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**AN ANALYSIS OF CAPITAL FLOW TO CONSTRUCT AN ECONOMIC  
TYPOLOGY IN A COMPARATIVE CASE STUDY OF THREE  
ANCIENT CITIES: THIRD KINGDOM OF UR, NEW KINGDOM OF  
THEBES, AND CLASSICAL ATHENS**

Darrell Gremillion

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AN ANALYSIS OF CAPITAL FLOW TO CONSTRUCT AN ECONOMIC  
TYPOLOGY IN A COMPARATIVE CASE STUDY OF THREE ANCIENT CITIES:  
THIRD KINGDOM OF UR, NEW KINGDOM OF THEBES, AND CLASSICAL  
ATHENS

by

Darrell C. Gremillion

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## ABSTRACT

This dissertation adds to the literature on Economic Development through the development of a Typology of Economy applicable to the earliest cities. Understanding the evolution of these early economies is a crucial step in understanding the past to assist in the establishment of policies for the future. This is especially important in the light of the environmental and sustainability challenges facing the globe today.

The cities in the comparative case study include the Third Dynasty of Ur in Mesopotamia, the New Kingdom of Thebes in Egypt, and Classical Athens in Greece. These cities are chosen for the case study for 1) meeting the minimum criteria of cityhood, 2) relatively broad archaeological evidence, and 3) sufficient separation from one another both spatially and temporally. The research is designed around a framework adapted from the development of typologies contributions of Collier, LaPorte, and Seawright (2012) and the comparative economic analysis of Varieties of Capitalism by Hall and Soskice (2021). The economic framework of the analysis includes the comparison of the flows of capital in a theoretical ancient economy. These capital flows include labor capital, financial capital, human capital, and public goods. The flows are differentiated by production, consumption, and extraction within five discrete socioeconomic classes, unskilled workers, skilled workers, professionals, merchants, and elites, and measured across two dimensions: market type, and institutional legitimacy. These two dimensions form the x and y axes of a two-dimensional typology, ranging from liberal to controlled for market type, and de facto to de jure for institutional legitimacy. The determination of these measurements is based on the current archaeological literature available for the three cases, with the lack of any official

institutional control of the economic component resulting in a default score of liberal market and de facto institutional legitimacy. The market score is adapted directly from Hall and Soskice, while the institutional legitimacy score is adapted from Douglass C. North's classification of institutions as formal or informal (1990). The results of the analysis reveal that the ancient societies used a variety of methods to solve the economic complexities of urbanization resulting in two broad typological categories. Ur III and Thebes received a liberal market/de jure institutional rating, while Athens received a liberal market/de facto institutional typology. The individual capital flows demonstrated both a wide diversity of typologies in labor and human capital, and a remarkable homogeneity in financial capital and the provision of public goods. The analysis also produced a database of quantitative data useful for additional experiments, such as calculating levels of socioeconomic stratification in the society.

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## DEDICATION

To my wife, our kids, and our grandkids. But mostly the grandkids.

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## LIST OF ABBREVIATIONS

<i>CL&amp;S</i>	Collier, Laporte, and Seawright
<i>CME</i>	Coordinated Market Economy
<i>H&amp;S</i>	Hall and Soskice
<i>LME</i>	Liberal Market Economy
<i>PUR</i>	Polycentric Urban Area
<i>SEC</i>	Socioeconomic Class
<i>USM</i>	The University of Southern Mississippi
<i>VoC</i>	Varieties of Capitalism
<i>WCU</i>	William Carey University

## CHAPTER I – INTRODUCTION

### Introduction

Why did human beings move into cities? By all accounts, the move from the small settlement of the hunter-gatherer to the densely populated urban environment resulted in a serious decline in overall health (Scott 2017; Algaze 2018). Living in the earliest cities was marked by poor nutrition, nonexistent sanitation systems, and high susceptibility to communicable diseases.

This dissertation will compare and contrast the economic institutions that formed in the earliest cities within a range of ancient civilizations in order to determine and explain how the institutions influenced the components of the city that made it attractive to its inhabitants. These institutions are framed by the features that shaped such cities with respect to 1) the criteria used to define the city as a unique entity, as inputs, and 2) the features that attract inhabitants to the city, as outputs. These criteria are identical for all cities in early history and represent a robust framework for comparison.

The dissertation addresses the research question, what institutions did early cities establish in response to the specific economic, social, and environmental challenges they encountered? The scholarly consensus on the basis of the available evidence is that early cities adopted institutional frameworks to deal with issues common to all cities and that these frameworks created attractive features uniquely identifiable with the specific city. In addressing the research question, the dissertation presents and assesses the extent of the validity of the following hypothesis:

H1: The institutional frameworks developed in the earliest cities can be categorized into a typology of attributes based on the source of legitimacy of the institution and the type of market.

The dependent variable of this hypothesis is the institutional typology of the city, framed through a two-dimensional matrix of institutional and market conditions common to all of the cases in the comparison. The two dimensions are *institutional legitimacy* and *market type*, measured as dichotomous variables on a framework of *actors*, *capital flow*, and *spheres of relationships* that define the economy of the city. Validation of this typological model occurs through the establishment of proxies for the spheres of influence referenced above and whether there is a statistical correlation between the existence of the proxy as the dependent variable, and the measurements of the independent variables described above, *institutional legitimacy*, and *market type*. These proxies are based on the features commonly recognized in modern urban theory as economically attractive to firms. The anticipated conclusion is a statistical model that leads to predictable typologies of attractive features.

#### Purpose of Dissertation

The dissertation adds to a growing institutional literature by filling the lacunae of the similarities between early cities in the form of a core typology as a root concept (in this case, cityhood), and the differences in the institutional and market framework of these cities as increasingly differentiated outcomes (i.e. the prevalence of slavery or provision of nonrival public goods) (Collier, LaPorte and Seawright 2012). Establishing these typologies gives the researcher the necessary tools to test the validity of the hypothesis through the inclusion of different cases meeting a broad qualification standard

and establishing whether the outcomes of their institutional typologies can be predicted with any degree of accuracy (Collier and Mahon Jr. 1993).

The typological premise follows the conceptual model of Hall and Soskice (2001) and their elaboration of the causal nature of institutional frameworks on the economic outcomes of capitalist societies. These outcomes result in a typology termed Varieties of Capitalism (VoC). In this conceptual hierarchy, the case qualifier is the democratic capitalist government type, followed by the calculated institutional framework type, which falls somewhere between the poles of a liberal market economy (LME) and a coordinated market economy (CME). This institutional framework measures the sources of institutional influence and the spheres of relations that these institutions work within. These institutional frameworks provide predictable outcomes in the nature of the macroeconomic structure of the economy as either consumption-oriented (LME) or export-oriented (CME) market economies. This conceptual framework, in turn, provides a useful model for the researcher to use by simply shifting the focus of variety from capitalism to the subject of interest.

### Research Framework

Using the guidelines established for comparative research by Collier, LaPorte, and Seawright (2012), defining attributes will be established as a framework upon which a typology can be based. The first set of criteria used for framing the research is formed around the fundamental definition of an ancient city as the core case type. The definitional criteria relevant to this article were first proposed by V. Gordon Childe in “The Urban Revolution” (1950). In this article, Childe lists ten characteristics common to all early cities:

- High population density
- Specialized classes of craftsmen

- Production surplus is given as tax or tribute to a ruling elite
- Monumental architecture
- An elite ruling class or theocracy
- A system of practical sciences and record-keeping
- A system of writing
- An artisan class
- Long-distance trade
- Community membership

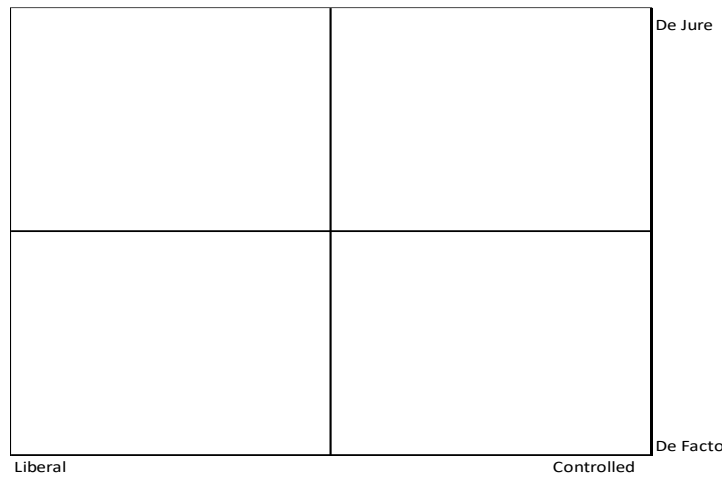
Childe's original aim was to present a set of criteria that must exist for a prehistoric settlement to be classified as a city. He based his requirements on the fact that, at the time, these ten criteria were found in all of the archaeological sites that had become recognized as the earliest manifestation of cityhood within a particular civilization. This fundamental typology describes the unique characteristics that made a city a city in ancient times. The adoption of this framework establishes a starting point for comparative analysis.

In order to build a framework on Childe's criteria, it is necessary to create a unifying conceptual logic to allow for a consistent evaluation of criteria. The unifying factor in the Childean list is to repackage his components into sets of actors, or economic classes, that are identifiable as distinct components of the economy which are common attributes of all early cities. These socioeconomic classes form a pyramidal view of society based on economic specialization. Unskilled workers, skilled workers, professionals, merchants, and elites become the new common components of ancient cities. Using these economic classes, the economy of the city can then be described in terms of its capital flow. Each of these classes provides a specific subset of production, consumption, and taxation that account for the bulk of the capital flow in the research framework. For the purpose of this dissertation, capital means any good or service

introduced into the economy, allowing the inclusion of pre-monetary systems. For each of these classes and their subsequent roles in the economy as producers, consumers, or taxpayers, typological measurements will include the source of legitimacy for the institutions relevant to the transaction and the market type in which these transactions occur. This creates a 2-dimensional typology matrix. Borrowing from Hall and Soskice (2001), each of the institutional legitimacy and market-type measurements will be categorized within a specific sphere that relates the measure to a specific focus of the economy. These are consolidated into four spheres (from the original five): relationships, governance, education, and integration. These roughly translate to labor relations, banking and finance, knowledge systems, and public goods availability and redistribution, respectively.

The combination of the five Childean categories of economic classes of actors, each with the three subcategories of production, consumption, and taxes creates a dataset with a maximum of fifteen elements per sphere, per dimension. Each of these datasets forms the core measurements in each of the four spheres of influence, resulting in a dataset of 120 dichotomous variables per case. Each variable is measured as a 0 or 1. For the market type measurement, a controlled market gets a score of 1 and a liberal market gets a score of 0. For the institutional legitimacy measurement, the de jure institution gets a score of 1 and the de facto institution gets a score of 0. The overall score of the measurements is a simple percentage of the actual score divided by the total possible for each axis. Measurements over 50% indicate a controlled market or de jure institutional legitimacy, while scores below 50% indicate a liberal market and de facto institutional legitimacy. Each quadrant represents a typology: liberal/de facto, liberal/de jure,

controlled/de facto, and controlled de jure. Market scores represent the horizontal axis, and institutional scores represent the vertical (See Figure 1).



*Figure 1. Sample Typology Matrix*

Using the adaptations of Childe’s original characteristics to establish a uniform core typology creates homogeneity among the cases being studied. *Case homogeneity* ensures that any additional cases that are added to the selection will maintain the integrity of the data without introducing conceptual stretching. Conceptual stretching is the inclusion of a “diminished subtype” of cases that do not meet the specific requirements of the core typology (Collier and Levitsky 1997). Although cases must typically meet the minimum criteria of the root typology for inclusion in the universe of cases, the inclusion of cases that differ along specific trajectories can be useful as a tool for testing hypotheses. In this study, all cases meet the minimum requirements of the root typology. *Causal homogeneity* provides the researcher with a homogenous starting point to evaluate the institutional effect on the outcomes being studied (Munck 2004). This also provides a stable platform to evaluate causal direction.

## Defining the Variables

The source of institutional legitimacy is the dichotomy between the de jure institution, established by some officiate, or the de facto institution, which is the unwritten “rules of the game” of society. North (1990) terms these types as formal and informal institutions. New Institutionalism describes different approaches to institutional legitimacy (Hall and Taylor 1996), based on *how* the institution affects the decision-making process of the actor. These analytical approaches to institutional legitimacy include *Historical*, *Rational Choice*, and *Sociological Institutionalism* and provide the researcher with distinct but overlapping trajectories to interpret actors’ participation in institutional influence on outcomes. This differentiation is useful to the researcher in terms of understanding the origin of the institutional form to help determine whether the institution is de facto or de jure.

The next aspect of the institutional frame is concerned with *where* the institution derives its influence. This aspect of legitimacy is adapted from Hall and Soskice (2001). Their original approach was to define regulatory regimes that describe the authority models of social production, and these regimes are easily adaptable to this research. These regimes include socializing agencies, conferred power, and matrices of sanctions and incentives. These regimes of authority apply to the same institutional analytical approaches being constructed for this research. The first, *socializing agencies*, refer to the social norms of the actors and are easily associated with the *sociological institutionalism* approach described above. In this case, the influence of the institution on behavior derives from the worldview of the actor and how these worldviews are influenced by institutional norms. The second aspect, *conferred power*, is roughly associated with the



*historical institutionalism* approach listed above. In this approach, institutional guidelines are based on the authority the actor gives the institution, which is in turn, based on the perceived legitimacy of the institutions. The third aspect, *matrices of sanctions and incentives* are easily relatable to *rational-choice institutionalism* from the view that rational choice is based on the rational self-interest of the individual and self-interested considerations include weighing potential benefits against potential losses. Regimes of authority and new institutionalism are valuable tools to establish criteria for measuring institutional legitimacy.

The institutional *sphere of influence* describes where in the economic framework of the city the institution influences outcomes. Again, the source of this category is derived from Hall and Soskice (2001) and requires some adaptation from its original conceptual realm of capitalist firms to the realm of the earliest cities. The five spheres of influence listed in their original form are 1) industrial relations, 2) vocational training and education, 3) corporate governance, 4) inter-firm relationships, and 5) employee coordination problems. At first glance, it seems obvious that none of these VoC categories has any realistic comparability with the early city, but these can be modified into relevance to the early city and still maintain the original conceptual premise of the category.

The first of these spheres concerns *industrial relations*. From a firm-centric perspective, this refers to the relationship between management and labor in the firm. From the perspective of the ancient city, this sphere becomes *relationships* and refers to how the individual economic classes relate their specific specialties to production and consumption, and how these activities are taxed to provide the operating capital required

by the city. The second VoC space is *vocational training and education*. This has to do with the institutions that regulate the skills and training provided by the firm to enhance the skill levels of its labor force and the relationship of the firm with ensuring sufficient and adequate training is provided by the state. For the city, this sphere becomes *education* and relates to the production and consumption of education and training as well as the taxation of these aspects, if any. These skills include craft specialties, scientific knowledge, military knowledge, and administrative and record-keeping knowledge (Mumford 1961). The third space is *corporate governance*. In the sphere of the modern firm, this relates to how the firm is capitalized and, in the case of the publicly traded firm, investor relations. For the city, this sphere becomes simply *governance* and applies to the production and consumption of financial instruments, as well as how these instruments are taxed. The fourth sphere relates to *inter-firm relations*, translatable to *inter-city relations*. The primary inter-city relationship is trade. Because long-distance trade is included with productive functions of the merchant class, this aspect of VoC spheres is dropped as redundant. The final sphere, *employee coordination problems*, translates into the institutional relationship of the city with its *inhabitants*. From the perspective of the city, this sphere becomes *integration* and refers to how public goods are produced, consumed, and taxed.

Translating the Childean criteria into actor groups is relatively straightforward and includes the combination and recategorization of certain components to create a logical analytical framework. The first component, a *large population* is combined with the *community* to form the *unskilled worker* class. This class represents the common man and includes everyone not represented by one of the other classes. The next of Childe's

criteria is *specialized craftsmen* which is combined with *artisans* to form the *skilled worker* class. These workers represent those workers that have a marketable production specialty. The next components are *scientific knowledge and record-keeping*, and *writing*. These represent those skills that require the ability to read and write and are collected under a skillset called the *professional* class. The next criterion is *long-distance trade*, and this criterion is modified to create another economic class, the *merchant* class. This class is included to represent those that engage in long-distance trade as a distinct and separate group from the rest of the economy. The next Childean category is the *elite* class. This class is self-explanatory and includes the ruling class. The next category is *monumental architecture*. This class does not represent a specific class. Instead, this category is considered to be representative of public goods and is already represented in the *integrations* sphere of measurements described above. Likewise, the category of the *taxable surplus* is respecified as the taxation subcategory of economic activity and is not relevant to a specific class of actors.

The second leg of the research determines whether the measurements that determine typology are also relevant to the outcomes of interest. These outcomes can be framed in terms of attractive features recognized as development goals in modern urban studies and the relatedness to the typological measurements with the proxies of these features derived from the four spheres of influence that frame the institutional relationships of the actors. The focus of the literature used in this study is the regional integration of the Polycentric Urban Area (PUR). The PUR in modern terms is the grouping of different urban areas to take advantage of their competitive advantages as a region (Bailey and Turok 2001). These desirable traits are based on those described by

Bailey and Turok (2001) and later refined by Tony Chapman (2011) and are easily relatable to the economies of early cities, especially in terms of the diversity of their populations, and the institutional coordination and integration required to create a prosperous and persistent city landscape. These include:

- Large labor market.
- Economies of scale.
- Sectoral cooperation and integration.
- Education, research, and knowledge pooling.
- Shared business networks.
- Reduced transaction costs.
- Shared infrastructure.
- Focus on local strengths.
- Trade networks.

Like Childe's criteria of a city, Chapman's attractive features are condensed and consolidated into four proxies related to the spheres of economic influence. The *relationship* proxy is represented by the prevalence of slavery in the workforce, the *governance* proxy is the presence of a public marketplace, *education* is the presence of a knowledge-sharing system, and *integration* is represented by large-scale manufacturing.

At this stage, the researcher has the entire framework of criteria for determining both institutional type and outcome. Beginning with a single component of the core typology derived from Childe's list, a component is selected and compared with the attractive components from Chapmans' list. Here, the researcher has some leeway in the determination of the appropriate institutional link with the core component and the desired outcome. The only caveat would be that in order to maintain homogeneity in case comparison, this same relationship should be maintained within all cases under comparison.

## Primer on Methodological Approach

To test these hypotheses, a case study will be conducted on three ancient city-states. The first of these is the city of Ur, the royal capital of the cities that formed the Ur III Dynasty, lasting from 2112 B.C.E. to 2004 B.C.E. (Oppenheim 1977). The next city is the city of Thebes, representing the capital of Egypt in the New Kingdom period lasting from 1550 B. C.E. to 1069 B.C.E. (Muhs 2016). The third city is the city of Athens, representing the Hellenic civilization of the Golden Age of ancient Greece from the 5th century B.C.E. through the death of Socrates in 399 B.C.E. (Durant, 1939). The case study will consist of a comparison of institutions based on the framework and guidelines discussed above. These cities were selected based on the accessibility of their historical record and their separation from one another across time and space. Each of the representative cities provides a rich foundation for institutional research and a diverse heterogeneity ideally suited for contrast and comparison of features. The cities are also representative of the larger civilizations in which they exist. This expands the ability of the researcher to examine institutional norms by exploiting archaeological records at the civilizational level where the same information may be incomplete at the specific city level.

## Organization of Dissertation

Chapter 1 introduces the reader to the main concept included in this paper, including a general overview of the methodology of the research and the cases under study, and provides a roadmap of how the paper is structured.

Chapter 2 encompasses the literature review. This section begins with a recap of the literature relevant to introducing the case study in this dissertation. Each case will be

comprised of a specific city in antiquity, and the details provided will acquaint the reader with the history of the city, the timeline in relation to the current era, the sociocultural framework, and the political framework. The next section will detail the current literature on the institutional framework of each case city. This includes both organizational de jure institutions and de-factor sociocultural institutions. This section will also include all relevant literature relative to the core typology of the cases, and their outcomes. The next section will explore the literature regarding the main themes in the dissertation, namely the criteria for building the institutional framework of the research including inputs and outcomes, current literature on institutional research, and methodologies adopted. The methodologies will include literature on the pros and cons of the chosen approach, relevant examples of the approach, and a detailed synopsis of the accepted best practices used in the creation of multidimensional typologies.

Chapter 3 presents and explains the research method, including the sources of the data used, as well as the difficulties in interpreting the data and how these obstacles were overcome, especially in terms of the reassessment of artifacts from the research perspective. This chapter adds specific detail about how the core typologies of the cases are determined, as well as a detailed description of the outcomes under study as well as how the data for these inputs and outputs relate to the approach. This will include the process of ensuring the conceptual relevance of the approach and how specific interpretations of potentially ambiguous data were chosen. The method of selection of the components of institutional typologies will be covered in detail as well as the current best practices in use for the development of institutional typologies.

Chapters 4-6 are each dedicated to one of the specific case studies, including a detailed historical background for each of the cities being studied. Each case study will include a focus on each of the core typology criteria and a detailed analysis of the institutional framework, including all of the typological criteria for evaluation of the institutional relationship in terms of its institutional legitimacy and market type of the component and subcomponent in each relationship sphere. Each city will receive a score based on the overall typological rating of every institutional linkage.

Chapter 7 will consist of a discussion comparing and contrasting each of the institutional scores of the three cases and how these scores relate to the outcomes and success of the city from an economic perspective. This chapter will also provide statistical analyses that validate the data samples as well as OLS regressions to evaluate the correlation between the independent variables and the outcome proxies identified above. The similarities and distinctions of the institutional frameworks will be detailed as well as the conjecture of whether the hypothesis can be supported in terms of the development of a specific typology of institutions as a predictor of general outcomes defined by the research framework.

