changes are rounded. The Kuwaiti numbers are based on 18 years of percentage changes derived from the available 19 years of data available for the annual percentage changes. The U.S. numbers are based on 31 years of percentage changes derived from the available 32 years of data of the percentage changes

REFERENCES

- Al-Muzaini, A. (2005). *The Public Budget of State of Kuwait and Its Development*.
Kuwait: Ministry of Finance, Public Budget Affairs.
- Alnajjar, G. (2000). The challenges facing Kuwaiti democracy. *The Middle East Journal*,
242-258.
- Anderson, B., Curristine, T., & Merk, O. (2006). Budgeting in Norway. *OECD Journal
on Budgeting*, 6(1), 7.
- Balanda, K. P., & MacGillivray, H. (1988). Kurtosis: a critical review. *The American
Statistician*, 42(2), 111-119.
- Baldwin-Edwards, M. (2011). Labour immigration and labour markets in the GCC
countries: national patterns and trends.
- Baumgartner, F. R., Breunig, C., Green-Pedersen, C., Jones, B. D., Mortensen, P. B.,
Nuytemans, M., & Walgrave, S. (2009). Punctuated equilibrium in comparative
perspective. *American Journal of Political Science*, 53(3), 603-620.
- Baumgartner, F. R., Foucault, M., & François, A. (2006). Punctuated equilibrium in
French budgeting processes. *Journal of European Public Policy*, 13(7), 1086-
1103.
- Baumgartner, F. R., & Jones, B. D. (1991). Agenda dynamics and policy subsystems. *The
journal of Politics*, 53(4), 1044-1074.
- Baumgartner, F. R., Jones, B. D., & Mortensen, P. B. (2014). Punctuated equilibrium
theory: Explaining stability and change in public policymaking. *Theories of the
policy process*, 8, 59-103.

- Berman, L. (2015). *The Office of Management and Budget and the presidency, 1921-1979*: Princeton University Press.
- Berry, W. D. (1990). The confusing case of budgetary incrementalism: Too many meanings for a single concept. *The journal of Politics*, 52(1), 167-196.
- Breunig, C. (2006). The more things change, the more things stay the same: A comparative analysis of budget punctuations. *Journal of European Public Policy*, 13(7), 1069-1085.
- Breunig, C., & Koski, C. (2006). Punctuated equilibria and budgets in the American states. *Policy Studies Journal*, 34(3), 363-379.
- Bunce, V., & Echols III, J. M. (1978). Power and Policy in Communist Systems: The Problem of "Incrementalism". *The journal of Politics*, 40(4), 911-932.
- Burman, L., & Slemrod, J. (2013). *Taxes in America: What everyone needs to know*: Oxford University Press.
- Caamaño-Alegre, J., & Lago-Peñas, S. (2011). Combining incrementalism and exogenous factors in analyzing national budgeting: an application to Spain. *Public Finance Review*, 39(5), 712-740.
- Carroll, D. A. (2009). Diversifying municipal government revenue structures: Fiscal illusion or instability? *Public Budgeting & Finance*, 29(1), 27-48.
- Citi, M. (2013). EU budgetary dynamics: incremental or punctuated equilibrium? *Journal of European Public Policy*, 20(8), 1157-1173.
- Cordesman, A. H. (2018). *Kuwait: Recovery and security after the Gulf War*: Routledge.

- Cowart, A. T., Hansen, T., & Brofoss, K.-E. (1975). Budgetary strategies and success at multiple decision levels in the Norwegian urban setting. *American Political Science Review*, 69(2), 543-558.
- Danziger, J. N. (1976). Assessing incrementalism in British municipal budgeting. *British Journal of Political Science*, 6(3), 335-350.
- Davis, O. A., Dempster, M. A., & Wildavsky, A. (1974). Towards a predictive theory of government expenditure: US domestic appropriations. *British Journal of Political Science*, 4(4), 419-452.
- Davis, O. A., Dempster, M. A. H., & Wildavsky, A. (1966). A theory of the budgetary process. *American Political Science Review*, 60(3), 529-547.
- Denison, D., & Facer, R. L. (2005). Interstate tax coordination: lessons from the International Fuel Tax Agreement. *National Tax Journal*, 58(3), 591-603.
- Gruber, J. (2005). *Public finance and public policy*: Macmillan.
- Haber, S., & Menaldo, V. (2011). Do natural resources fuel authoritarianism? A reappraisal of the resource curse. *American Political Science Review*, 105(1), 1-26.
- Herb, M. (2014). *The wages of oil: Parliaments and economic development in Kuwait and the UAE*: Cornell University Press.
- Hosking, J. R. (1990). L-moments: analysis and estimation of distributions using linear combinations of order statistics. *Journal of the royal statistical society. Series B (Methodological)*, 105-124.
- Ippolito, D. S. (1993). The Budget Process and Budget Policy: Resolving the Mismatch. *Public Administration Review*, 53(1), 9-13.