The concluding chapter (Chapter 8) will assess the extent of the validity of the hypotheses, state the conclusion of the dissertation, the shortcomings of the research approach and data used, and any subsequent recommendations for further research followed by a set of concluding observations.

## CHAPTER II – LITERATURE REVIEW

### Introduction

The data for the case studies in this dissertation is composed of scholarly literature within the distinct spheres of inquiry that are relevant to understanding how ancient civilizations structured their economies. The topics are a subset of economic literature that define production, consumption, and taxation for every classification of the worker within four referential frameworks (spheres). Worker classes include skilled, unskilled, professional, merchant, and elite. Each of these classes has a specific production function within the economy along four spheres: relationships, governance, education, and integration.

Unskilled workers form the bulk of the labor force in the ancient city. In this regard, the sheer bulk of the population in this class should represent a large body of work, but in fact, these are the least documented members of society in the ancient civilization (Oppenheim 1977). Most of the information available to the researcher is in the form of monumental structures that are built specifically to aggrandize members of the elite and to provide a distorted view of their often exaggerated accomplishments. Where attestation in the form of documentation of the peasant class does exist, it is often fragmentary and vague, offering the researcher little hard evidence of the existence of the lowest class (Baines and Yoffee 1998; Harmansah 2013). Fortunately, discoveries in the form of cemeteries, transaction receipts, work rosters, tax rolls, and cityscapes inform the researcher as to the true nature of this class and provide a window into the daily lives and challenges faced by this group. The skilled craft and artisan group in the next economic



tier offer the same set of archaeological records, but as skilled producers, this class usually enjoys a much higher standard of living, which often leaves behind a more tangible record of their existence. As builders of monuments and works of art, there are many more records available to the researcher than can be found in the records of the daily lives of the peasant class. The professional class increases the records of their existence exponentially. The defining feature of this class is literacy. The ability to read and write increases the records of their existence as the record-keepers of society, and as such have left behind enormous records of daily life, mostly in the form of receipts and contracts. This class also maintains the body of knowledge of the civilization as part of the formal training required for entry into this class including copying the ancient texts of their civilization repeatedly, with remarkable consistency, until the skills of writing are mastered. This repetition gives the researcher a number of sources of congruent material for reference, ensuring that even where fragmentary data is available, another source exists to confirm its content. Some of the records exist in quantities sufficient for the research to identify individuals by their handwriting style (Delnero 2010). The merchant class is the most controversial in terms of whether it is relevant in every society. A lack of records specifically identifying this class has led many researchers to conclude that ancient societies were entirely redistributive and that no marketplace was present beyond the simple barter of embedded economies (Polanyi [1944] 2001). As archaeological-economic thought evolves, the role of the marketplace is becoming more relevant to a growing group of scholars (Stark and Garraty, Eds. 2015; Garcia 2021). New archaeological discoveries and better decipherment of written records identify the merchant class as an important component of the early economies, responding to demand

more efficiently than a simple redistributive economy is able to. The elite class is those at the peak of the economy usually comprised of the government and religious leaders. This group is entirely supported by the productive surplus of society. This group is the most well-attested in the archeological record, and because of this their roles and activities in the economy are generally well-understood.

The spheres of economy are the groupings of economic activity in the dissertation. The relationships sphere details the typical job-related productive and consumptive activities of the different classes, and how these activities are affected by taxation. Taxation in this sense encompasses the extractive activities of the state relative to the economic activity within the sphere where it is located. The governance sphere looks at the economic activity surrounding borrowing and debt for the five classes. The education sphere details who gets training, how it is delivered, and its economic implications. Education is included as the primary mechanism that defines the different economic classes with the possible exception of the elite class. The final sphere is integration which refers to the production, consumption, and financing of public goods. These goods are redistributed taxes and include a variety of commodities, monuments, public works, defense, and temples, depending on the civilization.

The literature details the scholarly work focused on the different economic classes, their economic activities, and the spheres of economy listed above. Each of the volumes and articles informs the researcher of some aspects of the research framework. The remaining chapter focuses on each of the case studies, Ur III, Thebes in New Kingdom Egypt, and Athens in the Classical Period. This chapter is divided into an

instruction, a review of general literature, a section for each of the case studies, and a concluding section comparing the current research with the existing literature.

### General Background

There is a long literature on the history of ancient cities dating back to classical Greek and Roman authors. General reference materials on ancient cities are found in numerous works. The most comprehensive of these is the 4-volume set, *Civilizations of the Ancient Near East*, edited by Jack M. Sasson, et al. (1995). The volumes offer the researcher a comprehensive array of 180 articles by leading scholars in their field. These articles provide an in-depth analysis of Egyptian and Mesopotamian economics, philosophy, religion, education, and science relative to this dissertation. A comprehensive overview of the effects of these civilizations on Western thought, including Hellenic Greece is included. *The City in History: Its Origins, Its Transformations, Its Prospects* (Mumford 1961) offers the reader a comprehensive view of the earliest pre-city settlements through the modern megalopolis with specific coverage of Ur, Thebes, and Athens. In the 10-volume set *The Story of Civilization* by Will and Ariel Durant, *Volume 1: Our Oriental Heritage* (1935) provides detailed historical data on both ancient Ur and Thebes, with passing reference to Athens. *Volume 2: The Life of Greece* (1939) dedicates the entire volume to Greek history, with great detail on Hellenistic Athens and some references to Thebes. The collection *Markets and Exchanges in Pre-modern and Traditional Societies: Multidisciplinary Approaches to Ancient Societies: Interpreting Ancient Egypt* (Garcia 2021) presents articles of interest to the study of ancient economic institutions. These include *Markets and Transactions in Pre-Modern Societies* (Garcia) focusing on the evolution of economic institutions in the ancient Middle East, *The*

*Enchanting Scale: Magic and Morality in the Bronze Age Economic Balance* (Monroe), describing the sophistication of the markets in the ancient Eastern Mediterranean and Near East, and *Markets, Transactions, and Ancient Egypt: New Venues for Research in a Comparative Perspective* (Garcia) offers a comprehensive view of especially relevant data on the evidence supporting a robust market economy in New Kingdom Egypt. A view of different ancient economies based on the center-periphery concept of Emmanuel Wallerstein is *Center and Periphery in the Ancient World* (Rowlands, Larsen, and Kristiansen, Eds. 1987). Especially relevant in the collection are the articles *Cedar Forest to Silver Mountain: Social Change and the Development of Long-Distance Trade in Early Near-Eastern Societies* (Marfoe), and *Commercial Networks in the Ancient Near East* (Larsen). Another extremely relevant collection in the relationships sphere of the research is *Labor in the Ancient Near East* (Powell, Ed. 1987). This collection offers chapters specific to Ur III in *Collective Labor Service in Girsu-Lagash: The Pre-Sargonic and Ur III Periods* (Maekawa), *The Foresters of Umma: Toward a Definition of Ur III Labor* (Steinkeller), *Compensation of Craft Workers and Officials in the Ur III Period* (Waetzoldt), and for New Kingdom Egypt in *Work and the Organization of Work in the New Kingdom* (Eyre). In *The Deep Historical Roots of Modern Culture: A Comparative Perspective*, Roland (2020) describes the mechanisms by which the cultural roots of ancient societies formed path dependence on the institutional forms they created and how these forms are represented in the institutions of modern societies. In *Myths of the Archaic State: Evolution of the Earliest Cities, States, and Civilizations*, Norman Yoffee (2005) offers a comprehensive view of the development of the earliest cities through the understanding of the lives of the actors at every level of society. This work

covers a broad spectrum of civilizations and offers a detailed analysis of the early cities of Mesopotamia and Egypt and especially relevant new theories on the economic mechanisms of early civilizations. In *Reconstructing Ancient Worlds: Reception Studies, Archaeological Representation and the Interpretation of Ancient Egypt*, Moser (2015) offers insight into the methods of archaeological interpretation and provides examples from ancient Egypt, offering insights into the logic of interpretive methods that are applicable in any archaeological study. In the *Political Landscape: Constellations of Authority in Early Complex Polities*, Smith (2003) describes institutional interpretation based on the architecture of ancient cities. In this comparative work, Smith demonstrates that the topography of the city landscape allows the researcher to understand how aspects of the economy, especially markets, were regulated and how neighborhoods were segregated by specialization. In *Democracy Before Democracy*, Schemel (2000) compares the democratic institutions in ancient Mesopotamian, Egyptian, and Grecian societies with modern societies and points out that these ancient institutions were far more pragmatic in their application of democratic principles than is widely known. In the study *Geography, Transparency, and Institutions*, Mayshar, Moav, and Neeman (2017) use regional geography as an explanatory factor in institutional development, contrasting the economies of ancient Egypt and Mesopotamia and how topographical and hydraulic features of the environment shaped the evolution of the two societies. A similar contrast provides a detailed explanatory analysis in a comparative study of land law and institutions in the two states (Ellickson and Thorland 1995).

### Ur III

The first case study is the ancient city of Ur. This timeframe for this city is known as Ur III, or the third dynasty of Ur, and covers a narrow period from 2112 BCE to 2004 BCE. Although literature specific to this city at this point in time is limited, a number of volumes exist that give detailed insight into the lives and institutions of the Sumerian and Mesopotamian cultures, from which Ur was founded. The oldest of these is the volume *From Tribe to Empire: Social Organization Among the Primitives in the Ancient East* (Moret and Davie [1926] 1970). This work was translated from the original French by V. Gordon Childe, the noted historian that provided this dissertation with a common definition of early cities. Although the book is dated, and proceeds from a decidedly Eurocentric point of view, a great deal of valuable data can still be derived, mostly in the logic of the interpretation of the artifacts and ruins found. This logic is still relative in many cases, although due to more modern techniques of establishing dates in prehistory, some of the original timelines have been altered. The volume *The Sumerians* (Woolley [1929] 1995) offers a similar perspective but focuses more on the Sumerian civilization that predated and formed the foundation for the Mesopotamian civilization. The volume *Ancient Mesopotamia: Portrait of a Dead Civilization* (Oppenheim 1977) is one of the most comprehensive works available. The edition in use was compiled and edited by Erica Reimer from Oppenheim's completed notes some years after his death in 1974. It is based on Oppenheim's detailed decipherment of ancient cuneiform scripts and his assembly of the daily life and culture of the Mesopotamian civilization. This diligence informs a great deal of the specific institutional forms for this dissertation. The work offers deep insight into the Mesopotamian economy, society, religion, writing, and

science. Additionally, Oppenheim provides a valuable comparative analysis of the Egyptian civilization as a contrasting agent to the studies on Mesopotamia. An equally important scholarly volume is *Early Mesopotamia: Society and Economy at the Dawn of Civilization* (Postgate 1994), designed as a comprehensive review from a purely archaeological standpoint that interprets the archaeological evidence in terms of its application to Mesopotamian civilization. More modern works include *Everyday Life in Ancient Mesopotamia* (Bottero 1992), offering modern perspectives and interpretations of the life of the individual in Mesopotamia with regard to origins, cuisine, feasting, courtship and marriage, women's rights, craft specialties and monument-building, science, magic, and literary works, such as *The Epic of Gilgamesh*. In *Cities and the Shaping of Memory in the Ancient Near East* (Omur 2013) provides a comprehensive view of the mechanisms behind the formation of the first cities in Mesopotamia, with particular reference to the city of Ur. This volume analyzes the complexities of the landscape in contrast to the official archives that typically glorify the accomplishments of the leader and offer little in terms of the planning and management of the monumental architecture. A collection of articles contemporary to the case study are found in *The Archaeology of Political Spaces: The Upper Mesopotamian Piedmont in the Second Millenium BCE* (Bonatz, Ed. 2014). These include *Tell Fekheriye in the Late Bronze Age: Archaeological Investigations into the Structures of Political Governance in the Upper Mesopotamian Piedmont*, (Bonatz), *Settlement Patterns of the Middle Assyrian State: Notes toward an Investigation of State Apparatuses* (Brown), and *From Text to Tell: Governance and the Geography of Political Space according to Middle Assyrian Administrative Documents* (Cancik-Kirschbaum). A recent volume dedicated specifically

to the case study is Ur the *City of the Moon God* (Crawford 2015). This volume focuses primarily on the archaeological findings at the site through the various levels of inhabitation. These findings offer a broad insight into the inhabitants and culture of the city. *Law and Trade in Ancient Mesopotamia: Selected Papers of K.R. Veenhoff* (Veenhoff 2020) is a collection of essays by the author that detail the commercial and legal underpinnings of the Mesopotamian civilization. These essays provide deep insight into aspects of the economic structure especially relevant to the research framework, including *Ancient Assur, Its City its Traders, and its Commercial Network*, *Silver and Credit in Old Assyrian Trade*, and *Trade with the Blessing of Shamash in Old Babylonian Sippar*. In *Everyday Life in Ancient Mesopotamia* (Bottero 1992) offers the reader unique perspectives on life in Mesopotamia, including festivals, cuisine, the birth of astronomy, and classical literature. Algaze (2018) describes the levels of immigration that had to occur based on estimated mortality rates and economic growth in early Mesopotamian cities and postulates the attractiveness feature of the environment that would draw immigrants into the city. These attractors are thought to be primarily economic opportunities engendered by productive specialization. In *The Economic and Institutional Determinant of Trade Expansion in Bronze Age Greater Mesopotamia*, Benati, Guerriero, and Zaina (2021) provide a study that correlates institutional change with changes in long-distance trade contemporary with the Ur III period. Barjamovik, et al. (2019) follows ancient trade routes to hypothesize the locations of ancient trading centers in the region. *The Origins of Political Institutions and Property Rights* (Benati, Guerriero, and Zaina 2022) uses data from fifty separate periods of Mesopotamian cities, including Ur III to demonstrate the evolution of the political institutions regarding the property rights



of non-elites. Benati and Guerriero broaden the scope with a subsequent article, *The Origins of the State: Technology, Cooperation, and Institutions* (2022) in which he posits that the state forms as the result of the favorable environment created by cooperation, risk-sharing, technical innovation, specialization, and institutions. Again, the exemplars for this study are the cities of ancient Mesopotamia. In *Political Economy in Early Mesopotamian States*, Yoffee (1995) describes the evolution of the early city-states in Mesopotamia, including Ur III, and includes in the discussion the relevance of the rural areas and institutions of production that were specific to each representative city. Altaweel describes the importance of water as a dominant feature of development in *Southern Mesopotamia: Water and the Rise of Urbanism* (2019). Adamo and Al-Ansari (2020) describe the emergence of writing and irrigation as important developmental aspects of civilization. A number of articles on specific institutions are included, representing education, accounting, and finance are found in: *Reconsidering 'Tokens': The Neolithic Origins of Accounting or Multifunctional, Utilitarian Tools?* (Bennison-Chapman 2018), *The Significance of Ancient Mesopotamia in Accounting History* (Garbutt 1984), *Fair Value vs Conservatism? Aspects of the History of Accounting, Auditing, Business, and Finance from Ancient Mesopotamia to Modern China* (Macve 2015), and *Debt and Inequality: Comparing the "Means of Specification" in the Early Cities of Mesopotamia and the Indus Civilization* (Green 2020), education in *The Comparative Study of "Scholasticism" in Late Antique Mesopotamia: Rabbis and East Syrians* (Becker 2012), *Sumerian Extract Tablets and Scribal Education* (Delnero 2010), *Algebra in Cuneiform* (Hoyrup (2017), *The Rules of the School* (Gadotti and Kleinerman 2017), *The Tablet House: A Scribal School in Old Babylonian Nippur* (Robson 2001),

*Old Akkadian School Texts: Some Goals of Sargonic Scribal Education* (Westenholz 1974), taxes in *Corvee Labor in Ur III Times* (Steinkeller 2013), *Agricultural Economy and Taxation in the Sealand Kingdom* (Boivin 2016), religion in *The Animated Temple and Its Agency in the Urban Life of the City in Ancient Mesopotamia* (Pongratz-Leisten 2021), urban problems in *Early Urbanism in Northern Mesopotamia* (McMahon 2020), finance in *Shepherds, Merchants, and Credit: Some Observations on Lending Practices in Ur III Mesopotamia* (Garfinkle 2004), and markets *The Structure of Prices in the Neo-Sumerian Economy (II): The Wool* (Cripps 2019), *Dynamics of Trade in the Ancient Mesopotamian World System* (Edens 1992), *Structure, Agency, and Commerce in the Ancient Near East* (Lamberg-Karlovsky 2009), and *The Mesopotamian Merchant Files* (Powell 2018).

## Thebes

The second case study is the ancient Egyptian city of Thebes. The volume *Ancient Lives: Daily Life in the Egypt of the Pharaohs* (Romer 1984) offers a comprehensive view of life from the perspective of the average inhabitant of Egypt in general, but focuses on the city of Thebes, and the actors and activities involved in tomb-building in the Valley of the Kings. A similar scholarly work is *Ancient Egypt: Anatomy of a Civilization* (Kemp 1989) offers a comprehensive review of early Egypt in terms of its culture, bureaucracy, and economy. The focus of the work is on the individuals whose lives have been chronicled in ancient monuments and papyrus scrolls. The collection *The Oxford History of Ancient Egypt* (Shaw, Ed. 2000) offers a series of essays, with each essay centered around a specific period of Egyptian history. Of specific interest to this dissertation are the essays *The 18<sup>th</sup> Dynasty before the Amarna Period* (Bryan), *The*

*Amarna Period and the Later New Kingdom* (Van Dijk), and *Egypt and the Outside World* (Shaw). In *City of the Dead: Thebes in Egypt* (Manniche 1987), the author offers a discussion of mostly archaeological issues on the architecture and terrain but includes useful analyses of the finds that indicate some of the institutional influences on daily life. A similar volume, *Thebes in Egypt: A Guide to the Temples of Ancient Luxor* (Strudwick and Strudwick 1990) offers a more detailed view of specific temples and tombs in the area, with a chapter devoted to the daily life in a well-preserved village of the craftsmen that built the monuments of the time, Deir El-Medina. This chronicle of daily life includes the work habits and organization of the construction crews, their compensation methods, market and exchange activity, religious practices, and dispute settlement.

*Private Life in New Kingdom Egypt* (Meskell 2002) offers the reader an extremely detailed perspective of the life of the average individual and attempts to explain this life from the perspective of the individual. This book provides great detail on many of the mundane institutional forms that governed daily life, such as which calendar to use, different communities, social life, family life, sexuality, and the Egyptian concepts of beauty and “the good life”. In a similar nature, the volume *The Spirit of Ancient Egypt* (Ruiz 2001) describes the institutions of daily life, religion, and architecture. The volume *From the Ptolemies to the Romans: Political and Economic Change in Egypt* (Monson 2012) chronicles a later period of Egyptian history but establishes many of the political and economic institutions that existed over previous millennia. This is an invaluable source of ancient Egypt's institutional knowledge and covers topics such as the political economy, population distribution, land tenure, agrarian institutions, taxation, investment, redistribution, and institutional change. *The Ancient Egyptian Economy 3000 – 30 BC*

(Muhs 2016) is as comprehensive as its name suggests. This volume offers detailed insight into every aspect of the Egyptian economy and covers such varied topics as ancient documentation, censuses, entrepreneurship, exchange and redistribution, measurement, criminal justice, and official duties of government officers. In *The Walking Dead at Saqqara: Strategies of Social and Religious Interaction in Practice* (Weiss 2022) provides a detailed look at the underlying religious and social institutions of the ancient Egyptians as well as a thorough and comprehensive guide to a methodological inquiry of the subject and how the worlds of the living and the dead were essentially the same and how this shaped Egyptian society. Two collections of essays on Egyptology in honor of retired distinguished academics include *In Honor of Prof. Liritzis Ioannis: Essays in Archaeology and Archaeometry and the Hellenic Contribution to Egyptology* (Tsokas et al., Eds. 2022) and *Archaeological Research in the Valley of the Kings and Ancient Thebes: Papers Presented in Honor of Richard H. Wilkinson* (Creasman 2013). Each of these collections offers new research and interpretation of artifacts that are useful in providing alternate and modern views on previous literature. *Order and Accounting as a Performative Ritual: Evidence from Ancient Egypt* (Ezzamel 2009) explores the importance of accounting in maintaining cosmic order and how this influenced a broad range of institutions. Muller-Wollerman (2015) provides an overview of Egyptian law, including the Egyptian concept of crime in *Crime and Punishment in Pharaonic Egypt*. In *The Emergence of Law in Ancient Egypt: The Role of Maat*, Blerk (2018) describes the emergence of legal institutions from the religious principles of fairness and justice. Fagbore (2023) follows with an overview of the bureaucratic administration of agriculture for revenue extraction in *Punishment, Patronage, and the Revenue Extraction*

*process in Pharaonic Egypt*. Further articles on labor, taxation, and debt in the *New Kingdom* include *Debts and Credit in the New Kingdom* (Janssen 1994), taxation (Katary 2011), *Regulating Labour through Foreign Punishment? Codification and Sanction at Work in New Kingdom Egypt* (Loktionov 2023), *Work and Compensation in Ancient Egypt* (Warburton 2007), *What Makes Shabti Slave* (Silver 2009), and *Expeditions to the Wadi Hammamat during the New Kingdom* (Hikade 2006).

Several articles address specific institutional topics such as property ownership in *Social Position and the Organization of Landholding in Ramesside Egypt: An Analysis of the Wilbour Papyrus* (Antoine 2014), *Egypt, Property Rights and Contracting in Ptolemaic Egypt* (Manning 2004), education in *Education in Ancient Egypt* (Dawson 1925), *Scribal Training in Ancient Egypt* (Williams 1972), *Literacy and Ancient Egyptian Society* (Baines 1983), and *Do We Still Adhere to the Norms of Ancient Egypt? A Comparison of Ptahotep's Communication Ethics with Current Regulatory Principles* (Lowstedt 2019), poverty in *Toward a Study of the Poor and Poverty in Ancient Egypt* (Driaux 2019), *Maids at the Grindstone* (Lang 2016), leisure in *Laughter, Carnival and Religion in Ancient Egypt* (Murashko 2021), and economics in *Thinking the Pharaonic Economy* (Garcia 2014), *Trade and Power in Ancient Egypt* (Garcia 2017), *The Earliest Sailboats in Egypt and their Influence on the Development of Trade* (Mark 2013), are included.

### Athens

The institutional framework of the third city in the case study, Athens, is extremely well-documented. One of the most comprehensive works on this case is the three-volume set *The Social and Economic History of the Hellenistic World* (Rostovtzeff

1941). By many accounts, this work has yet to be surpassed in its illustration of the life of Ancient Greece. In addition to the previously mentioned volume *The Life of Greece* (Durant 1939) which provides a comprehensive historical chronicle of Greek history and life, the volume *The Making of the Ancient Greek Economy: Institutions, Markets, and Growth in the City-States* (Bresson 2016) provides a detailed view of the institutions of ancient Greece and Athens that more than fill any lacuna. This volume covers numerous institutional and economic topics in detail, including the population and the average person, the structure of the economy and political systems, energy and transportation, agricultural production and economy, non-agricultural production and economy, domestic markets, money, international trade, and cities. The collection *The Ancient Greek Economy: Markets, Households, and City States* (Harris, Lewis, and Woolmer, Eds. 2016) includes essays on the Hellenic economy including sections on *Creating the Foundations of Market Exchange: The Role of the State*, *Household Production for Markets*, *Markets and Trade Networks*, and *Commodities. Is Development Uniquely Modern? Ancient Athens on the Doorstep* (Carugati and Weingast 2018) argues that Athens was on the verge of becoming an open-access society through its institutional framework as described by North, Wallis, and Weingast (2009) and in some cases actually succeeded in the transition. *Values and Institutions as Determinants of Entrepreneurship in Ancient Athens* (Bitros and Karayiannis 2008) introduces the theory that ancient Athens behaved much like a modern economy based on the quality of its institutions and its social values. In *Morality, Social Norms and the Rule of Law as Transaction Cost Saving Devices: The Case of Ancient Athens*, Karayiannis and Hatzis (2012) support the argument that the social underpinnings and moral structure of ancient

Athens made economic growth possible as the underpinnings of economic institutions. In *Tradeoffs of Inclusion: Development in Ancient Athens*, Carugati (2020) follows with a discussion of the tradeoffs that inclusivity incurs, with ancient Athens as a case study of extending welfare typically reserved for citizens to non-citizens. Institutional control of markets and its subsequent effects are discussed in *Institutions, Taxation, and Market Relationships in Ancient Athens* (Lyttkens 2010), and *Restraint of Trade in Ancient Athens* (Lowenstein 2018). The institutions governing taxation are discussed in *Who Pays Taxes? Liturgies and the Antidos Procedure in Ancient Athens* (McCannon 2017). An analysis of the effectiveness of ancient Athenian institutions using the Economic Freedom Index can be found in *Measuring Institutional Quality in Ancient Athens* (Bergh and Lyttkens 2014). An ample body of work exists describing the origin, evolution, and functions of the democratic system of institutions in ancient Athens. These include *Democracy, Institutional Changes, and Economic Development: The Case of Ancient Athens* (Kyriazis and Karayiannis 2011), *The Origin of the Statesman – Demagogue Distinction in and After Ancient Athens* (Lane 2012), *Gentrifying the Demos: Aristocratic Principles and Democratic Culture in Ancient Athens* (Asmonti 2015), *Constitutional Choice in Ancient Athens: The Evolution of the Frequency of Decision Making* (Tridimas 2017), *Making Democracy Work: A Rational-Actor Perspective on the Graphe-Paranomon in Ancient Athens* (Lyttkens, Tridimas, and Lindgren 2018), and *Democracy Without Political Parties: The Case of Ancient Athens* (Tridimas 2019). Several articles on the society and culture of ancient Athens such as the legal system, including *On the Benefits and Costs of Legal Expertise: Adjudication in Ancient Athens* (Fleck and Hanssen 2012) and (Fleck and Hanssen 2019), international relations, *Gulliver*

*Unleashed? International Order, Restraint, and the Case of Ancient Athens* (Reiter 2021), society, *Class, Embeddedness, and the Modernity of Ancient Athens* (Nafissi 2004), and the status of women, *Bodymaps: Sexing Space, and Zoning Gender in Ancient Athens* (Davidson 2011).

### Miscellaneous Literature

Several reference works are included in this review as sources of incidental data and referential information. These include the 17-volume set of the *International Encyclopedia of the Social Sciences* (Sills, Ed. 1968) that offers a comprehensive wealth of knowledge on all things sociological. *The Dictionary of Human Geography* (Gregory, Pratt, and Whatmore 2009) is a modern reference to socioeconomic subject matter, *The Oxford Dictionary of the World* (Munro, Ed. 1995) is a quick reference to sites and people in history, *An Encyclopedia of World History* (Langer 1952) is a dated but thorough reference to major events in world history, and *A History of Economic Theory and Method* (Eckelund and Hebert 2014) provides insight into the economic thoughts and actors that shape many of the institutional approaches in this dissertation.

### Conclusions: Additions to Relevant Literature

The literature listed in this chapter has been chosen specifically for its relevance to the framework of the dissertation research. This framework defines the economic flow of capital from various classes of production, consumption, and taxation through four discrete economic domains. The classes of production in society are the unskilled worker or peasant class, the skilled workers, or craftsmen and artisan classes, the professional class consisting of the literate and educated non-elite classes employed in traditional professional roles, the merchant class that is defined as an entrepreneurial class of



speculators employed as merchants that buy and sell for a profit, and finally, an elite class consisting of the ruling aristocracy and religious people generally considered as conspicuous consumers (Veblen [1899] 2009). Each of these classes has a production function, in which economic capital is produced, a consumption function in which economic capital is consumed, and a state support function, either as a bureaucrat or a taxpayer in which economic capital is extracted in support of the state. Each of these capital flows is further grouped into a sphere of economic relevance. These spheres include relationships, in which the relationships of labor are analyzed for each class, governance, in which each class is analyzed in terms of the production and consumption of capital, education in which each class is analyzed in terms of human development, and integration, in which each class is analyzed in terms of the production and consumption of public goods.

Very few scholarly articles are specifically focused on a comparative analysis of ancient economies within a rigid research framework. Oppenheim, in his volume *Ancient Mesopotamia* (1977), compares aspects of ancient Egypt with similar aspects of the Mesopotamian civilization with the spheres of writing, religion, architecture, conflict, and interaction between civilizations. Most of these comparisons consist of one or two sentences in order to illustrate evolutionary change. In *Order, Legitimacy, and Wealth in Ancient Egypt and Mesopotamia* (Bains and Yoffee 2011) offer an article specifically focused on a comparison of the two civilizations in the areas of the roles of kings, differences in urbanization, the archaeological record, societal order, political and economic development, and elite “high culture”. This is a more comprehensive representation of comparative research and provides the researcher with a glimpse of the

two societies in a purely qualitative fashion. In *Understanding Early Civilization*, Trigger (2003) devotes a volume to the development of a comparison of the features of a number of civilizations, including Egypt and Mesopotamia, but also Chinese, and Mesoamerican civilizations of the Aztec, Maya, and Inca. This comprehensive work is also entirely qualitative and offers the researcher an in-depth view of how each of the civilizations compared along a number of historical paths, with sections on Sociopolitical Organization, Economics, and Cognition and Symbolism. In a purely quantitative study, Benati, Guerriero, and Zaina (2021) provide a comparative analysis of the institutional and economic determinants of trade across 44 different metropolitan areas of Mesopotamia between 3050 and 1750 BCE in 50-year increments. The article seeks to establish correlations between the gravity model of trade, risk-sharing arrangements, and the rise of merchant institutions. This intra-civilization comparison demonstrates a temporal growth pattern in trade in which trade expansion and risk sharing remain relatively stable, but trade potential and merchant institutions show significant variability.

Although not exhaustive, these studies are representative of the type of comparative research available on ancient cities. To date, there have been no known examples of research that seek to typify the economic system of an ancient city based on a rigid parametric framework, nor any that provide a comparative analysis of the outcomes. The case studies for this research are chosen from deep history in order to provide a relatively pristine environment to study. Significant difficulties in acquiring verifiable and valid data exist in the limited amount of historical material available, but the dichotomous nature of the research variables provides the researcher with enough flexibility to feel assured that the measurements provided are accurate.

The structural components of the research are derived from the literature on the economic systems of capitalism (Williamson 1985; Bairoch 1988; Hall and Soskice 2001) and adapted to the ancient economies being compared. The core of the economic analysis in this dissertation is the structure of the flow of capital. The simple model of capital flow used is based on three activities: production, consumption, and extraction. A number of theories exist as to how this movement of capital unique to cities came about. Some hold that the evolution of cities is the culmination of the interaction between sedentary farming communities and roving bandits that eventually also became sedentary and through their monopoly on coercive force extracted production surpluses from the population (Olson 1993; Fukuyama 2011). Other views hold that increased productivity led to the need to establish centers of trade to exchange the various surpluses derived from agricultural and animal domestication (Jacobs 1969). Another theory posits that the establishment of cities arose from a need to create large irrigation systems to create larger surpluses in order to feed growing populations and that the management capabilities of certain groups to coordinate and incentivize the population to construct these large-scale waterworks led to the collectivity of urban agglomerations (Mayshar, Moav, and Nieman 2017; Scott 2017; Altaweel 2019). All of these theories agree on the basic premise that after the neolithic revolution in agricultural production, there was a surplus of production. The existence of the surplus also created an opportunity for production specialists that were freed from having to produce their own subsistence and could instead exchange their products for the consumption of agricultural surplus. The third activity, extraction, explains how productive surpluses are transferred into the hands of the non-productive elite. Understanding how each of the sampled ancient cities produced, consumed, and

extracted their productive surplus provides the researcher with additional tools to understand the transformation into cities that these surpluses enabled.

Analysis of these capital transactions is done through a framework defined by the actors. Another hallmark of cityhood is the stratification of its society into social classes (Childe 1950; Scott 2017). The classes of actors are related by their economic association which allows differentiation of the actor groups by their association with the economy in general (Dickovick and Eastwood 2016). Each of these actors has an identifiable production and consumption function, and a relation with the extracting authority in terms of how these actors both supply their surplus to the state and how the surplus is redistributed, if at all. Further differentiation is accomplished by separating distinct economic spheres of coordination into four separate domains. The domains are adopted from Hall and Soskice (2001) and adapted to reflect the environment of the ancient city economy. These four domains are relationships, defined as the relationships of the classes of labor with how their direct production and consumption of goods represent the productive capital of the economy. The next sphere is governance, which seeks to illuminate the relationship of the actor classes with the production and consumption of the financial capital available to the economy. The third domain is education. This sphere is directed at the production and consumption of human capital. In this domain, the relationship of the actor with his class is directly associated with the level of productive skill development that defines the class. The final domain studies the relationship of the actor classes with the production and consumption of public goods. These are the goods available to society and represent the redistribution of the surplus extracted from the actor classes and the forms of redistribution common in that society. Each of these spheres (or

domains) of capital provides a representative cross-section of measurements that form the overall typology of the economy.

This dissertation adds to the literature in a number of ways. First, by providing an adaptable template for establishing a research approach for the comparison of economic characteristics. This template is adaptable in terms of redefining the transaction groups, the actor groups, and/or the economic domains. This template is designed to analyze the production function of specific actor groups within distinct economic domains. By shifting any of these three frameworks, the template can be adapted for any specific use. In addition to the comprehensive analysis and typing of the economy of the entire city, typologies can be assigned to actor groups, various transaction subcategories, or economic domains. Next, the development of a typology based on the measurement framework provides a consistent and reliable means of comparative analysis. As noted in the literature, there are a number of theories in the development of cities revolving around productive surplus and its control. A template of typologies is a step toward identifying the trajectory of development of these specific aspects of cities, based on examples such as class stratification, social welfare, or markets. Finally, through the adoption of specific outcome proxies, the relationships between the economic traits of the city and specific outcomes can be measured.

The next chapter on Methodology demonstrates the logic of how this research framework is developed, including precedent research, and the techniques employed for ensuring accurate measurements. The remaining chapters on the case studies and the outcomes demonstrate the feasibility of this approach.

## CHAPTER III – METHODOLOGY

### Introduction

The research approach for this dissertation is a mixed comparative institutional analysis of three case studies. More specifically, the research seeks to illuminate and compare an institutional and market typology of a group of cities in antiquity within a specific frame of reference. The frame of reference consists of an economic model built on the relationships between actor groups, economic spheres, and capital flow. The typology is a two-dimensional matrix of market type and institutional legitimacy scores. The relevance of the typology will be determined through a comparative analysis of the cases with regard to specific outcomes. The frames of reference used in this comparison are adapted from a set of criteria fundamental to the recognition of early settlements as cities within spheres of economic activity derived from similar studies in the literature. The outcomes are proxies for the types of economic features that made these cities attractive to their inhabitants. The research frame is formed around the hypothesis:

Hypothesis 1: The institutional frameworks developed in the earliest cities can be categorized into a typology of attributes based on the source of legitimacy of the institution and the role of the state in the control of the market.

This framework defines the specific components being considered for comparative analysis, refines the potential spectrum of inquiry, and provides a repeatable roadmap for further research (Binford 2001).

The typologies derived from the study form the dependent variables of this research. The research framework provides the parameters of the research. The case

studies provide the data. The independent variables are the dichotomous measured market type and institutional legitimacy scores derived from the research.

The ancient cities included in the case studies are chosen for their well-attested historical record, especially records that chronicle the economic lives of ordinary citizens, and for their diversity. The small-n nature of the samples is offset by the use of an extremely rigid research framework that maintains uniformity across the samples. The variables under study represent a robust cross-section of strongly comparable cases related to the structural constants established by a comprehensive research framework (Lijphart 1971; Munck 2004). This structural consistency provides a stable foundation for the creation of a framework to study and compare more nuanced aspects of the institutional landscape of individual cities. Institutional information is derived from the archaeological record that informs the economic relationships between the actors and capital flows of the cases.

The primary focus of this dissertation is to establish a typology of institutional and market types as related to a specific framework of analysis for the economy of an ancient state and to analyze the measured parameters of three different cases to establish a correlation between measurements and specific outcomes identifiable in the economy. These research goals are realized through the adaptation of similar procedures found in the literature on institutions, economics, comparative analysis, research frameworks, and typologies. This chapter is organized into five sections. The first section is introductory to the overarching goals of the research. The second section provides a background on the literature that informs the methods and procedures used as the basis of research for this dissertation, including literature on institutions, institutional evolution, institutional

analysis, behavioral economics, economic sociology, urban theory, comparative analysis, comparative institutionalism, research frames of reference and typology design. The third section details the research framework used, justifies the structural rigor, presents the research question, and builds the frame of reference including the actors, capital flows, and spheres of economic activity. The fourth section details the data for the research, including typologies, variables, and measurements. The fifth section details tests of validity and the case studies used.

## Background

### *Institutions*

The institutional nature of the dissertation requires a broad understanding of baseline institutional concepts to establish a consistent analytical focus. This ensures consistent measurement of the variables, identified as market type and the source of institutional legitimacy of the parameters defined in the study. In *Structure and Change in Economic History*, Douglas North (1981) establishes the institutional basis for economic and political activity. In this work, he describes the institutional form as a system of individual rights, the state as the enforcer of these rights, and how the ideology that drives the worldview of the actors works in the establishment of these systems. Particularly salient in the volume is North's focus on the transition from the neolithic village to the earliest city-states and the role of institutions in this process. In subsequent work, *Institutions, Institutional Change, and Economic Performance*, North (1990) explain how institutions influence behavior and expectations and how and why institutions form and change over time. North also proposes a research framework for the analysis of institutions, including transaction costs and incentives as motivating factors in



the development of institutions, and technological change as the primary motor of institutional change. The practical effects of institutional outcomes are elaborated in *Violence and Social Order* (North, Wallis, and Weingast 2009). This volume specifies that levels of societal development can be determined through the inclusiveness and impersonal nature of its institutions. This notion of inclusive institutions is further elaborated in *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (Acemoglu and Robinson 2012). Here the authors introduce the concept of extractive institutions as a device for transferring productive surplus into the hands of the elite. Several other authors have contributed to institutional literature from differing perspectives. Theories on how society constructs and integrates political and economic institutions into single or separate entities and how these entities relate are discussed in *Theories of Political Economy* (Caporaso and Levine 1992). This volume explores several approaches to political economy and informs this study in terms of understanding the rationale governing institutional development trajectories. In *The Economic Institutions of Capitalism* (Williamson 1985), institutional paradigms about neoclassical economics are restructured to reflect the reality of the economic environment. This provides the institutional researcher with a unique perspective on the interpretation of how institutions are structured by including relevant factors such as hierarchies and reciprocity in exchange mechanisms and the nature of market alternatives. This volume also informs the reference models used in this dissertation through detailed analyses of the specific spheres of economic influence detailed in the framework. General reference sources on economic and political institutions, including definitions, theories, and case studies particularly relevant to this dissertation are included in *The Evolution of*

*Economic Systems* (Clark 2016), and *Comparative Politics: Integrating Theories, Methods, and Cases* (Dickovick and Eastwood 2016).

### *Institutional Evolution*

There is another group of classic and modern literature that informs the researcher of the various aspects of social, political, and economic evolution that inform the institutional inquiry of this dissertation. *The Gift*, by Marcel Mauss ([1925] 2016) describes the fundamental nature of gifting and reciprocity that forms the basis of the modern market exchange. The complex evolution of market economies and the embeddedness of society in the economy is addressed in *The Great Transformation: The Political and Economic Origins of Our Time* (Polanyi [1944] 2001). Social stratification and wealth accumulation are introduced in *The Theory of the Leisure Class* (Veblen [1899] 2009). The influence of exogenous factors such as climate and geography in economic development are addressed in *The Wealth and Poverty of Nations: Why Some are so Rich and Some are so Poor* (Landes 1999). The evolution of the modern political system from prehistory is described in *The Origins of Political Order: From Prehuman Times to the French Revolution* (Fukuyama 2011) and *Dictatorship, Democracy, and Development* (Olson 1993). Several works on how groups and societies organize for the common good are found in *Assemblage Theory* (Delanda 2016), *The Logic of Collective Action* (Olson 1965), *Governing the Commons* (Ostrom 1990), and *Community, Anarchy and Liberty* (Taylor, 1982). Several texts describe the prehistoric pathways to the earliest cities and help define the origins of many of the institutions being studied. These include *Stone Age Economics* (Sahlins 1970), *Against the Grain: A Deep History of the Earliest*

*States* (Scott 2017), *Timewalkers* (Gamble 1993), *The Leopard's Tale* (Hodder 2006), and *In Search of the Indo-Europeans* (Mallory 1989).

### *Institutional Comparative Analysis*

An understanding of institutional forms for comparison is found in the literature on “new institutionalism”. This concept is introduced in *Political Science and the Three New Institutionalisms* (Hall and Taylor 1996). This article acknowledges three established schools of institutional study, historical institutionalism, rational choice institutionalism, and social institutionalism. Each of these schools offers an approach to institutional study by defining specific trajectories of institutional development, change, and persistence. Steinmo and Tolbert (1998) explore this concept through analysis of whether institutional variation accounts for the taxation policies of OECD countries and provides analytical tools for determining how institutions affect outcomes, including the necessity of establishing a rigid research framework. Adding to this analytical approach is the concept of the importance of the informal institution as a key to understanding the incentive and reward structure of political systems (Helmke and Levitsky 2004). In this article, the authors construct a two-dimensional institutional typology that informs the similar approach used in this dissertation. A preeminent collection informing this institutional study is found in *The Oxford Handbook of Comparative Institutional Analysis* (Morgan et al. 2010). This group of articles offers the researcher a thorough analysis of institutional types and approaches to the comparative study of institutions. The first section of the book deals exclusively with theories and methods of comparative institutional analysis. *Institutional Perspectives-Working Towards Coherence or Irreconcilable Diversity?* (Djelic) discusses the evolution of institutionalism and the

debate between action and agency to describe institutional influence on outcomes.