- Jacobs, P. D., Héris, J.-L., & Bouley, D. (2009). Budget Classification.
- John, P., & Margetts, H. (2003). Policy punctuations in the UK: Fluctuations and equilibria in central government expenditure since 1951. *Public Administration*, 81(3), 411-432.
- Jones, B. D., Baumgartner, F. R., Breunig, C., Wlezien, C., Soroka, S., Foucault, M., . . . John, P. (2009). A general empirical law of public budgets: A comparative analysis. *American Journal of Political Science*, 53(4), 855-873.
- Jordan, M. M. (2003). Punctuations and agendas: A new look at local government budget expenditures. *Journal of Policy Analysis and Management*, 22(3), 345-360.
- Key, V. O. (1940). The lack of a budgetary theory. *American Political Science Review*, 34(6), 1137-1144.
- Kosar, K. R. (2004). *Shutdown of the federal government: causes, effects, and process*.
- Lauth, T. P. (2014). Zero-Base Budgeting Redux in Georgia: Efficiency or Ideology? *Public Budgeting & Finance*, 34(1), 1-17.
- Lee Jr, R. D., Johnson, R. W., & Joyce, P. G. (2012). *Public budgeting systems*: Jones & Bartlett Publishers.
- Lienert, M. I. (2005). *Who Controls the Budget: The Legislature or the Executive?* : International Monetary Fund.
- Lindblom, C. E. (1959). The science of "muddling through". *Public Administration Review*, 79-88.
- Marshall, M. G., & Jaggers, K. (2002). Polity IV project: Political regime characteristics and transitions, 1800-2002.

- McNab, R. M., & Melese, F. (2003). Implementing the GPRA: Examining the prospects for performance budgeting in the federal government. *Public Budgeting & Finance, 23*(2), 73-95.
- Menifield, C. E. (2013). *The Basics of Public Budgeting and Financial Management Updates*: University Press of America.
- Mikesell, J. (2013). *Fiscal administration*: Cengage Learning.
- Mikesell, J. L., & Mullins, D. R. (2011). Reforms for Improved Efficiency in Public Budgeting and Finance: Improvements, Disappointments, and Work in Progress. *Public Budgeting & Finance, 31*(4), 1-30.
- Natchez, P. B., & Bupp, I. C. (1973). Policy and priority in the budgetary process. *American Political Science Review, 67*(3), 951-963.
- Pauw, J. (2007). A measurement of year-on-year variation in the allocations to national departments in South Africa (2003/4-2007/8) from a public management point of view. *Politeia, 26*(3), 252-272.
- Pyhrr, P. A. (2003). Zero-Based Budgeting. *Handbook of Budgeting, Sixth Edition*, 677-696.
- Razali, N. M., & Wah, Y. B. (2011). Power comparisons of shapiro-wilk, kolmogorov-smirnov, lilliefors and anderson-darling tests. *Journal of statistical modeling and analytics, 2*(1), 21-33.
- Reiss, R.-D., Thomas, M., & Reiss, R. (2007). *Statistical analysis of extreme values* (Vol. 2): Springer.
- Robinson, S. E. (2004). Punctuated equilibrium, bureaucratization, and budgetary changes in schools. *Policy Studies Journal, 32*(1), 25-39.

- Ross, M. L. (2001). Does oil hinder democracy? *World politics*, 53(3), 325-361.
- Ruppert, D. (1987). What is kurtosis? An influence function approach. *The American Statistician*, 41(1), 1-5.
- Sabatier, P. A., & Weible, C. M. (2014). *Theories of the policy process*: Westview Press.
- Schick, A. (1983). Incremental budgeting in a decremental age. *Policy Sciences*, 16(1), 1-25.
- Shapiro, S. S., Wilk, M. B., & Chen, H. J. (1968). A comparative study of various tests for normality. *Journal of the American statistical association*, 63(324), 1343-1372.
- Shull, S. A., & Franklin, G. A. (1978). Agency appropriations and expenditures: A descriptive note on budget change. *Southern Review of Public Administration*, 529-541.
- Slemrod, J., & Bakija, J. (2008). *Taxing ourselves: a citizen's guide to the debate over taxes*: MIT Press.
- Treisman, D. (2010). Is Russia cursed by oil? *Journal of International Affairs*, 63(2), 85-102.
- True, J. L., Jones, B. D., & Baumgartner, F. R. (1999). Punctuated-equilibrium theory: Explaining stability and change in American policymaking. *Theories of the policy process*, 97-115.
- Wang, X. S. (2014). *Financial management in the public sector: tools, applications and cases*: Routledge.
- White, J. (1994). (Almost) nothing new under the sun: Why the work of budgeting remains incremental. *Public Budgeting & Finance*, 14(1), 113-134.

- White, J. (1998). Entitlement budgeting vs. bureau budgeting. *Public Administration Review*, 510-521.
- Wildavsky, A. B. (1964). Politics of the budgetary process.
- Wildavsky, A. B. (1997). *The new politics of the budgetary process*: Addison Wesley Publishing Company.
- Wood, B. D., & Vedlitz, A. (2007). Issue definition, information processing, and the politics of global warming. *American Journal of Political Science*, 51(3), 552-568.

VITA

Barrak Ghanim Algharabali

Education

Master in Public Administration Earned 2015
Andrew Young School of Public Policy
Georgia State University, Atlanta, GA Concentration: Management and Finance.

Bachelor of Science, Business Administration Earned 2013
Concentration in Marketing and Corporate Management.
California State University, East Bay.

Experience

Breed International Consulting Summer Internship 2014
Research Analyst

PIGAL General Trading Summer Internship 2010
Public Relations Officer

Honors and Awards

Best Internship Experience Paper Spring 2015
Georgia State University

Dean's List Several Semesters/Quarters
California State University

Outstanding Student Award from the Kuwaiti Ministry of Higher Education
(many times throughout the period 2009-2013)