*Beyond Comparative Statistics: Historical Institutional Approaches to Stability and Change in the Political Economy of Labor* (Thelen) introduces the reader to Pragmatic Constructivism, an alternative to the Varieties of Capitalism theory, and frames both under the rubric of historical institutionalism. This approach sees the institutional framework as specifically unique to the environment as opposed to intentionally structured. *Actors and Institutions* (Jackson) stresses the importance of the actor in studying the comparative effectiveness of the institution. This section provides a template for reframing the Childean city criteria into actor classes. *Institutional Reproduction and Change* (Campbell) discusses the various ways institutions form, change, and diffuse in society. *Complementarity* (Crouch) discusses the ways in which institutions work with or against each other as complements. *Qualitative Comparative Analysis of Social Science Data* (Kogut) covers the comparative method and the methodology of determining the accuracy of social science claims. This chapter includes sections on configuring multiple conjunctive analyses, counterfactuals, statistical approach comparisons, fuzzy-set logic, and multi-level analysis. The author illustrates his approach using the same example that informs the trajectory of this dissertation (Hall and Soskice 2001). The volume *Structuring Politics: Historical Institutionalism in Comparative Analysis* (Steinmo, Thelen, and Longstrech 1992) offers a comprehensive collection of chapters by leading institutionalists informing the historical institutionalism approach to comparative politics. Many of these chapters cover topics that are especially relevant and adaptable to institutional comparative analyses in this dissertation. These include *Historical Institutionalism in Comparative Politics* (Thelen and Steinmo), *Institutions and Political*

*Change: Working Class Formation in England and the United States, 1820-1896* (Hattam), and *Ideas and the Politics of Bounded Innovation* (Weir). These articles offer specifics on approaches to historical institutional analysis and their applicability to understanding institutional variables and their effect on outcomes. Another comprehensive collection of articles can be found in *Comparative Historical Analysis in the Social Sciences* (Mahoney and Rueschemeyer 2003) and the follow-up volume *Advances in Comparative-Historical Analysis* (Mahoney and Thelen 2015). These essays offer the researcher a wide variety of tools for comparative institutional analysis. The first of these, *Comparative Historical Analysis: Achievements and Agendas* (Mahoney and Rueschemeyer 2003) describes the unique features of this line of inquiry, especially where the field of historical institutionalism falls within the broader realm of comparative historical analysis. They caution that although all comparative historical analyses fall under the umbrella of historical institutionalism, historical institutionalism does not necessarily qualify as historical analysis where it is lacking the structural rigor characteristic of historical analysis. In *How Institutions Evolve: Insights from Comparative Historical Analysis*, Thelen (2003) provides a thorough review of historical institutionalism and the different approaches of study, including utilitarian-functionalist, power-distributional, and cultural-sociological, and how these approaches affect institutional change. In *Periodization and Preferences: Reflections on Purposive Action in Comparative Historical Social Science*, Katznelson (2003) argues that historical institutionalism is an invaluable tool in understanding comparative history, especially in terms of path dependence and critical junctures. In addition to the articles above, case selection guidelines can be found in *Strategies of Causal Assessment in Comparative*

*Historical Analysis* (Mahoney 2003). In *Comparative Historical Analysis in Contemporary Political Science*, Thelen and Mahoney (2015) introduce the concepts of big data and the big-picture approach to causal inference at the macro level, while understanding that these processes are the result of aggregations of smaller components. For case-based research, the mechanism created by this process inform the outcomes. *Critical Junctures and Institutional Change* (Capoccia 2015) discusses the importance of critical junctures in the path-dependent process of institutional formation and offers six examples of this in history. *Drift and Conversion: Hidden Faces of Institutional Change* (Hacker, Pierson, and Thelen 2015) introduces the concepts of drift and conversion as factors in institutional evolution and change.

#### *Behavioral Economics*

Modern behavioral economics explains humans' psychological responses relative to how economic decisions are made. In his ground-breaking book, *Misbehaving*, Richard Thaler (2015) demonstrates through key examples the problem with rational choice economic theories and introduces the evidence-based behavioral economics approach. This approach allows the researcher to expand his views on how to analyze economic behavior in terms of how the decision-maker may frame the problem and synthesize the solution. This is relevant to this research in terms of understanding nuances of institutional development and persistence in early cities by interpreting the archaeological evidence in an analytical framework different from rational economic theory. In an attempt to codify coursework in behavioral economics, Peter E. Earl (2022) has published a graduate-level textbook on the subject, *Principles of Behavioral Economics: Bringing Together Old, New, and Evolutionary Approaches*. This book provides the interested

student with a comprehensive study of the subject, especially in terms of the evolutionary aspects of human economic behavior. *In The Mind of the Market: Compassionate Apes, Competitive Humans, and Other Tales from Evolutionary Economics*, Michael Shermer (2008) provide insight into economic behavior from both a psychological and biological perspective, using research into physiological responses to demonstrate the effect of engaging in certain economic behaviors, such as buying and selling. He devotes a significant portion of the book to describing how economic behavior evolved from hunter-gatherers to modern humans and the development of the informal institutions that play a role in the regulation of society. Numerous scholarly articles on behavioral economics exist in the literature. Behavioral models such as central-place theory are combined with missing-market development theory to explain ancient household surplus production including, production specialization, transportation costs, and exchangeable commodities (Dempsey and Winterhalder 2019). Price-haggling in a bazaar demonstrates the institutionalization of competitive-equilibrium behavior applicable to the market in early cities (Miller and Tumminello 2015). Gudeman (2001) demonstrates the relevance of economic institutions from the community perspective and provides relevant examples of the practical and sacred aspects of institutionalized economic behavior. In *The Economic Institutions of Capitalism*, Williamson (1985) juxtaposes rational transaction cost economics with the applicable dimensions of behavioral economics.

### *Economic Sociology*

Further exploration of the behavioral aspects of economics can be found in the literature on economic sociology. The collection *The New Economic Sociology: A Reader* (Dobbin 2004) offers the reader a wide array of essays on the topic. These include

*Institutionalized Organizations: Formal Structures as Myth and Ceremony* (Meyer and Rowan) detailing rationalized formal structures (institutions) as a reflection of social reality, *The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields* (DiMaggio and Powell) on the theory that emerging bureaucratic complexity is not necessarily related to organizational efficiency, *A Structural Approach to Markets* (Leifer and White) argues that social network relationships are far more relative to the market than information, and the excerpt *From the Social Construction of Reality: A Treatise in the Sociology of Knowledge* (Berger and Luckmann) discussing the differences between socially constructed reality and actual knowledge. Each of these articles gives insight into the way that socially constructed institutions influence outcomes. The volume *Principles of Economic Sociology* (Swedberg 2003) covers a wide range of socioeconomic issues, especially how the history of the market influences what we can infer about modern markets. In *Economics and Culture*, Throsby (2001) discusses the relationship of culture with the economy, including the concept of value, cultural capital, economic development and performance, art, and industry. The collection *Culture Matters* (Harrison and Huntington 2000) contains several articles relating to the impact of human societies on economic development. These articles include a foreword by Samuel Huntington, *Why Culture Matters*. Other contributors include Michael Porter, *Attitudes, Values, Beliefs, and the Microeconomics of Prosperity*, Jeffrey Sachs, *Notes on a New Sociology of Economic Development*, Mario Grondona, *A Cultural Typology of Economic Development*, Ronald Inglehart, *Culture and Democracy*, Francis Fukuyama, *Social Capital*, Robert B. Edgerton *Traditional Beliefs and Practices – Are Some Better*



*than Others*, and Richard Sweder, *Moral Maps, First World Conceits, and the New Evangelists*.

### *Urban Economics*

*Urban Economics* (O'Sullivan 2009) provides a fundamental economic rationale for why cities exist, how cities grow, how resources are distributed, and the role of government. These concepts are adaptable to the cases in this study. *Cities and Economic Development from the Dawn of History to the Present* (Bairoch 1988) provides broad coverage of the developments that led to the earliest cities and how these cities thrived or failed. These insights include the earliest pre-urban settlements, the agricultural revolution, early trade, and the characteristics of early urban cultures. *In An Evolutionary Theory of Urban Systems* (2018), Denise Pumain describes the relevance of city systems and provides analytical tools for comparative studies of cities that are easily adaptable to this study, especially the phenomenon of the issues surrounding the rapid emergence of urban areas. The collection *Regional Analysis Volume 1: Economic Systems* (Smith Ed., 1976) offers several articles that inform the researcher about how various regional economic systems work. Especially useful are the strategies in economically underdeveloped areas that inform the issues and resolution of unique problems in agricultural production and marketing that are relevant to the case studies in this dissertation. These include *Regional Economic Systems: Linking Geographic Models and Socioeconomic Problems* (Smith) which describes many typologies of rural marketing and various applicable theories, *Periodic Trade in Developing Areas without Markets* (Plattner) which describes costs of goods, periodic goods, periodic demand, and development stages, *The Role of Urban Food Needs in Puno, Peru* (Appleby) describing

market hierarchies and evolution, and *Some Economic Dimensions of Agricultural Marketing Research* (Jones) describing methodologies of studying farm markets, research frameworks, and effectiveness of methodologies. *Dark Age Economics: The Origins of Towns and Trade 600-1000* (Hodges 1982) discusses the emergence of economic systems after the collapse of the Roman Empire, offering the researcher valuable insight into the ground-up development of the institutions and economies of cities and regions, especially on the importance of markets and trade in the formation of the modern state. Various literature relevant to this study includes the division of labor and specialization (Baysal 2013; Depetris-Chauvin and Ozak 2020), the process of early crop differentiation and surplus (Conolly 2008; Jacobs 1970), and settlement growth issues (Fletcher 1995). Relevant articles on urban development include *Recent Advances in Urban System Science* (Arcaute 2022), *Agglomeration and Assemblage: Deterritorializing Urban Theory* (Dovey 2018), *Introduction: European Prehistory and Urban Studies* (Gaydarska 2017), *Interregional Trade and the Formation of Prehistoric Gateway Communities* (Hirth 1978), *Settlement Scaling Theory: Bridging the Study of Ancient and Contemporary Urban Systems* (Lobo, et al. 2020), *Urban Science: Integrated Theory from the First Cities to Sustainable Metropolises* (Lobo, et al. 2020a), *Large-Scale Investigations of Neolithic Settlement* (Miera, et al. 2022), *The Prehistory of Urban Scaling* (Ortman and Cabaniss 2014), *Settlement Scaling and Increasing Returns in an Ancient Society* (Ortman, et al. 2015), *The Nature of Cities: The Scope and Limits of Urban Theory* (Scott 2014), *Jane Jacob's "Cities First" Model and Archaeological Reality* (Smith 2014), *The Diffusion of Development* (Spolaore and Wacziarg 2009), *External Urban Relational Process: Introducing Central Flow Theory to Complement*

*Central Place Theory* (Taylor and Verbruggen 2010), and *Extraordinary Cities: Early Citi-ness and the Origins of Agriculture and States* (Taylor 2012).

### *Comparative Institutionalism*

The comparison of institutions across societies is the discipline of Comparative Institutional Analysis (see Morgan, et al. 2010). This method of inquiry seeks to understand how the institutions of a society affect the economic outcomes of that society, and that the understanding of how this is accomplished is best served through comparison with similar institutions in other societies. The nature of this inquiry requires an understanding that these institutions do not exist in isolation but create a system of interrelated and dependent institutions that form the unique framework of that society (Caporaso and Levine 1992). This broad spectrum of inquiry is multidisciplinary in the sense that it incorporates techniques normally found in such diverse fields as economics, sociology, political science, archaeology, and theology (Thelen and Steinmo 1992).

Although it is tempting to couch the research under the rubric of the Comparative Historical or Historical Institutional analytical methods, it is neither, in the strictest sense of the terms. The field of comparative historical analysis seeks to understand causality as a process over time (Mahoney and Rueschemeyer 2003), while this comparative analysis seeks to understand what institutions exist at a specific moment in time. That is not to say that the methods used by comparative historians are not useful. Similarly, historical institutionalism is primarily concerned with the historical processes that lead to institutional forms and the critical junctures that cause institutions to move in one direction or another (Steinmo, Thelen, and Longstreth 1992; Hall and Taylor 1996; Thelen 1999). Although this knowledge is extremely important in terms of explaining the

existence of the institution, it is secondary to the primary focus of this research. Historical institutionalism is useful for explaining the existence of an institution by understanding its historical roots, especially where there is no specific attestation of the institution in the historical record in the period under scrutiny, and its existence must be inferred by the researcher from the evidence of its previous existence (Kogut 2010).

A significant body of scholarly literature exists that informs the development of the comparative framework used in this dissertation. A section on methodology in the volume *Advances in Comparative-Historical Analysis* (Mahoney and Thelen Eds. 2015) includes *The Comparative Sequential Method* (Faletti and Mahoney 2015) and *Nested Analysis: Toward the Integration of Comparative-Historical Analysis with Other Social Science Methods* (Lieberman 2015). The volume *Shaping the Political Arena Critical Junctures, the Labor Movement, and Regime Dynamics in Latin America* (Collier and Collier 2015) explore the institutional basis of the labor movement in Latin America and in addition to the useful methodological examples that abound, there is a specific focus on how cases were selected for the study. Several articles are specific to the selected approach and the selection of cases in this dissertation and can be found in *Rethinking Social Inquiry: Diverse Tools, Shared Standards* (Brady and Collier 2004). These are *Refocusing the Discussion of Methodology* (Brady, Collier, and Seawright), *Claiming too much: Warnings About Selection Bias* (Collier, Mahoney, and Seawright), *Tools for Qualitative Research* (Munck), *Turning the Tables: How Case-Oriented Research Challenges Variable-Oriented Research* (Ragin), *Case Studies and the Limits of the Quantitative Worldview* (McKeown), and *The Importance of Research Design* (King, Keohane, and Verba).

### *Frames of Reference*

Using the literature cited as exemplars of developing a research framework, specific approaches have been adopted for this research. The guidelines for establishing a frame of reference for the research can be found in *Constructing Frames of Reference: An Analytical Method for Archaeological Theory Building Using Ethnographic and Environmental Data Sets* (Binford 2001). This methodology establishes the framework as a limiting device that focuses the constellation of inquiry into a manageable subject area and also provides subsequent researchers with an established framework for repeatable inquiry.

### *Typologies*

There are a number of articles in the literature using economic and political typologies as a research approach. Developing this approach into a methodology is addressed in *Putting Typologies to Work: Concept Formation, Measurement, and Analytical Rigor* (Collier, LaPorte, and Seawright 2012). This article establishes the typological approach as a legitimate analytic tool and addresses many of the arguments opposing this approach. The article informs a system of typologies built on several basic principles, including typology type, measurement scales, quantitative versus qualitative comparisons, multidimensionality, concept formation, and structure. The authors also include a template for forming typologies, establishing the row and column variable matrix, and intersecting cellular analysis. The paper also includes guidelines for establishing typologies based on broad concepts without built-in structural limitations, such as continuous variables and multiple dimensions. Several exemplar articles are cited in this study, providing the researcher with a wide array of typological studies and

structures to inform subsequent research, including the article used as the model for this research, *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (Hall and Soskice 2001). Other notable contributions of unique typologies are *Between the Revisionist and the Frontier State: Regional Variations in State-War Propensity* (Miller 2009) which creates a typology of states based on institutional outcomes, and the chapter *Big, Slow Moving, and ... Invisible: Macrosocial Processes in the Study of Comparative Politics*, in which Pierson (2003) analyzes the effect of temporal junctures in institutional change. In the chapter, *A Quantitative Method for the Creation of Typologies for Qualitatively Described Objects*, Martino and Martino (2018) describe a method for the creation of a logical relationship between typologies that can be analyzed algorithmically. Although this approach uses neolithic artifacts as the focus of the typology, the approach is useful from the standpoint that it creates an adaptable analytical bridge between the qualitative data of the case study and the quantitative method of analysis.

The conceptual basis of developing institutional typologies from the perspective of institutional forms and predictable outcomes is based on the collection edited by Peter A. Hall and David Soskice, *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (2001). In the first chapter, written by the editors, *An Introduction to Varieties of Capitalism*, the concept of how institutional frameworks can influence the economic structure of a country is established. This framework defines not only the political and economic institutions but the interrelatedness of the institutions and how their separateness or codependence creates an environment for economic advantage. This approach is adapted for the comparative case studies in this dissertation by changing

the environment from capitalist democracies to ancient cities. This adaptation still follows the basic premise of institutional relativity introduced by the authors, including how institutions influence behaviors and outcomes, and what spheres of influence the institutions operate in. The research follows this guidance as a format for determining a basic research framework identical for all cases as well as a method for evaluating typologies of outcomes. This method is further supported in the literature on VoC. In *Varieties of Capitalism and Institutional Comparative Advantage: A Test and Reinterpretation* (Witt and Jackson 2016) offer guidelines for adapting the original premise of VoC. This informs a methodology for the introduction of new parameters into the theoretical frame that helps validate the premise of this dissertation. The adaptability of the VoC approach is further illustrated in *Rethinking Comparative Political Economy: The Growth Model Perspective* (Baccaro and Pontusson 2016) in terms of a different analysis of causality and its rebuttal *Growth Models, Varieties of Capitalism, and Macroeconomics* (Hope and Soskice 2016). *Institutional Change in Varieties of Capitalism* (Hall and Thelen 2005) investigates the role of institutional change in the outcomes described by VoC.

## Research Framework

### *Research Problem*

The first step in designing a comparative analysis research agenda is to define the research problem (Collier, Seawright and Munck 2004). The research problem for this dissertation is: What kinds of market institutions formed around capital flow in the earliest cities? Much literature has been dedicated to the identification of institutions in early cities and the analysis of the influence of these institutions on the lives of the

inhabitants (Bresson 2016; Garcia 2021; Muhs 2016; Sahlins 1972; Yoffee 2005), but little research has been done to address whether there is an identifiable typology of economic and institutional frameworks that exist across a sample of early cities. This dissertation contributes to the literature by 1) establishing a comprehensive research design that allows the researcher to choose case studies based on established criteria and to perform comparative institutional analyses on the cases in a repeatable manner, and 2) establishing typologies of institutional frameworks in early cities that lead to predictable outcomes.

Hypothesis 1: The institutional frameworks developed in the earliest cities can be categorized into a typology of attributes based on the source of legitimacy of the institution and the role of the state in the control of the market.

The falsifiability of Hypothesis 1 rests in the ability of the researcher to identify enough specific traits in the institutional makeup of the city to justify a unique and discrete typological framework. Failure to do this may be because these unique traits do not exist within the selected cases or are hidden in the archaeological record. The validity of Hypothesis 1 can be tested quantitatively through tests of causality between the measured variables in the research and tangible outcomes as proxies for the research framework.

### *Frame of Reference*

The most important aspect of this research is its frame of reference. This framework defines and limits the field of inquiry, establishes a consistent point of reference for the comparative study, and creates a uniform standard of case selection that ensures heterogeneity without introducing conceptual stretching (Collier and Mahon 1993; Collier, Mahoney, and Seawright 2004).



The use of frames of reference allows the researcher to establish a framework for analysis that consists of a foundation of information that is relatively well-known juxtaposed with another set of information that is less well-known or understood (Binford 2001). In this case, the foundation of the frame of reference is also the criteria for the inclusion of samples in the case studies. This is the criteria established for the classification of an ancient archaeological settlement as a *city*. The criteria used in this dissertation are adapted from the list developed by V. Gordon Childe in his 1950 essay *The Urban Revolution*. In this essay, Childe lists ten criteria that were the hallmarks of the classification of an ancient city. These criteria were included as common features of all known ancient cities at the time, and the list still has relevance for this research framework. Childe's criteria provide a static framework of tangible factors to use when comparing cities across space and time. Each of these factors can be associated with its economic relevance by establishing an institutional relationship between the factor and a specific economic activity. The inclusion of the criteria as a framework provides the researcher with a reliable and consistent foundation for the analysis that is portable in the sense that this qualification can be used in subsequent research on other cases (Rueschemeyer 2003). Using these criteria also allows the researcher to expand or contract the case qualifications, depending on the requirements of the research. These are the "known" features required for qualification as part of a research framework, per Binford. These criteria are valid in the sense that they form the fundamental criteria for every city then classified as a city, and these criteria are known to have originated within these cities in the timeframe in which the city existed, rather than as a later addition. Childe's (1950) criteria are listed below.

- High population density
- Specialized classes of craftsmen
- Production surplus is given as tax or tribute to a ruling elite
- Monumental architecture
- An elite ruling class or theocracy
- A system of practical sciences and record-keeping
- A system of writing
- An artisan class
- Long-distance trade
- Community membership

Although Childe's original list contained ten criteria, several items have been conflated to simplify the analysis. The *artisan class* was included in *craft and labor specialization*. Childe originally included the artisan class as a unique feature of cities based on his observation that:

“Neolithic peasants never...tried to represent natural objects, but preferred to symbolize them by abstract geometrical patterns, which at most may suggest by a few traits a fantastical man or beast or plant.”

History has since proven him mistaken, citing a growing collection of extremely sophisticated examples of Paleolithic and Neolithic art found in the historical record (Gamble 1993; Klein and Edgar 2002; Hodder 2006). Childe also noted that these artisans were responsible for the artistic expressions within the society that formed uniquely identifying features for archaeologists. For this dissertation, the differentiation of an artisan class from other skilled craft specialists creates unnecessary complexity and provides little, if any, additional insight into economic production in the economic system under study. Next, the *invention of writing* was added to *scientific knowledge and record-keeping* specifically because it has been determined that the invention of writing came about as the direct result of the invention of symbolic record-keeping, making its

inclusion as a separate component redundant (Bennison-Chapman 2018; Oppenheim 1977; Yoffee 2005).

Monumental architectures consist of palaces, temples, and tombs that are specifically built as symbolic edifices dedicated to the status of the elite, the gods, or the afterlife (Harmansah 2013; Mumford 1961). The construction of monuments is evidence of the output of the collected wealth and knowledge of the elite and requires the participation of most of society as contributors of goods or labor to the effort, but this also implies that these participants are compensated in some manner for their contributions. Monumental architecture also includes the redistributive provision of public and collective goods (Blanton and Fargher 2010; Garraty 2010; Muhs 2016; Olson 1965) such as irrigation and sanitation systems, granaries, defensive fortifications, or scientific observatories. The economic implication of this is to consider monumental construction as an important driver of the economy and also as a unifying feature of the population into a community. The remaining Childean criteria, community, in the original sense, denotes a sense of belonging to a larger, non-kinship group in which the inhabitant was a political as well as an economic participant (Childe 1950). Community, in this frame, relates to the political status of the different social strata and their institutional relationship with authority. From an economic standpoint, the relationship of the individual with the community is part of the wider complex of social institutions. Understanding the role of community in the individual worldview is an explanatory factor in why institutional outcomes occur as they do (Lin 2001; Pierson 2015). For this research, community incorporates not only the political aspects of citizenship, but also explores relevant social institutions such as socialization and leisure, ceremonial

activities, group memberships, and ethics and morality. In this sense, *community* can be conflated with *monumental architecture* into a new component, *public goods*.

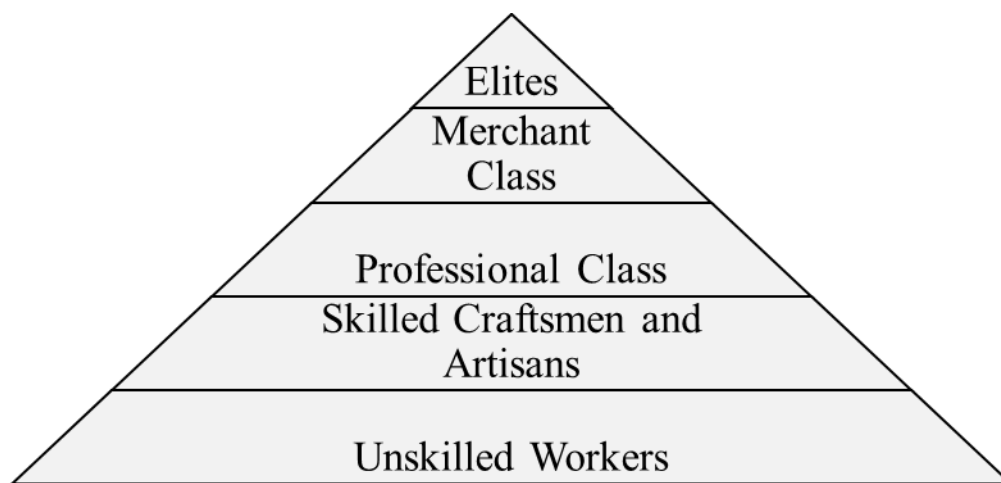
The next criterion is long-distance trade. The inclusion of this component in Childe's list illustrates the difficulty of archaeology in determining the existence of markets (Garraty 2010). It is far easier to identify goods that had to be sourced elsewhere either through their natural availability or because they are manufactured artifacts that can be linked specifically to a distant culture (Stark and Garraty 2010). The difficulty in determining the existence of a market in this sense is that it is easy to identify goods that are obviously traded over long distances without the need for identifying a marketplace for goods that are produced and traded locally. For this dissertation, the presence of long-distance trade is considered a proxy for a market presence. At a minimum, outside trade provided a source of raw materials and goods unavailable locally and provided an outlet for locally produced goods in demand elsewhere (Yoffee 2005). In general, however, there is a wide consensus that local market economies were ubiquitous in ancient times (Derksen 2014). Including long-distance trade as part of a wider market expands Childe's list slightly without a conceptual stretch, and also facilitates a better explanation of the institutional linkages in the economic system.

The reconfiguration of these components also allows for the consolidation of some of these criteria into actor groups, and others into capital flow, which is important for the development of the analytical framework as demonstrated below.

### *Actors*

The first step in defining the research framework is to adapt the core components that limit case selection into the actor groups that best relate to these components.

Developing the components into actor classes allows the framework to define processes as actions constrained by the socioeconomic class of the actor (Jackson 2010). Adapting Childe's original components of a city, it is possible to create a pyramidal stratification of socioeconomic actors (North, Wallis, and Weingast 2009). The high population criteria can be classified as the base of the pyramid, the unskilled labor class, followed by the class of artisans and craft specialists, followed by a professional class consisting of bureaucrats, scientists, physicians, magicians, and scribes, a merchant class consisting of market entrepreneurs, and at the peak level, an elite class. Although the professional and merchant classes were not specifically listed as one of Childe's criteria, these classes are simply adaptations of Childean criteria into actor groups to simplify the reference framework. The professional class is redefined as a container for all of the actors that embody the criteria of scientific Knowledge, writing, and record-keeping, as these were skills that comprised the most educated members of society (Yoffee 2005).



*Figure 2. Childean economic classes*

The *merchant class* is an adaptation of the Childean feature of long-distance trade into an actor group. Long-distance markets imply the existence of a merchant class,

although it is unclear where on the social spectrum this class would appear. Arguments can be presented that integrate merchants at the lowest levels of society but considering market exchange as a considerable source of wealth, the merchant may also be included in or source from the elite class (Yoffee 2005). For this dissertation, the merchant class will be inserted above the professional class more as a placeholder for the class than as a concrete definition of socioeconomic status.

These social classes are illustrated in Figure 2. Each of the social categories of actors is represented in Childe's remaining criteria to some degree. Associating actor groups with Childean criteria allows the researcher to view Childe's criteria as the components of an economic system. The remaining Childean components are the taxable surplus and public goods. Both can be associated with all classes of actors and are included in the research framework as part of the capital flow (see below) as public goods are typically derived from taxation.

### *Institutional Relationship Spheres*

The second focus of institutional influence is the sphere of institutional relationships (Hall and Soskice 1991) (H&S). As originally developed, these spheres denote the coordinating relationships that firms develop with respect to their competitive advantage. These relationships differ from those of the ancient city, but the rationale remains the same, each institution has a predominant sphere of influence in its coordination of actors. These spheres of coordination are the primary determinants of the typologies developed by H&S. In general, coordination efforts in economies that rely on the competitive market tend to form liberal market economies, while economies whose coordination efforts rely on non-market forces or administrative policies form

coordinated market economies. These two types of capitalist market economies form the typology of the H&S argument. In their study, most capitalist economies fall somewhere on a spectrum between the two extremes, although outliers do occur (Baccaro and Pontusson 2015). The coordinating relationships of the modern firm revolve around issues that are relative to modern capitalist economies.

These coordination spheres occur at five levels. The first is *industrial relations* which refers to the macro relationship between industry and labor. From an institutional perspective, the behavior of firms concerning bargaining rights, hiring practices, compensation, and benefits is juxtaposed with government policy and influences macroeconomic outcomes such as inflation and unemployment rates (Thelen 2001). How labor affects the economy is apparent in modern economic theory, but whether labor relations had any effect on ancient economies is unclear. From an institutional perspective, the key features regarding employment are the institutional rules governing how labor is procured and compensated by both the public and private sectors. The second sphere is *vocational training and education* which refers to the ability of firms to find a workforce with the skill, training, and aptitude to perform required tasks effectively. Firms tend to be attracted to areas where similar firms operate and cluster together, or agglomerate (O’Sullivan 2009). The coordination efforts of the second sphere include ensuring that the educational requirements of the agglomeration are available and supporting whatever competitive advantage is serviced by the agglomeration. This poses an interesting question to the awareness of the ancient economy regarding its competitive advantage. An indication of some specific field of training may indicate such awareness and provide insight into the competitive advantages

that may exist in that economy. Pertinent to this sphere are the institutions that are involved in training, including the types and levels of training available, its costs and delivery methods, and who is allowed to participate. The third sphere is *corporate governance*. The primary focus of this sphere is the availability and terms of financing specific to the needs of the firm, and the safeguards in place to protect the investors (Williamson 1985). Given the financial component of the sphere, a direct relationship with practices in the ancient economy is unlikely, although there are some indications that rudimentary banking and finance activities may have taken place in some economies (Garraty 2010). Instead of financial institutions, this sphere of coordination will instead focus primarily on the typical sources and targets of finance, entrepreneurship, and private enterprise. This sphere includes institutions that govern private enterprises and the economic institutions that support them. The fourth sphere is *inter-firm relations*. This coordination sphere also refers to the agglomeration effects of firms and how they interface with one another to take advantage of shared resources. This includes ensuring adequate markets and stable supply chains, as well as information and knowledge sharing appropriate to the competitiveness of the individual firm. The issues relevant in the sphere also apply to the ancient economy in the form of redistribution. For this sphere, the institutions that control the extraction and redistribution of production are the focus. The fifth and final coordination sphere is between the firm and its *employee relations*. This refers to the rules that apply in terms of how employers hire and retain skilled employees, and also produce an environment that ensures these employees do not abscond with valuable trade secrets or knowledge accumulated in the workplace. This sphere is relevant to the ancient economy in terms of how skilled workers are procured



and incentivized to remain in their positions. The institutional rules in this sphere relate to employee and employer rights and obligations, and the incentives and sanctions applicable in the enforcement of these rights.

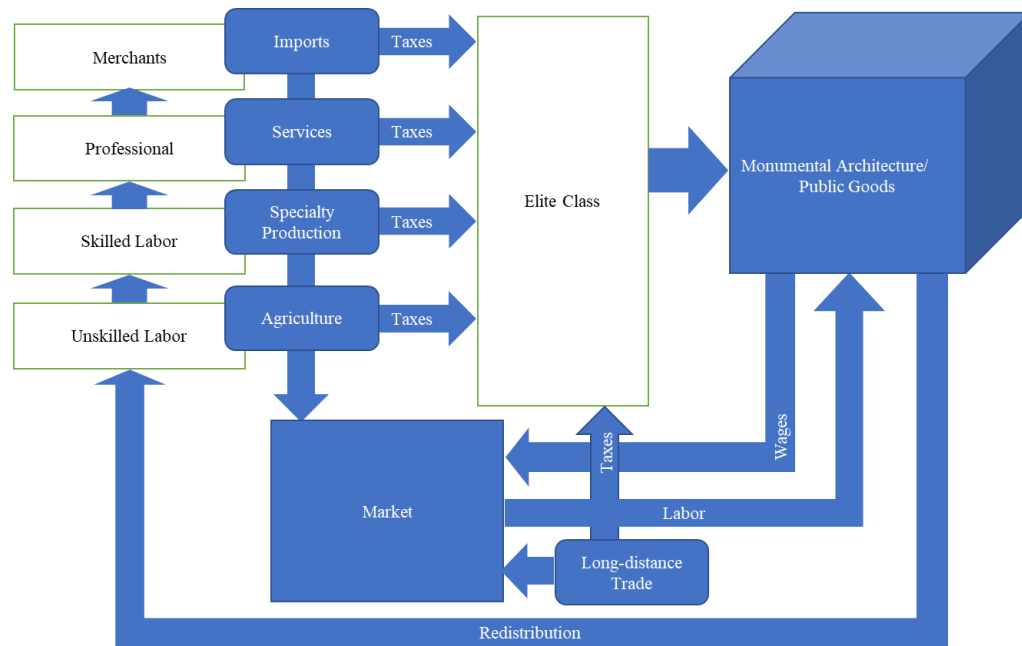
Adapting the H&S spheres demonstrate that *industrial relations* and *employee relations* are essentially the same spheres in the context of the ancient economy.

Combining these two spheres into one creates a collection of four spheres of institutional influence. These are renamed to include *relationships*, *governance*, *education*, and *integration*.

### *Capital Flow*

One of the methods available for the researcher to understand the institutional structure of an economic system is to follow the flow of capital in the system. Capital in this sense is defined as any good that enters the economic chain, including land, labor, agriculture, manufactures, and services (Lin 2001; O’Sullivan 2009). Figure 3 provides a generic capital flow of a hypothetical early city. The flow begins with the class of producers of surplus. The diagram includes unskilled workers as the producers of agricultural products. This diagram also includes the market as a key institution, even though it is not listed as a Childean criterion. This inclusion is rationalized in the previous section. For this research, the market is more of a container for the subprocesses that occur in the individual exchange of goods and labor. The agglomerations of these subprocesses define the institutional spheres of coordination. Each of the arrows in the diagram indicates an institutional relationship between the source and destination of that capital flow.

The first group of producers each has a dual direct relationship with the elite through a taxable surplus and their availability as part of the labor force. This producer group also has a relationship with the market as both suppliers and demanders. The elite class has relationships with each other class as a demander of taxes and labor and as a supplier of wages. The elites also act as a supplier of monumental architecture and public goods, the latter of which has a relationship with the other classes in the redistribution of elite wealth and services in the form of public goods (Harmansah 2013; Yoffee 2005).



*Figure 3. Theoretical capital flow*

Understanding the relationships in the economic model between the actors and the market allow the researcher to explore whether an identifiable institutional relationship exists. It is almost certain that some form of institutional constraint exists in all human interactions (North 1990), but the key for this research is whether these can be identified.

Ideally, this institutional relationship is codified in some manner, but if this is not the case then the institutional form must be inferred as an interpretation of recognized behavior (Kogut 2010). Beginning with the producer class a number of relationships can be identified. The first is the social class itself. It is relevant to understand the institutional basis for the organization of society. In other words, how do individuals achieve their social status, and is this status persistent? Directly related to the social hierarchy is the production status of the actor classes. In this case, the primary questions are what are the institutional rules and regulations regarding production? Some of these requirements include what can be produced, when it can be produced, how much can be produced, and even the process that can be used in production (Acemoglu and Robinson 2012). The next step in the economic system introduces the elite class. Here the production surplus of the producer classes is subject to taxation or appropriation by the elites. The institutional rules determine what process defines the targets of taxation, tax rates, and the various commodities and services subject to taxation. The other primary interface of the producers with the elites is in the form of corvee labor. The institutional basis for this defines the conditions under which the elites can require the labor services of their citizens, the duration of service, and how compensation is determined. Subsequent to this, the remaining surplus after taxes, if any, is available for exchange in the market. How the market operates is the key institutional element that provides the interface to the attractive features of the research framework. The features of market institutions from the producer-as-supplier perspective include merchandising, transaction costs, prices, middlemen, property rights, and dispute resolution (North 1991). Many of the same market features apply to the producer-as-consumer perspective as well. Long-

distance trade is another aspect of the market and defines the merchant class. The institutions at work here determine how external trade is managed and taxed, and what goods are made available to the population. A significant cost to the elites is the construction of monuments and public works. The institutions that govern this aspect of the economy include how projects are planned, selected, and funded, and then how these projects are provisioned, scheduled, and coordinated. From an economic standpoint, the requirements for large labor pools, and the sourcing of materials in the market imply either a significant recycling of wealth back into the community or a form of taxation with the benefit to the community residing in the provision of a public or collective good. The simple model in Figure 3 above also assumes that some percentage of the redistribution of wealth comes about through the construction of monumental projects and is coordinated through the market. It may well be determined in individual cases that the central coordination of the market resides instead with the elite administration, and the redistribution of wealth, if any, is governed by a completely different category of institutions. This requires the development of an institutional typology that maintains a conceptual consistency to ensure a compatible comparative framework.

### *Typologies*

This dissertation requires the construction of a typology with two dimensions, a market dimension, and an institutional dimension. The typology is built using the technique described by Collier, LaPorte, and Seawright (2012)(CL&S). The first step in this process is the development of a research framework that supplies the primary dimensionality of the typological frame. Using the city-criteria portion of the framework as a model for a system of economic processes, several potential institutional

relationships can be formed. CL&S describes a specific structured approach to the development of a typology that will be adopted for this dissertation. Their first step is the identification of the “overarching concept”. The first typology in this dissertation can be titled, *Institutional Typologies of the Economies of Ancient Cities*. The second step is the identification of the row and column variables. These variables will measure market type and institutional legitimacy for three economic dimensions, production, consumption, and extraction (taxation) for each actor group within all four economic spheres.

## Data

### *Market Type*

Although some of the specific coordination spheres listed above may not seem appropriate for the ancient economy, valuable insights into building a specific measurable variable of typology can still be derived. The first insight is that the focus of these institutional forms in the H&S model is on the type of market economy. Whether a modern capitalist economy is liberal or coordinated relates directly to the primary source of national income in a modern capitalist economy. Liberal market economies tend to thrive on consumerism, that is consumption of goods both imported and manufactured locally, while coordinated market economies derive national income primarily through the foreign exchange of goods manufactured locally (Hall and Soskice 2001). For the modern capitalist economy, these distinctions are entirely appropriate but are not easily applied to the ancient economy. Instead of the two predominant types of possible market economy referenced in the H&S modern capitalist state, the ancient non-capitalist market economy can fall into three possible categories. The first of these models is a society where no marketplace exists and there is little market activity. The second model is a

society in which there are peripheral markets, but the market principle does not apply to the distribution of labor, land, or subsistence commodities. The third model is the classical marketplace where market principles of supply and demand predominate (Bohannon and Dalton 1962). Given the unrealistic extremes of the market economies represented by the “non-market” characteristics of model 1 and the perfectly unregulated market in model 3, the most likely scenario is some form of model 2, allowing the researcher the flexibility to recognize a significant variation in the economic systems of the cases without introducing a too-rigid market typology. Given that model 1 and model 3 represent the extremes of a completely redistributive versus a perfectly competitive economy, these two extremes equate to the extremes of the H&S capitalist economy of a completely liberal market versus a completely coordinated market. For this discussion, the terms for the measurements will be liberal versus controlled since the coordinated aspect of the H&S model cannot correspond to the ancient economy. Scoring this dimension of typology will consider whether a market environment exists for the component being measured. For this dissertation, the existence of a market that responds to supply and/or demand stimuli is adequate evidence for a liberal market. The absence of any market presence will result in a controlled market score.

### *Institutional Legitimacy*

Institutional Legitimacy variables are adapted from the institutional features described by Hall and Soskice in *Varieties of Capitalism* (2001). The first of these variables relate to the three foci of how institutions affect behavior, *socializing agencies*, *conferred power*, and *matrices of sanctions and incentives*. These roughly correlate to the three institutionalisms described by Hall and Taylor (1996), *Sociological Institutionalism*,

*Historical Institutionalism*, and *Rational Choice Institutionalism*. Although the latter group of institutional approaches is broader in perspective in that they are also concerned with institutional origins, mechanisms of change, and persistence, they are also useful in honing the definitions used by Hall and Soskice and adapting their variable definitions for this study. The first variable, *socializing behavior*, relates to the worldview of the actor as influenced by institutional norms in determining a course of action to take. This category relates to the community. Here, the inclusion of the individual into a specific community defines a worldview consisting of shared beliefs, socializing behavior, and reciprocity (Taylor, 1982; North 1990). In this case, the institution provides the normative scripts for actions, but these scripts are largely based on the preference order of the society, including the symbolic and moral perspectives of the social culture (Campbell 1998; Dobbin 2004). The inclusion of this type may be counterfactual, in that it may be indicated where institutional control is apparent, but neither of the other two behavioral control variables is identifiable. The next behavioral variable is *conferred power*. This category describes the influence of the institution by the power it confers or denies actors within that institutional framework (Hall and Soskice 2001). This power can be related to the differences in resources that give one actor an advantage over another in a market setting, or the power to coerce that is common to a political structure (Caporaso and Levine, 1992). This compares to the focus of historical institutionalism that sees institutional control derived from both the formal structure of the institutions that are defined by path-dependence, guided by the informal constraints imposed by the societal institutional framework as a whole (Thelen and Steinmo 1992). This institutional form establishes the legitimacy of the powerful but provides constraints on this power as

a byproduct of historical norms through a process of ceremonial legitimization (Meyer and Rowan 2004). The third behavioral variable is the matrix of sanctions and incentives that guides actors' behavior. These are the institutionally derived rules that specify the type of activities that are condoned through incentives to engage in that activity or penalties as disincentives (Djelic 2010). This relates to the rational institutionalist school in the perception that actors are primarily concerned with maximizing their preference agendas and behave in ways that are relative to how they believe others will respond (Hall and Taylor 1996). A great deal of overlap exists within these three categories, especially when the institutions governing the ancient economy are considered. In most cases, these early cities rely on the historical institutions of tribal law that specify the rules of society (North, Wallis and Weingast 2009; Yoffee 2005). With this possibility, the lines between social, historical, and rational become blurred. In ancient society, institutional rules were either conferred by society or conferred by law. This distinction is further complicated when the theocratic nature of the elite class is considered. In this scenario, the socially derived belief system may be codified into law. In fact, belief systems form the basis for much of contemporary law (Fukuyama 2011). Due to this blurring of distinctions, the measure of institutional control will span two extremes, *de facto*, or informal social institutions, and *de jure*, or formal legal institutions (North 1990). This shifts the focus from the source of institutional control, which requires reference to three different institutional schools of thought, to focus instead on where the institution derives its legitimacy to direct norms of behavior, which is a simple dichotomous relationship and easily distinguishable.



### *Measurements*

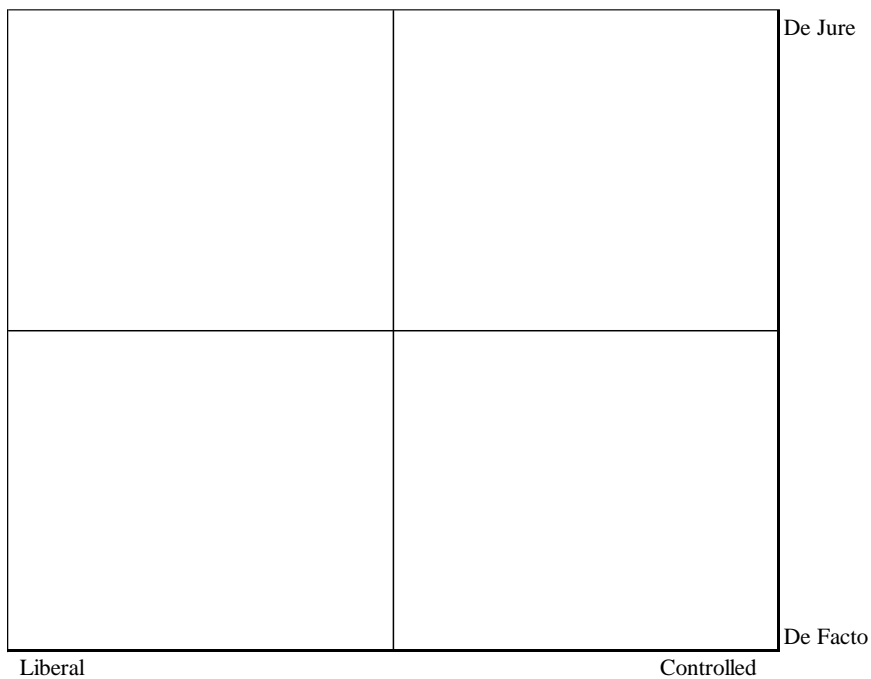
The two typological variables, market type, and institutional legitimacy, provide a multidimensional framework for the measurement and categorization of the institutional structure of the economies of ancient cities. The first categorizes the institution by the sphere of influence it controls, measured on a continuum as either fully elite-regulated or fully market regulated. The second categorizes the institution by the source of legitimacy through which it controls behavior, either socially derived or legally derived. These typologies determine the rows and columns specified in step 2 of the building blocks of typology formation (Collier, LaPorte and Seawright 2012). The third step in typology development is the creation of a matrix delineating the scores of the individual components of the dimensions of the typologies as seen in Figure 1.

<b>Economic class</b>	<b>T1</b>	<b>T2</b>
Taxes		
Production		
Consumption		
Totals		

*Figure 4. Childean Institutional Measures Worksheet*

Each specification for institutional analysis is analyzed for an institutional presence within the stated framework. Beginning with the Childean economy model, each criterion will be evaluated in terms of its relevant institution linkage within each sphere of coordination, including the rating of that institution in terms of its position in the market type continuum (T1), and its source of legitimacy (T2). Ideally, each institutional linkage identified in the economic model will be represented by all four spheres of influence. The rating of the position on the market continuum will be either a 1 for controlled or a 0 for liberal. The legitimacy of the institution is also a dichotomous

rating with 1 for de jure institutions and 0 for de facto institutions. The overall score amassed by the institutional market rating will contribute to the typological determination. Each sphere of influence will receive a total score in the two typological dimensions and these scores will be compiled in the assessment for the determination of the case typology. The overall score for the two typological dimensions will determine the typological quadrant the case study fits within. The overall score includes all of the Chilean class components and all of the identified institutional relationships.



*Figure 5. Institutional Typology Matrix*

The two dimensions of the typology include market rating (X-axis) and source of legitimacy (Y-axis). Each of the typological scores will be a percentage of the maximum possible score. The typology cross-tabulation is seen in the 2X2 matrix in Figure 5. This basic matrix design is borrowed from Levitsky and Murillo (2009). Here the total score falls within one of four quadrants. Where the case falls in the quadrant will determine its

typology. These include De Facto/Liberal, De Facto/Controlled, De Jure/Liberal, and De Jure/Controlled.

### *Outcomes*

Each of the institutional spheres of influence can be related to a proxy outcome that allows the researcher to test for a correlation between the typology score as the independent variable and the outcome proxy as the dependent variable. The relationships sphere, which includes the rules governing labor, is directly related to the large labor market feature. This requires little elaboration. The key to understanding how these relationships influence this outcome requires the development of a proxy for the large labor market. One of these proxies can be in the form of the prevalence of slavery as a source of labor. Although all ancient societies included slavery, if slavery is the preponderant method of labor utilization, then the attractiveness of this is rated very low. Most individuals would steer away from a society where the odds of being sold into slavery are high. The measure of slavery is the estimated percentage of slaves that make up the labor force, or alternatively, the existence of slavery in relation to the other cases. The next sphere is governance. This sphere is primarily related to private enterprise and relates to the attractive feature of the availability of financial capital. This feature is related to entrepreneurship in terms of the ability to capitalize a startup venture. The proxy for this is the evidence of a financial market in which entrepreneurial individuals can obtain necessary funds, and lenders can lend to these startups as a profitable investment. The third sphere is education. Although this is easily relatable to the attractive feature of shared knowledge, that feature was combined with reduced transaction costs, indicating that a somewhat broader proxy than evidence of an

educational system is required. In this case, the ability to read is also a good proxy for reducing transaction costs through shared knowledge. Most transaction information is efficiently transmitted in the marketplace and the ability of literacy is a market advantage (Muhs 2016). The education proxy is the accessibility of education to non-elites as a measure of how well knowledge is diffused in society and measured as the estimated percentage of the population that can read. The fourth sphere, integration, is also easily relatable to sectoral cooperation and integration. This sphere implies specialized, relatively large-scale manufacturing requiring different component suppliers. Evidence of this type of manufacturing activity is the proxy for this feature.

#### *Tests*

Even considering the small-n sample of the qualitative case study, the resulting dataset provides the research with a comparatively large sample of dichotomous quantitative data. The dependent variable in this analysis is the measurement of the outcome proxies defined above, while the independent variables are the measures of institutional typology. Where the outcome proxies are simply the presence or absence of the feature, a logistic regression is the appropriate form. Where these proxy measurements are continuous, a standard ordinary least squares regression will suffice.

Both use the same standard form:

$$\gamma = \beta_0 + \beta_1 \text{Sphere} + \beta_2 \text{Taxation} + \beta_3 \text{Production} + \beta_4 \text{Consumption} + \mu$$

#### *Figure 6. Outcome typology regression model*

An alternate measure using continuous variables for the independent variables can be performed by counting the changes in economic treatments of the different socioeconomic classes. This count will determine how many times a value changes

between each socioeconomic class using the nonparametric Runs test (Naghshpour 2016a). This test provides a continuous variable representing socioeconomic stratification. A higher value indicates a larger heterogeneity of economic treatments between classes. Regressing these variables on the proxy measurement demonstrates whether these factors are correlated.

### Case Selection

The selection of cases for this study is necessarily limited to a small sample. This is due to the limitations in the archaeological record in terms of the validity and availability of information in the cases under consideration. This also limits the availability of cases that form a heterogeneous sample. The sample cities chosen as cases for the comparative study, Ur III, Thebes, and Athens, are well-documented, both through academic research and through the copious written records that have been discovered. The framework for the study of institutions in early cities is designed to ensure that each city is equally represented. This requires a static framework of identifiable attributes that occur in all cities. These attributes form the basic framework for identifying the institutions that form the basis of understanding how institutions frame the behavior of various actors to achieve a specific outcome. Specifically, the focus is on the economic factors that make up the city and the outcomes that make the city desirable to live in. The relationship between the economy and the outcome forms the relationship to identify the institutions that govern the behavior of the actors. To understand this relationship at its most fundamental level, the sample cities chosen for this study represent a cross-section of the earliest cities known to history, Ur in Mesopotamia, Thebes in Egypt, and Athens in Greece. Each of these cities represents a unique

geographic and temporal space. The institutions that developed in these cities demonstrate how these urban dwellers solved the many new challenges that came about in the revolutionary settlement known as the city. The cases are sufficiently separated temporally and spatially, providing the researcher with a reasonable expectation that homogeneity due to cross-contamination is unlikely.

The selection of individual cases is based on the criteria set forth by V. Gordon Childe. These criteria allow for a consistent basis for inclusion in the comparative study, and any early city meeting these criteria is eligible for the sample selection. For this study, the cases were also chosen for their temporal and spatial distance, and also for their establishment as relatively mature cities, evolving from numerous iterations of previous cities or eras within that society. Differentiating these cities by their relative maturity is done to provide adequate room for the establishment of mature institutional frameworks that remain relatively easy for the researcher to identify. Each of the selection criteria will be explained in detail in the chapters specific to the city-case study.

The first of the cases will be the ancient city of Ur, located in Mesopotamia in modern-day Iraq. This study will concentrate on the period known as Ur III, which is the Third Dynasty of Ur dating from the 22<sup>nd</sup> millennium and lasting for around 100 years. This later period provides ample time for institutional development from the earliest manifestations of the civilization and is also informed by a profusion of ancient documents in the form of clay cuneiform tablets (Oppenheim 1977). The population estimate of the city includes 24,000 individuals residing within the walled portion of the city, with as many as 500,000 residing within the administrative sphere of influence in the surrounding countryside (Bairoch 1988). A walled city and numerous elaborate

temples and reliefs attest to the artistic nature of its craftsmen, and numerous trade routes emanate from the city (Oppenheim 1977). The relevance of its scientific achievements is notable in that the astrological zodiac in use in modern times had its origins in Mesopotamian culture (Brown 2017). The characteristics of the city easily fulfill the requirements of the base typology of the ancient city (Childe 1950).

The second city of interest is the Egyptian city of Thebes. Thebes is the Greek name for the city. Locally, it was known as Wesi or Ne (Durant 1935). Thebes represents a city of ancient Egypt, widely separated from Ur both geographically and temporally. The city itself encompasses an area of around 4 km<sup>2</sup> and had an estimated population of 50,000 (Meskell 2002). Numerous discoveries of papyrus records, correspondence, and stelae give the researcher deep insight into the daily life of the typical Theban. As the gateway to the Valley of the Kings, Thebes had a sizeable workforce of highly skilled craftsmen living in both the city and in special work camps for tomb-building (Romer 1984). Thebes covers a timeframe including the Eighteenth through Twentieth Dynasties, circa 1570-1069 BCE (Muhs 2016).

The third city is Athens, representing the Hellenic civilization of the Golden Age of ancient Greece from the 5th century BCE through the death of Socrates in 399 (Durant, 1939). The population estimates in the 5<sup>th</sup> century vary but estimates over 100,000 are accepted as feasible. A considerable corpus of information survives in the form of ancient texts and from it, the researcher has access to many of the institutional forces that guided the considerable principles of Athenian society. The preponderance of exquisite arts and crafts, spectacular monuments, and fundamental philosophical

contributions to modern Western society are hallmarks of the Hellenistic civilization represented by Athens (Bresson 2016).

### Comparative Case Analysis

Urban typologies were first published in the 16<sup>th</sup> century CE to establish architectural typologies for public and private buildings. These typologies were a comparative analysis of identifiable architectural features to help determine whether the structure of a city was an organic natural evolution or based on some formative conceptualization that drove the development of the built spaces of the city, and how these spaces operationalized the economic activities of the city. One of these fundamental typologies was between the planned and the grown city (Sonne 2022).

Although modern comparative analysis has remained a widely used tool in urban studies, there remains little in terms of standards of practice in developing conceptual foundations of comparative case study research (Krehl and Weck 2020). These standards include case selection and a robust research framework that provide a “theoretical contribution to the methodology of comparative case study research”. Ragin (2004) points out that cases should be selected on the basis that the selection criteria should create enough parallelism to enable a comparison. There are opposing views on the determination of a suitable research framework, which Colin McFarlane (2010) terms “scope”. One side is the view that too broad of research goals in terms of simply establishing correlation stifles research and that the specific identification of causality is research-stimulating with respect to further testing, refining, and extending the claims (Thelen and Mahoney 2015). Counter to this is the view that the broader research goal of correlation is enough, and that is the primary goal of the research. Future research will be



stimulated by the need to understand the “mediating factors” determining causality (Green, Ha, and Bullock 2010). Comparative typologies fall under four (non-exclusive) categories: encompassing, individualizing, universalizing, and variation finding (Brenner 2003). Encompassing typologies relate to how local traits affect global systems. Individualizing typologies contrast specific parameters to understand how a case relates to other cases. Universal typologies compare parameters to determine how cases are related to one another. Variation-finding analyzes differences across differentiated contexts.

The analysis in this dissertation follows a specific philosophical trajectory based on this literature. The first is the creation of a robust research framework. This includes the selection of cases on a purely technical basis that creates a uniform specification without regard to sociological factors such as politics or religion (McFarlane 2010). This provides the foundation to compare and differentiate the economic traits of the cases without regard for exogenous causal factors. The broad typological outcome that forms the focus of the research is based on the comparative concepts of individualizing and variation finding (Brenner 2003). The economic traits defined in the research framework are identified on an individual basis and demonstrate individual economic responses per case and variations in type across cases. The research framework is broadly adaptable for further inquiries into the causal nature of any number of variables on the outcomes identified in the analysis. These typologies form a foundation for future research.

## CHAPTER IV – MESOPOTAMIA: UR III

### Introduction

Ur III refers to the third dynasty of Ur, which begins in 2112 BCE and ends in 2004 BCE. This period represents the culmination of Mesopotamian cultural and social development that began in the Early Dynastic period around 2900 BCE. The generally accepted date of the beginning of a distinctly Mesopotamian culture is the ascension of Sargon as the ruler of a number of city-states in the southern region, with the establishment of the city of Akkade as its cultural and political center (Yoffee 2005). The establishment of this civilization is preceded in history beginning with the first sedentary agricultural settlements around the beginning of the sixth millennium BCE (Crawford 2015). Numerous theories exist as to how these settlements grew and coalesced into the first recognized city of Uruk, nominally dated to 3900 BCE. These theories fall into several distinct categories. These include proposals that these cities grew from ceremonial centers (Moret and Davy [1926] 1970; Mumford 1961), economic centers such as marketplaces or crossroads of trade routes (Jacobs 1970; Pirngruber 2021), centers of coordination for agriculture and irrigation (Altaweel 2019; Adamo and Al-Ansari 2020), environmental change (Nissen 1988), or simply the result of violent subjugation and exploitation (Olson 1993; Fukuyama 2011).

The actual city of Ur was continuously inhabited from approximately 5,800 BCE until its abandonment due to the shifting course of the Euphrates River sometime early in the common era. The period under consideration, Ur III, refers to a number of cities under the administrative control of the Kings that reigned during the period, beginning

with Ur-Nammu. He was a governor of Ur, appointed by the king of Uruk Utuhegal who broke away and formed his own kingdom, eventually absorbing Uruk and many other cities into his dynasty. He began the transformation of the city into a highly organized bureaucracy, which was completed by his son, Shulgi (Crawford 2015). This brief historical interlude describes Ur III as less of a specific city and more of a point of reference for the representative socioeconomic structure. In fact, Ur III as a political entity never had specific or fixed borders (Michalowski 2013). The high degree of standardization among the cities of Ur III allows the researcher to understand, from an institutional point of view, how the economy worked across the kingdom. In this way, evidence from any city from the Ur III dynasty provides the researcher with a valid understanding of the institutional form of any other city. Some differences exist, such as the patrilineal versus fratrilineal succession practices of provincial governorships (Allred 2013), but these differences do not affect the institutional nature of the relationship of the office with economic institutions.

The primary economic unit in Ur is the household (Ur 2014). Understanding the importance of the household in the structure of Mesopotamian society is crucial in understanding the socio-political structure of the culture. Rather than the household resulting from or adapting to the exogenous pressures of society at large, the household becomes the formative institution that shapes and transforms society (Souvatzi 2012). From this perspective, the structure of the hierarchies of the Ur III administrative functions can be understood where each level was structured as an extended family. The Ur III dynastic structure consisted of the royal level, provincial level, temple level, and local levels, with the head man at each level acting with the authority of a head of

household and every member of the population under this level of the administration part of an extended family. Understanding activity at the basic level of the household informs the researcher of the embeddedness of the household in the larger economic structure (Foster 2012).

Although the Ur III period is of relatively brief duration, the period is extremely well-attested in terms of surviving records and texts written in the cuneiform script on clay tablets. Ur III especially has detailed records of all aspects of economic life important enough to record (Civil [1991] 2017). These clay tablets represent human history's first known example of writing (Oppenheim 1977; Renfrew 1987; Bennison-Chapman 2016). The first decipherable cuneiform scripts were invented by the Sumerians and represent the culmination of a long evolution of record-keeping involving seals, tokens, and other relatively crude methods of transaction record-keeping, eventually forming into the ability to represent abstract thought and institutional knowledge (Algaze 2008). As part of this legacy, the Sumerians also established the tradition of Scribal schools, in which students were taught to become experts in the production of cuneiform tablets by transcribing ancient texts. In this way, many of the attestations of knowledge available from this civilization are referenced numerous times, and any lacunae in the records uncovered in archaeological digs can be inferred from numerous complementary sources. It is important to understand the scribal school in terms of its contribution to the body of knowledge of the ancient Mesopotamians. It is estimated that hundreds of thousands of these tablets exist, many as yet undiscovered. Over 120,000 tablets have been uncovered in Ur dating from the third dynasty (Ur 2014). Cuneiform writing remained in use from its first inception as a distinct writing style, distinguishable from

simple record keeping, beginning around 3100 BCE until the common era, when it was replaced by the more facile scripts of Aramaic (Orlin 2007).

Scribes did much more than simply transcribe texts and translate them into the then-dead languages of classic Sumerian from the commonly spoken Akkadian language. These scribes also translated scientific and astrological knowledge and became skilled in the use of computational mathematics. These scribes became experts in astronomy, medicine, engineering, surveying, and accounting (Hoyrup 2017). Evidence indicates that scribal schools were conducted in a room of the house belonging to the instructor (Gadotti and Kleinerman 2021), and the choice of instructor determined the focus of the more advanced aspects of education (Hoyrup 2017). The elementary portion of the education was highly standardized, but it is unclear if this proved the case due to official institutional guidelines or simply a reflection of the professionalism of the scribal class. Students in the scribal tradition seem to have been children of the instructor and various other students selected from the immediate neighborhood, with only approximately five students in a class (Gadotti and Kleinerman 2021). There are some examples of tablets indicating that some of the scribes performing basic scribal tasks, such as counting workers or harvests, received on-the-job training in writing in order to maintain rudimentary records.

This chapter is organized as follows. Following an introductory section that describes important features of the case study, the remaining sections will be grouped by the four Spheres of Influence indicated in Chapter 3, Relationships, Governance, Education, and Integration. Each of these Spheres of Influence sections begins with a brief review of the relevant features of that sphere, followed by a list of the Childean

classes identified in Chapter 3 (Methodology) in the order of presentation including each of the institutional relationship subcategories identified within that criterion. The first sphere of influence, relationships, will also contain a description of that aspect of society as an introduction to the subcomponent processes. This process will continue through all of the remaining spheres of influence, each organized by the Childean component and capital flow. The final section will consist of a discussion reviewing the scoring of the model, the selection of an institutional typology for that case, and an analysis of the data in relation to the proxies for the economic spheres identified in Chapter 3.

### Relationships

The first sphere of influence for the institutional categories is *relationships*. This sphere is a consolidation of the two spheres identified by Hall and Soskice (2001), *industrial relations*, and *employee relations*. Simplifying these two into a single relations category applicable to the ancient economy of Mesopotamia refers to the rules governing employment from the perspective of either the employer or the employee and what institutions and market forces drive the outcomes in this sphere in relation to the component criteria being addressed. The Childean criteria to be addressed as institutional relationships with this sphere are *unskilled workers*, *skilled workers*, *professional class*, *merchant class*, and *elite class*. Each of these categories will be subdivided into subcategories relating to the flow of capital in the economy, *taxation*, *production*, and *consumption*.

The first capital flow subcategory for the *relationships* sphere is the tax liability of the unskilled worker. From the standpoint of the relationship with the economy, unskilled labor represents the common man, lacking specialized marketable skills. The

tax obligation of these workers to the state was fulfilled in the form of corvee labor. This compulsory labor replaced the transfer of wealth in the form of taxation as a source of revenue for the state (Garfinkle 2013). Each citizen of Ur III was required to provide labor to the various institutions of the state, including military service, usually amounting to six months out of a year (180 days), or some other specified amount. The unskilled worker made up a distinct class in this labor requirement and meticulous records of his contribution in days, plus the work he was assigned were recorded. These tasks included such mundane tasks as cleaning irrigation ditches, harvesting reeds, or transporting goods (Koslova 2013). The worker was compensated for each day's work with a ration of commodities, including barley and beer. This labor requirement made up the worker's total obligation to the state and when not serving the state's needs, was free to work on his own behalf for the remainder of the time. The vast archive of the Ur III bureaucracy records no other taxes levied against the ordinary worker. Conscriptions of labor were mandatory and avoiding duty by running away was treated harshly. For this institutional relationship, taxation in the sphere of labor relationships assigns the labor itself as the tax burden. Because the tax burden is fixed, there are no market forces involved in varying the tax burden according to market aspects of the needs, income, or hardship of the individual, resulting in a controlled measurement for the market type. The legitimizing aspect of institutional control is *de jure*, based on the attested bureaucratic regulations.

The next institutional focus is on the unskilled worker as a *producer* of goods for the economy. Any productive activities of the unskilled worker are considered to be anything outside of the requirements for corvee labor. In this sphere, the worker may be employed by one of the institutional economies or remain self-employed. Institutional

economies in Ur III consist of those productive activities controlled by royalty, the province, or the temple. Each of these institutions owned land and operated production facilities that provided gainful employment to the citizenry outside of their corvee obligation. The output of these activities provided income for these institutions in lieu of taxation and could include any productive activity. In the case of institutional landholdings, agricultural produce, animal husbandry, and forestry were key economic activities (Steinkeller 2013). The ability of these entities to meet their fiscal needs eliminated the need for additional taxation or tithes (Hudson 2000). In terms of labor relations, the terms of the employment would be with the institution, if that is the path chosen by the individual, but there are no market constraints that limit his employment opportunities. The unskilled worker is free to pursue whatever work is demanded by the labor market. For this sphere, the institutional rules regarding employment are dependent on the type of employment, *de jure* for institutional employment or *de facto* for self-employment. Considering that the most lucrative employment would be in the institutional sector, this measurement tends toward *de jure*. Market forces are measured as controlled.

The next institutional focus is on the unskilled worker as a *consumer* of goods in the economy. Returning to the metaphor of the patriarchal society with the king as the “father” of an extended family, the primary source of income for the common man was through the redistribution of goods accumulated by the elites, either as a gift to symbolize elite power (Veenhoff 2020) or as payment for corvee labor provided. This included rations of barley, beer, oil, and wool (Lamberg-Karlovsky 2009). These monthly rations amounted to more than the worker could consume and so became a resource for barter or



sale in the marketplace for other necessities not provided through the redistributive process (Widell 2005). These rations were in addition to the amount the worker could eke out from the allotment of subsistence land granted by the king. In general, it can be assumed that the typical unskilled worker received the bulk of his income from institutional sources legitimized through a *de jure* process and that how much his surplus could be exchanged for was driven by the market, but there were no restrictions on what the rations could be used for. The market score for this sub-component is liberal and *de facto* for institutional legitimacy.

Remaining within the sphere of relationships, the next component group is skilled workers. Skilled workers' institutional relationships are measured in the same way as unskilled workers. Skilled workers differ from unskilled workers in two important ways. First, the skilled worker is a specialist and does not earn his subsistence as an agricultural worker. Second, the skilled worker is a valuable commodity to the ruling elite, is compensated more, and attains a higher social standing. This value is often seen in the requests of other rulers to "borrow," especially skilled workers, and they then become an important commodity in foreign relations and trade (Veenhoff 2020). These workers include skilled craftsmen and artisans, but also such occupations as shepherd, boatman, carpenter, and lumberjack. Institutionalized taxation of the skilled worker amounted to a fee for a "professional license" to operate (Hudson 2000). In addition, the skilled worker was under the same obligation as the unskilled worker to provide *corvee* labor. This amounts to an additional tax on the private enterprise activities of the skilled worker that is not present for the unskilled worker. The amount of tax or labor required is fixed and not affected by market pressures of ability to pay or hardship. Payment of taxes by the

skilled worker in the market environment is controlled and institutional legitimacy is de jure.

The next institutional focus for the skilled worker in the relationships sphere is *production*. The skilled worker, as a specialist, provided very a specific production output that was primarily in demand by elite institutions, such as temples, provincial governments, and royalty. As a result, the primary productive output of the skilled worker is for the institutional economy (Renger 1995), and as can be seen by the policies of taxation, somewhat highly regulated. In terms of market activity, the production of certain products, such as luxury goods, through which the display of these goods increased the status of the individual, was curtailed so that only the elite class was able to own these goods and display their status through ostentatious displays of wealth as symbols of their authority (Veblen [1899] 2009; Zaccagnini 1987). Often, the institutions would supply raw materials to craftsmen so they could produce and sell the finished materials, and subsequently repay the institution from the proceeds (Postgate 1987). Specialty production in the market is controlled and institutional legitimacy is de jure.

The next institutional focus in the relationships sphere is on the skilled worker as a *consumer* of goods and services for the economy. The skilled worker is higher on the socioeconomic ladder, and as such receives higher pay and a larger plot of subsistence land. As such, the skilled worker has a greater disposable income than the unskilled worker. Some especially skilled and renowned craftsmen received higher remuneration in accordance with their skills (Zaccagnini 1987). There were no apparent market restrictions on how this income was used, although as noted in the taxation subsection, this income could be taxed, quite heavily at times, to the point of financial ruin (Hudson

2000). The market environment for skilled workers' consumption is liberal and even assuming the bulk of their income is derived from institutional sources, there are no official rules governing what can be consumed. Institutional legitimacy is *de facto*.

Remaining within the sphere of relationships, the next component group is *professionals*. Simply put, this economic class is comprised of the non-elite literate class. Literacy in this context implies education at a scribal school in the elementary techniques of reading and writing cuneiform script in both the then-ancient Sumerian and modern Akkadian languages. From a taxation perspective, this class represents the wealthiest of the non-elite inhabitants of the city. Although there is no income tax known, there were taxes attached to the land owned by the professional class in the form of land-use taxes, such as irrigation tax (Cripps 2019) or agricultural taxes payable to the institutional economy that held claim to the land (Boivin 2016). Another form of taxation of a professional manager derives from how worker obligations were counted on projects requiring corvee labor. The foreman was allotted a number of workers that were accounted for on a daily basis, including planned and unplanned days off. The foreman was responsible for worker attendance and was personally responsible for unplanned days missed and had to reimburse the state for these days. The only days that were forgiven were in the case of the death of the worker (Alverini 2013; Koslova 2013). The professional class formed a primary resource for the institutional economies, and this resulted in a close relationship with elites, who as intermediaries as tax collectors were in a position to forgive or obscure tax obligations for the professionals (Mayshar, Moav, and Nieman 2017), although it is unknown if this practice is widespread. Due to the lack of an income-based tax, it is unlikely that any professional services rendered outside of the

institutional economy were taxable. The market environment for the taxation of professionals is controlled, and institutional legitimacy is de jure.

The productive output of the professional class also seems to be highly regulated. The scribal nature of the professions is ascribed to a highly structured and standardized curriculum, indicative of highly institutionalized educational practices. Scribes trained as judges referred to the law code of Ur-Namma as guidance for determining legal outcomes (Ellickson 1995; Wilke 2007). Medical practitioners were guided by detailed instructions on procedure, as well as fair payments for specific treatments and injunctions for malpractice (White et al. 2022). These examples indicate both a tightly controlled market as well as a highly de jure institutional legitimacy of these professions.

There are no records indicating that the consumption practices of the professional scribal class are circumscribed in any way. As some of the top non-elite earners in society, from both institutional and agricultural sources, this group would have a wide variety of exchange goods at their disposal. As with the skilled worker class, there would be possible restrictions on ownership of the trappings of the elite classes, but the professional symbols of their trade would ascribe sufficient clues to their high status in the community. Often, the attainment of any scribal profession conferred the owner with significant prestige (Michalowski 2013). The market environment for the consumption practices of the professional class is liberal and institutional legitimacy is de facto.

The next component group is the market or *merchant class*. The distinction of the social class is one of high prestige, probably on a par with the professional class, but as a distinct group due to its relationship with the economy. The merchant class permeated all of Mesopotamian society. This class was responsible for redistributing commodities

taken in as tax payments for the temples and administrative offices and ensuring the productive surplus of the local producers was available for exchange in long-distance trade (Larsen 1987). Trade also served as a lucrative investment for both institutional and private investors, giving the merchant the necessary capital required to purchase goods for resale abroad or to import goods from abroad to sell locally. Generally, the bulk of materials for transactions came from institutional sources such as temples and provincial government production (Garfinkle 2013). The lack of raw materials in Mesopotamia required their import in substantial quantities. The role of the merchant in securing and ensuring a continuous supply elevated his status to that of a public trustee, allowed to increase his own holding of wealth and property while still serving the needs of the institutional economy (Orlin 2007). The importance of the merchant was so great that they were afforded special privileges, such as safe passage in times of conflict, and exemption from corvee labor duties. Taxation on the merchant class usually came in the form of a duty on imported goods, paid at specific checkpoints along trade routes. These taxes were levied on trade goods entering and leaving Ur III territories, and similar duties were levied upon entering foreign soil (Postgate 1994; Veenhoff 2020). Other obligations in the form of taxation came about as a balance of payments. Goods supplied to the merchant for exchange were assessed as a specific value, and this value was compared to the value of the goods returned. If there was a credit, the merchant pocketed the amount less whatever tax was imposed, if any. If there was a debit, the merchant would be in arrears and the account would be settled in the next transaction cycle or during an annual audit of accounts (Larsen 1987; Lamberg-Karlovsky 2009). The nature of market influence on merchant taxation is controlled, with specific, and transparent rates

(Barjamovic 2019). The institutional legitimacy governing merchant taxation is *de jure* and consists of fixed rates of ten percent and is levied at state-controlled customs houses at strategic locations in the kingdom.

The production of the merchant class is chiefly defined by the imported goods they provided. Mesopotamia was resource-poor in terms of raw materials like tin, copper, silver, gold, lapis, lumber, bitumen, gypsum, and spices (Lamberg-Karlovsky 2009). The state supplied the merchant with goods to exchange abroad, including wool, textiles, hides, oils, and grain. As stated above, the state set the value of the goods exchanged at fixed rates, with some variation for seasonal supply and demand. This still left the merchant with considerable leeway to obtain the most profitable exchanges possible, and many merchants amassed considerable wealth, even to the point of achieving elite status. This illustrates the dual role of the merchant. As an entrepreneur, the merchant was a rational actor seeking to maximize profits. As an agent of the state, the merchant was also a key diplomatic asset, using trade to further the interests of the ruling elite (Edens 1992). Even with the price-fixing aspects of state-mandated trade, the merchant had significant flexibility to take advantage of market conditions without constraint, although merchants were rarely allowed to sell foreign goods in the open market that competed with locally produced goods (Postgate 1994). And although the state had specific requirements for the goods traded, these goods represented those in greatest demand by the Mesopotamian economy. Even though the prices of institutionally traded goods were fixed, the ability of the merchant to take advantage of profitable market conditions results in a market score of liberal. There is little direct evidence of *de jure* documentation of merchant legitimacy other than specific tokens that granted him safe passage through foreign lands, but it is

unclear if this is a rule of custom or treaty (Larson 1987). From an international perspective, institutional legitimacy derives from this long-established understanding of merchant autonomy. Because of the specificity of this legitimacy, institutional legitimacy results in a *de jure* measurement.

For the classes producing a surplus of agricultural goods from land allotments or rations, or specialty goods manufactured in family production units there were three options for exchanging their goods for other necessities not provided by the state. The first is a reciprocal exchange. This is a personal exchange of goods of equal value and requires a connection to that individual that has the goods desired and desires the goods produced as surplus. The second method is to submit the surplus to a central repository in exchange for goods that are redistributed surpluses from other sources. The third method is to sell the goods at a market and use the proceeds to purchase the items needed at the same market (Polanyi [1944] 2001). The historical record attests to the redistribution of goods as a primary source of need fulfillment and the existence of long-distance trade, but archaeological evidence verifying the existence of a local marketplace in any of the cities of Ur III is difficult to ascertain (Algaze 2008). The lack of records specific to the market demonstrates two possible scenarios. The first is that there is no market, *per se*. Institutional producers produced goods for export, and all domestic needs were met through household production and reciprocal exchange, and redistribution. The second is that the market is an entirely socially embedded institution that exists as a market in the strictest sense but operates outside of the purview of the state. Given the large populations of the cities of the Ur III dynasty, the first proposal seems inadequate and highly inefficient. The existence of a market, at least at the neighborhood level, in which

specific product specialties are available seems more feasible (Widell 2005). Market forces can be insinuated through changes in prices over time (Lamberg-Karlovsky 2009). Many commodities, including labor, show wide variations in prices during the Ur III dynastic period, implying that these prices were driven by market forces of supply and demand. Interestingly, the price of wool remained constant throughout this period implying that this commodity was strictly controlled, presumably due to its importance as an export commodity (Cripps 2019). The merchant functions as a consumer of locally produced goods for resale in the local or export marketplace, primarily as a transaction cost-reducing mechanism. Merchants that specialize in commodities, such as bakers, innkeepers, potters, and barbers, give the consumer the knowledge required to locate the goods or services and to haggle over the prices to reach an equilibrium, thereby lowering transaction costs for both (Miller 2015). As a consumer, the merchant is entirely dependent on free market equilibria and institutionally constricted only by de facto social norms.

The *elite class* is the final component group in the relationship sphere and sits at the top of the socioeconomic pyramid. This class is composed of the ruling bureaucracy, the temple estates, and the royalty. At the very top of the pyramid sits the king, as the embodiment of a divine being (Wattenmaker 1998; Yoffee 2005). From an economic perspective, the elite class originally represented the individuals and groups that could organize and take advantage of the increasing complexity of a growing society, especially in providing enough resources for the survival of increasing populations (Frangipane 2007). The organizational structure of the Ur III dynasty consisted of the royal administration, including the king and his bureaucracy. This was the overarching



authority in the dynasty. Next were the provincial governments, seated in the cities of Asur, Mari, and Susa, that oversaw the various provinces of the kingdom, including the cities and their respective governments (Oppenheim 1977). Equidistant with the provincial governments were the temple estates, which housed the religious practitioners, temple-lords, cupbearers, and chief lamenters as well as the holy symbols and relics of society (Sallaberger 2019). The key figure in the Ur III dynasty is the son of the founder Ur-Nammu, Shulgi. Shulgi expanded the empire to its widest influence and created a highly organized bureaucratic state from which the archives provide one of the richest legacies of attested ancient historical information in existence. He also declared himself a god and ruled for 48 years (Klein 1995).

The taxation subcomponent for the elites can be approached from two perspectives, as a collector of taxes, and as a payer of taxes. All of the provinces in the dynasty, their cities, and their temples were required to pay taxes to the king. Tax exemptions existed for specific types of payment from specific cities or even specific duties for classes of workers in those cities, but it is unclear what the exemptions are for (Oppenheim 1977). It is likely that the exemption was a concession made by the king to ensure the continued loyalty of the region, but the complexity of the dynastic politics of the period is beyond the scope of this dissertation. Suffice it to say that in light of a varied tax burden on different cities and segments of the population, the political climate that drove the exemptions is essentially a market force driving the imposition of a tax in awareness of what the market will bear. The market forces guiding the taxation of elites are liberal, and the institutional legitimacy of the king is *de jure*.

The productive activities of the elite classes are the source of almost all manufactured goods available for exchange. Industrial-scale manufacturing was controlled by the institutional economies, primarily the temple estates, but also by provincial and city administrations (Oppenheim 1977). The scale of these operations can be seen in the wool processing crafts in Ur III. The amount of raw wool to be woven into textiles was sheared from herds of over one million sheep and required numerous steps and various raw materials to complete the process, forming both forward and backward economic linkages (Algaze 2018). The elite institutions owned vast holdings of farmland and herds of livestock, providing a substantial surplus of agricultural goods. The output of these goods made the institutions and their large households self-sufficient, and able to employ large segments of the population in the manufacture of both household and luxury goods (Hudson 2000). Most of the goods were transported to huge collection centers for redistribution and could be exchanged for any other goods needed by the exchanging institutions (Klein 1995; Svizzero and Tisdale 2019). The scale of the example of wool production cited above is an indication that there was a substantial market for woolen textiles. This is indicative of following the demand of the market rather than a top-down mandate for production. The market score for elite production is liberal and the institutional legitimacy score for this sector is *de jure*.

Due to the self-sufficient nature of the elite institutional production economies, these entities were largely autarkic and whatever goods were required for subsistence were supplied from their own agricultural holdings. Raw materials for producing goods that were unavailable locally had to be imported or purchased from merchant traders. The records of these transactions clearly indicate that the institution was independent in

choosing the commodities to purchase and also aware of the fair market value of the items requisitioned and the commodities they proffered to the merchant for payment (Lamberg-Karlovsky 2009). One of the institutions that clearly denote large-scale production is the mar-sa. This institution exists to facilitate the construction and repair of boats and consists of two centers of activity, one focused on the provisioning and storage of the raw materials needed for construction and repair and the other focused on the actual work being performed. These are the administrative mar-sa, and the technical mar-sa, respectively. The administrative mar-sa managed the warehouses of material and recorded all of the transactions and costs involved in the activity. These include the coordination and movement of workers, organized by their skill sets, rations, and any required tools and materials (Alverini 2013). The market measure of elite consumption appears to be tightly controlled, with the predesignated allotment of goods and labor for production. Due to the highly bureaucratic institutional nature of the elite production sector, the elite consumption institutional legitimacy score is *de jure*.

### Governance

The next sphere of institutional analysis is *governance*. This sphere relates to both the private enterprise of the actor categories and any rules regulating financial activity relative to these endeavors. For the governance sphere, rules for *unskilled*, *skilled*, and *professionals* are the same, so all of these actor groups are included in this section, and all will receive the same score. The governance of *taxation*, *production*, and *consumption* of financial instruments for the three groups is identical, even though there are greater burdens in terms of taxation for the skilled and professional groups (see above). In this sphere, all three groups are free to engage in any private or institutional financial dealings

with no record of any additional bureaucratic taxation or regulation, nor are there records of any institutional controls in the form of taxation on private enterprise. Any financial deals made by the involved parties were strictly governed by the market forces that dictated the terms, such as a need arising from a poor harvest (Steinkeller 2013). For this category, both the legitimizing aspect and the market control of this institution are negligible, there is no specific *de jure* institutional control relative to the taxation of the unskilled worker's private financial transactions. The lack of any specific taxation outside of the normal taxes on production results in a null value for both market type and a *de facto* institutional legitimacy for the taxation subcategory in the three categories, unskilled workers, skilled workers, and professionals.

The next governance subcategory for unskilled workers, skilled workers, and professionals is *production*. This subcategory relates to the ability of the actor to finance any private enterprise activities and usually refers to the practice of making a loan against the agricultural output of the client's allotment of land, usually at rather exorbitant rates, but could include interest-free and antichretic loans, where interest is repaid with labor instead of goods (Garfinkle 2004; Wilke 2007; Garfinkle 2013). It would be unusual for the unskilled worker, at his level of income, to have enough surplus to make loans, but there is no injunction against it. Although enforcement of loan repayment could be brought before a judge, no other stipulations seem to have been in place other than social constraints on usury. Loan contracts were created on clay tablets, and the acceptance of the repayment of the loan resulted in "breaking the tablet". Interest rates were usually based on kinship ties, with foreigners and non-kins subject to the highest interest rates. Family members typically receive zero-interest loans, but this was not always the case

(Garfinkle 2004). Market constraints on loan activity are liberal, dependent on supply and demand, and institutional legitimacy on rules of conduct is de facto for the three categories.

The next subcategory in the governance sphere is *consumption*. In this subcategory, the institutional and market forces that govern the receiver of finance are the focus. Again, there are no distinctions in this category between the rules that govern financial obligations for the three actor groups consolidated above. In fact, records indicate that borrowers often included the elite classes (Garfinkle 2004). For the elite classes, these loans were often institutionally sourced and provided seed grain for the planting season or other raw materials for productive use in the institutional factories (Steinkeller 2013). For the unskilled worker receiving advances of seed grain collateralized with the potential harvest, the interest could be paid with labor. Often, the loans would stipulate specific labor to be performed, such as harvesting a specific field or acreage of farmland. For the skilled craftsman loans might be simple advances of raw material, such as silver, to create jewelry. Failure of the craftsman to furnish the commissioned piece resulted in double damages, in which the craftsman owed twice the value of the raw materials provided (Garfinkle 2004). In cases where predatory practices of financiers caused the loss of subsistence properties, the king could declare a “clean slate” in which all debts were forgiven (Hudson 2000). The loss of a subsistent plot to a private citizen delegitimized the royalty, who actually owned the land and provided it to the farmer. Failure or inability to pay back a loan could cause the debtor to be sold into slavery to repay the debt, but there does not seem to be a tendency to finance bad loans to increase the slave population. Institutional loans appear to have been made to institutional

workers specifically to ensure that this did not happen (Garfinkle 2004). The financial markets were an important part of the Mesopotamian economy at all levels of society, but other than prescribed penalties for certain defaults on payment, the availability of a borrower to find financing was dependent on market forces that determined whether he was a good investment risk. The institutional legitimacy of loan collection was enforced through written contracts that verified the transaction had taken place and provided evidence for the lender to receive a judgment of default by a judge, but there were no official rules constraining the receipt of finance on any of these groups. For consumption of financing, the market measurement is liberal, and the institutional measure is *de facto*.

For the *merchant class*, the sphere of governance is slightly different. Like the other classes, specific taxation of interest accrued is not taxed, but in some cases, lending may be a merchant's primary source of income. In this case, no institutional taxes on specific wealth increase the contribution of his tithe to the ruling authority. For those that could afford it, this payment was in lieu of the corvee obligation (Garfinkle 2013). No specific tax on interest earned applies. Merchant taxation in the governance sphere is null for both market type and institutional legitimacy.

The primary production of the merchant class in the governance sphere is as the provider of financing, both as a private individual and as part of the terms of trade in dealing with the elite institutions. In terms of private lending, there is no difference between the merchant and any other individual. Lending to the institution takes place as part of a transaction with the merchant acting as an intermediary between the institutional demand and the market supply (Svizzero and Tisdale 2019). Institutional lending incurred the same obligations of the debtor and borrower as a private transaction. Merchant

lending scoring is institutionally unregulated and only market conditions regulate the terms of the loan. The market type is liberal, and institutional legitimacy is de facto.

Merchant consumption of finance for trade is distinctly different from private or institutional finance. The primary source of merchant funding is through the institutional provision of goods on consignment to the merchant to be exchanged for the specific goods desired by the institution. As noted above, these goods are traded at fixed prices predetermined by the institution, but the merchant is otherwise completely autonomous in terms of profit-taking in the market. The secondary source of funding is through partnerships with investors. Financial speculators in merchant trade missions received a portion of the profits commensurate with the percentage of the total investment. The merchant used these funds to procure goods for resale (Garfinkle 2004; Lamberg-Karlovsky 2009). These high-risk investments were also potentially quite lucrative and could make the investor quite wealthy. Due to the flexibility of the merchant-consumer, the market measurement of this item is liberal. The institutional legitimacy of the merchant remains de facto.

The final category in the governance sphere is the *elite class*. Although primarily a source of funding, many records exist that demonstrate members of the elite were also the recipient of personal and institutional loans. No records demonstrate that any tax was levied on the proceeds of any of these financial transactions. There are no records detailing any specific tax requirement on loans or interest. The institutional governance of the elite class was as a lender to the royal elite class. These loans were standard interest-bearing instruments, but the loans and accrued interest could be considered as payment against the taxes due to the king (Steinkeller 2013). This use of the king's debt

to satisfy the institutional tax owed could be considered a response to fluctuating market conditions that required additional contributions from the periphery, held as an interest-accruing loan until the next tax season. This results in a liberal market score. Because these rules appear to be unofficial personal agreements regarding taxation, the institutional legitimacy of taxation on elite loans is *de facto*.

Elite production of finance is the dominant source for both private and institutional loans. Loans in the form of seed grain were provided to individuals and to other large institutional landholders. These loans were interest-bearing antichretic loans, and whether to lower or upper-class echelons, the repayment of interest in labor was required, indicating that in the harvesting season, labor was in short supply, and a valuable commodity (Steinkeller 2013). Loans in the form of building materials were also made to institutions for large building projects, with the expectation of repayment. Loans could also be made from the institutions to the royal economy. These institutional loans could be rendered to individuals to prevent the individual from being sold into debt slavery due to the inability to repay a previous obligation. This was generally done to retain skilled workers within the loaning institution. Evidence exists that the state made explicit loans to merchants in order to assist them economically outside of the normal elite-merchant relationships discussed above (Lamberg-Karlovsky 2009). Providing loans in response to market conditions indicates a market score of liberal. The institutional legitimacy of elite loans is *de jure*.

The final subcategory of elite governance is consumption. As shown above, it was not uncommon for an elite individual or institution to receive loan assistance, and the loans were subject to normal interest and repayment stipulations. The provincial to royal



loan example described above only applies when the debtor accrues a tax obligation to the borrower and uses the loan proceeds to pay the taxes. Because the rules governing elite loan consumption are the same as the general population, the market score becomes liberal, and the institutional legitimacy score is *de jure*.

### Education

The next sphere of influence is *education*. In ancient Mesopotamia, education generally came in two forms. First, the Scribal school is described in the Introduction section of this chapter. Scribal schools are formal educational institutions where professionals are trained. The second form of school is the apprenticeship and on-the-job training of the skills mastered by the professional craftsman. These craftsmen are usually clustered in kinship groups and represent long histories of family specialties in various trades. Craftsmen, professionals, and merchants belonged to associations that were largely controlled by kinship groups (Garfinkle 2013).

As an unskilled worker, it is unlikely that there was any opportunity for receiving a formal or technical education, although there are anecdotal accounts of especially clever students of the lower classes being accepted into these scribal institutions on merit alone (Oppenheim 1977). In terms of taxation, there is little relevance to either the legitimacy or market aspects of this category within this sphere. Both of these measurements are null, meaning that they are removed from the calculations of totals and percentages as irrelevant or unknown. The production of training in the unskilled category is also irrelevant. Unskilled denotes uneducated, and unlikely to be involved in the delivery of any institutionalized educational services. Market and institutional legitimacy measures for this subcategory are null. Based on the anecdotal evidence cited

above, the fact that it may be possible for unskilled workers to elevate their social position through the consumption of education implies that there may be market forces of demand that drive this possibility. If this is the case, a liberal market score is indicated. From an institutional legitimacy perspective, the lack of institutional relevance in this subcategory is measured as *de facto*.

The skilled worker received his training from the kinship group to which he belonged. This training was the workers' inherited legacy. The delivery of training in these crafts was essentially a lifetime of on-the-job apprenticeship training by the economic group formed by the worker's household cooperative. Although there are examples of craft manuals on clay tablets that contain instructions for how to perform specific tasks, these do not appear to be part of an institutional curriculum (Postgate 1994). The archaeological record identifies agglomerations of household production of similar products in various neighborhoods throughout the Ur III dynasty (Parker 2012). Maintaining an ongoing, restricted, kin-based apprenticeship is a controlled market activity. Although there may have been some support for ensuring adequate craft training, the primary legitimacy of this activity is the social aspect of kinsmanship. The institutional legitimacy is *de facto*.

These same factors apply to the consumption of training. Members selected for apprenticeship came from within the clan or from those selected by the clan and membership was highly selective. In the case where specific training is requested by the institutional economy to increase the ranks of specific skills, the selection process is still highly controlled (Garfinkle 2013). The market score for consumption is controlled, and the institutional legitimacy measurement is *de facto*.

The education of the professional class, as indicated above, consists mainly of educating scribes in scribal schools. Little is known in terms of the actual structure of the scribal educational system, except that in the remnants of the class exercises on clay tablets, there is a remarkable consistency in the curriculum (Postgate 1992; Delnero 2010). There is no evidence that scribal schools levied or collected taxes or benefitted from any specific tax. The lack of information on this subsection results in a null score for both market measures and institutional legitimacy.

In terms of the production of Scribal education, most research agrees that this was done as a private enterprise (Gadotti and Kleinerman 2021), although there is some evidence of institutional sponsorship. King Sulgi, for example, boasted that he had established a center of knowledge, but no other evidence exists to support his claim (Postgate 1994; Vacin 2013). The typical scribal school convened in a private house with no more than four or five students at a time. The curriculum was a long and complicated process of repetition (Orlin 2007). It is unknown how students were chosen for school, but evidence indicates that the students were mostly the children of the instructor and others chosen from the neighborhood, reinforcing the kinship nature of productive specialties (Delnero 2010). Given the widespread need for scribes in the highly bureaucratic society, and the prestige reading and writing had in society, literacy among the Ur III population seems to be relatively widespread. Literacy was a prerequisite for a vast occupational field in Mesopotamia, and scribal schools were only the first elementary step in that process (Boyes 2022). Providing scribal education was a highly standardized affair, given the strict conformity to the curriculum and the need for legitimacy of the education. There are no apparent market restrictions on the delivery of a

scribal education reflected by the prevalence of small independent private schools. Market forces for the provision of scribal training are liberal, and the institutional legitimacy is *de jure*.

Consumption of scribal education is more open. For instance, women were included in the scribal ranks as well (Postgate 1994), and many of their roles in temple economies required literacy (Orlin 2007). The appearance of scribes in all manner of menial record-keeping indicates that the ability to at least become literate was based more on market demand and ability than strictly controlled access. The market score for the consumption of scribal education is liberal. Institutional legitimacy is *de jure*.

For this category, the *merchant class* can be included. There are no known special provisions for this class in taxation, provision, or consumption of education. What is known is the importance of the scribal tradition for the merchant class. The ability to read and write and keep accurate accounts was an essential skill for the merchant and included both men and women (Postgate 1994). As with the professional and skilled craft classes, merchants were agglomerated through kinship groups and professional associations. These groups created strict controls for entry, but it is unclear if these controls extended to educational services (Garfinkle 2013). In fact, it is likely that literacy becomes a prerequisite to entry. The market measure for merchant education in both production and consumption is liberal. Institutional legitimacy for both subcategories is *de jure*.

Although the section above illustrates the scribal school as somewhat open, the majority of students in these schools were probably from elite families (Tsouparopoulou 2015). Non-elite scribes working in the royal palace economy often achieved elite status. The predominance of elites in the scribal school underscores the importance of literacy to

the ruling classes, but there are no specific records that indicate elite status was a controlling feature of entry into a scribal school. Little is known in this regard, but due to the ubiquitous nature of the scribal schools identified in the archaeological record, it is likely that certain prestigious schools catered exclusively to elite clients. Elite status appears to have little or no influence on the market forces that control enrollment, resulting in a measurement score of liberal for both elite production and consumption of education. Again, the strict curriculum indicates an institutional legitimacy score of *de jure*. No relevant relationship of this category to taxation can be discerned resulting in a market and institutional score of null.

### Integration

The final sphere of institutional analysis is *integration*. The sphere in this context is essentially the availability of public and communal goods to the various economic classes, and their market and institutional relationships. Most of the interfaces of these groups with these goods have been introduced in the Relationships section.

The first category is the unskilled worker class, and the subcategory is taxation. For the unskilled and skilled worker classes, this tax amounted to a requirement to perform maintenance on the portion of the public irrigation infrastructure that he used to irrigate his land. The market forces in this subcategory are controlled. These classes are required to maintain these waterways regardless of market conditions in which they may choose to leave their lands fallow for the season (Steinkeller 2013). The institutional legitimacy of this subcategory is *de jure*.

The professional and elite classes are faced with a similar issue, especially given the amounts of farmland they controlled. In their case, due to the large holdings, it is

likely that workers would have to be hired to perform maintenance duties on the sections of irrigation under their control. In this case, even though the canals require maintenance regardless of the market conditions for the crops that season, the cost of labor to perform these services is driven by market conditions dependent on the seasonal availability of labor. The market measure of taxation for professional and elite classes in the integration sphere is liberal. Institutional legitimacy is measured as *de jure*.

For public goods, taxation also occurs in the form of tolls or usage fees attached to the use of the good. Ur III maintained an extensive road system, and this was a source of great pride for the royal family (Ellickson 1995). Many of the roads and bridges used in long-distance trade required tolls at various points along the route. These tolls amounted to a tax that was used to maintain this infrastructure and mainly applied to merchant traffic (Barjamovic 2019). Caravans entering cities were required to pay a fee to set up in the caravanserai of the city in order to trade (Orlin 2007). These examples are the only specific use taxes evident for any public good and generally apply primarily to the merchant class. For the merchant class, the tax subcomponent market measure is controlled, and the institutional legitimacy is *de jure*.

The production of public goods by all classes, including some elites, is through the obligation of *corvee* labor. This is discussed in detail in the Relationships taxation section. The form of public goods supplied by this labor is in the form of large constructions of infrastructure such as waterworks, city walls, roads, bridges, and port facilities, and in the form of agricultural goods and craft, where the *corvee* labor is applied to farm or pasture duties, or in the creation of manufactured goods in the production houses owned by the institutional economy (Maekawa 1987). Market

measures in the production of public goods for the unskilled, skilled, professional, and merchant classes are controlled, and the institutional legitimacy measure is de jure.

Elite production of public goods irrespective of corvee duties, is the primary source of all public and community goods in the economy. The elite temple and provincial economies control most agricultural production and manufacturing, and at the highest level can marshal the resources required for the construction of the largest projects (Renger 1995; Altaweel 2019). This production is considered a public good by virtue of the redistribution of these products to the general population in the form of payment for corvee duties, normal employment, and rations received by all citizens according to their social standing (Postgate 1994, Steinkeller 2013). Although the amounts of rations are fixed according to status, the actual measures of rations vary with the availability of goods. This is attributed to lean harvests or other market disruptions that reduce the reserve supplies available for redistribution (Maekawa 1987). Based on this, the market forces determining the availability of rations are liberal. Institutional legitimacy is de jure.

The *consumption* of public goods in the three categories of unskilled, skilled, and professional workers is set up as a capital flow recognized as the return of corvee to the worker in the form of usufruct of public or communal goods. This return occurs in three ways. The first of these is the assignment of subsistence land by the ruling authority. This plot of land is calculated to allow the worker to raise enough food to sustain himself and his immediate family. The second way the return occurs is through the availability of irrigation or other systems, such as roads, which the worker can take advantage of (Steinkeller 2013b). The third return is through the system of rationing. As noted above,

rationing is based on a strict formula based on the recipient's social status, or value to the institutional economy. The market measure of the receipt of rationed goods is liberal. As noted, the amounts of goods received can vary according to market conditions.

Additionally, there are no specific market regulations that stipulate how the individual must use his land allotment. The availability of the land and rights to irrigation, as well as rationed goods, are legitimized through a *de jure* process.

The consumption of public goods by the merchant is significantly different. Many of the institutional goods manufactured with *corvee* labor are provided to the merchant in exchange for imported goods (Lamberg-Karlovsky 2009; Barjamovic 2019). Although the costs of the goods were fixed by royal edict, the merchant could take advantage of any advantageous market conditions, and if the value of the exchanged goods exceeded the fixed price, he was allowed to keep the profits. Market forces for the merchant class consumption of public and community goods are liberal. Institutional legitimacy is *de jure*.

The elite class is also the largest consumer of public goods. Many of the large construction projects managed by the elite institutions came in the form of temples and palaces that were beyond the reach of most of the population. Roads and bridges are constructed to ensure the ruling class has easy access to the other cities and shrines in the jurisdiction. As the largest property owners, elites used a disproportionately large fraction of available irrigation systems. And all of the productive output of the institutional economies was primarily used to provide resources to the institutional households and workers, and only the remainder was considered a surplus to be redistributed to the population at large, and as exchange capital for the merchant class. In this arena, the



market forces controlling this consumption can be classified as controlled. Market forces do not determine the consumptive practices of this group, even though the redistribution of the unneeded portions of their production is affected by scarcity. The institutional legitimacy of these consumptive practices is de jure.

### Scores

The results of the individual category measurements within the spheres of influence are shown in Table 1. Totals are calculated on a percentage of the dichotomous measures consisting of the total number of positive counts divided by the total number of possible counts. Each category is made up of three subcategories. With five categories each, this results in a total possible category score (100%) of 5 categories X 3 subcategories = 15 possible outcomes. With a total of four spheres the total possible outcomes = 60. Where individual measures are nulled, these counts are reduced by one for that subcategory within its sphere of influence. This can be seen in the education sphere, and the taxation subcategory within each class, resulting in a reduction in the overall possible score of five in this column. Additionally, the production subcategory within the unskilled worker category in the education sphere reduces the possible total count for Education by an additional unit.

Evaluation of the percentage score is based on the percentage of the specific measure. Each measure is in a specific typological frame. The T1 measure records the market typology where 0% equals a fully liberal economy, and 100% equals a fully controlled economy. This same measurement scheme applies to typology 2, T2, institutional legitimacy. In this typological measurement, 0% equals a fully de facto institutional typology and 100% = a fully de jure institutional typology. Recall that in a

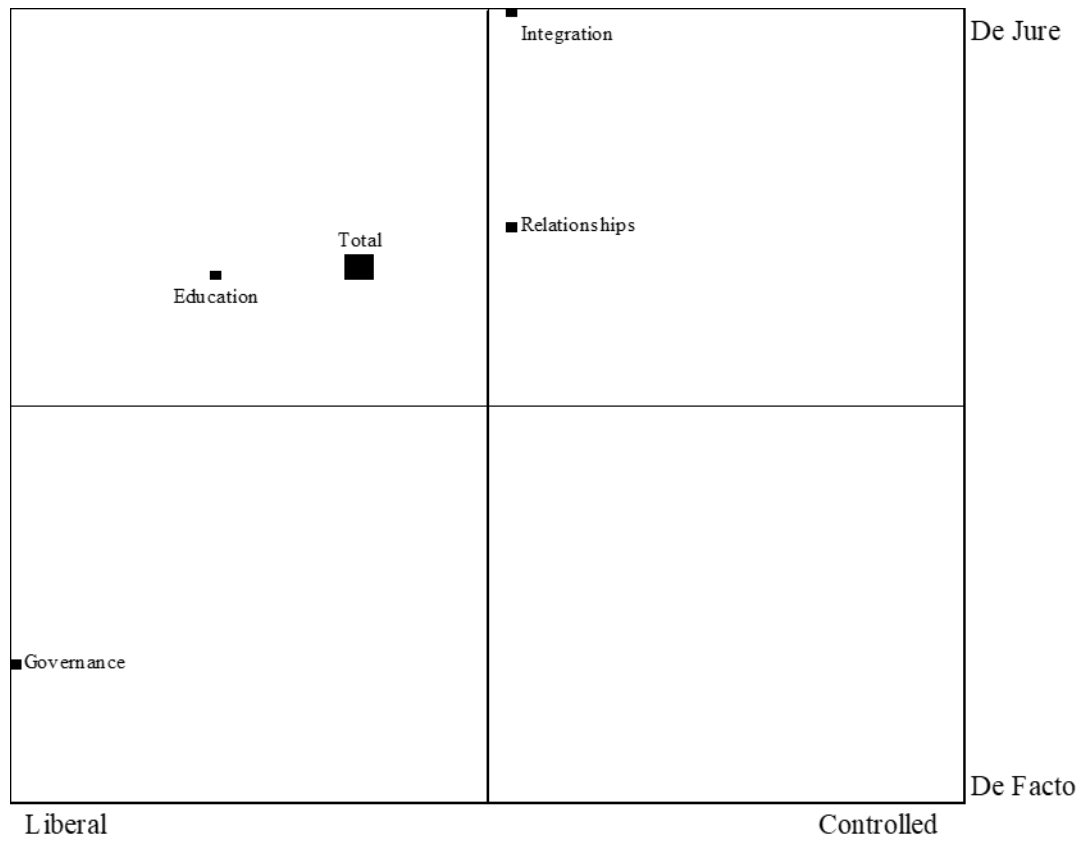
liberal market, market decisions are driven by market conditions, while in a controlled market, decisions are made based on rules external to market forces. De facto institutions are the unofficial rules mandated by society and culture, while de jure rules are those that are mandated by official codified law.

The total measure demonstrates a moderate tendency toward liberal market control at 36 and a relatively strong tendency toward de jure institutional legitimacy at 68. In the four spheres of influence, seen in Figure 4, Relationships (53/73) is nearly halfway between a liberal and controlled market and moderately de jure in institutional legitimacy. Governance (0/18) is extremely liberal market and shows a slight tendency toward de jure institutional legitimacy. Education (22/67) falls near the center of the quadrant with a solid presence in both the liberal market and de jure institutional legitimacy quadrants, and Integration (53/100) shows a slight tendency to a controlled market, and maximum possible de jure institutional legitimacy.

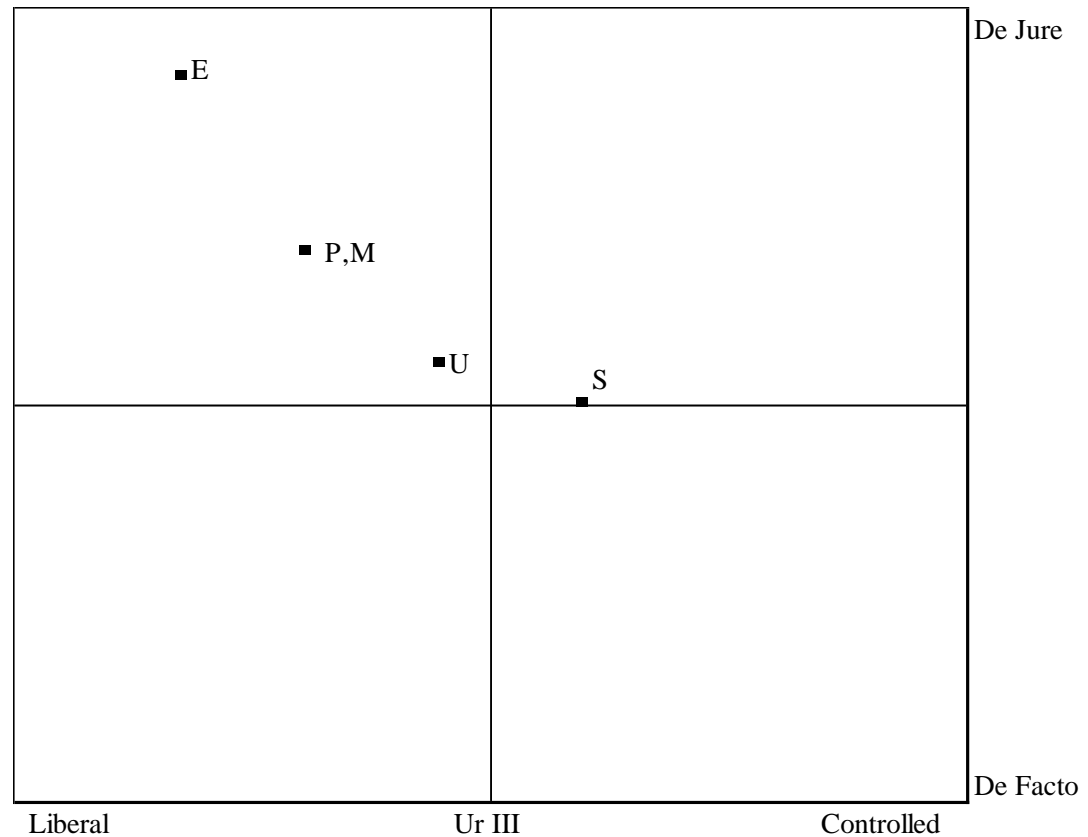
The score for the economic classes shows a different outcome, with the unskilled class (44/56) showing up almost mid-point as slightly liberal, and slightly de jure institutional quadrants (See Figure 8). Skilled labor (60/50) demonstrates a more controlled market type, it remains at exactly midpoint and could be rated in either the de facto or de jure quadrant. The market and professional measurements (30/70) are identical and move close to the center in both the liberal market and de jure institutional section. The elite class (18/91) moves closer to the fully liberal market location and very high toward the maximum de jure score.

The typological classification of the case study Ur III shows a significant tendency toward a liberal market economy, with a similar strength indicated in the de jure

institutional legitimacy quadrant. While the liberal market may be somewhat unexpected, the de jure classification seems understandable given the highly bureaucratic nature of the Ur III administrations.



*Figure 7. Case 1 score by economic sphere*



*Figure 8. Case score matrix by economic class*

Proxy measures identified as attractive features in each of the economic spheres are the percentage (or predominance) of slavery in the population as a proxy for relationships, the existence of a financial market as a proxy for governance, the literate percentage of the population as a proxy for education, and large-scale manufacturing as a proxy for integration.

There are two opposing views on the prevalence of slavery in Ur III. The first is that slavery was an insignificant economic force in the production of labor. The majority of slaves owned in Ur III appear to be household servants and were often incorporated into the household and eventually manumitted as members of the family, occasionally rising through society as highly respected scribes and elites (Postgate 1994). Another

view holds that slavery was both ubiquitous and widespread (Algaze 2008; Larsen 2017). Algaze provides the most quantitative measurement available, citing the prevalence of the term for female slaves as the second most prevalent commodity. Barley is listed as the most prevalent.

The practice of private borrowing and lending is prevalent in Ur III based on the large numbers of receipts discovered of this type of transaction (see the Governance section in this Chapter). There are no indications that this practice was institutionalized in any way.

Literacy appears to be a provenance of the wealthy elite, (professional) bureaucracy, and merchant classes (Postgate 1984; Boyes 2022). There are indications that other classes and women were literate in certain contexts, but overall, the percentage of the population that could read seems to be quite small.

The existence of large-scale industry in Ur III is widely attested (see elite Production and Consumption in the Relationships section, this Chapter). This industry is wide-scale and entirely institutionalized and occurs under the oversight of elite temple economies.

In addition to the typological score, the social stratification score is based on a count of the number of changes in the economic treatment of the different classes in the transactions within the economic spheres. For Ur III, these scores are taxation 4, production 3, and consumption 4 in the market type category, and taxation 1, production 5, and consumption 3 in the institutional legitimacy category.

Institutional Focus	Sphere of Influence								Category Totals		Category Percents	
	Relationship		Governance		Education		Integration					
Unskilled Labor	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	1	1	0	0			1	1	2	2	67%	67%
Consumption	0	0	0	0	0	0	0	1	0	1	0%	25%
Totals	2	2	0	0	0	0	2	3	4	5	44%	56%
00												
Skilled Labor	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	1	1	0	0	1	0	1	1	3	2	75%	50%
Consumption	0	0	0	0	1	0	0	1	1	1	25%	25%
Totals	2	2	0	0	2	0	2	3	6	5	60%	50%
Professional Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					0	1	1	2	50%	100%
Production	1	1	0	0	0	1	1	1	2	3	50%	75%
Consumption	0	0	0	0	0	1	0	1	0	2	0%	50%
Totals	2	2	0	0	0	2	1	3	3	7	30%	70%
Merchant Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	0	1	0	0	0	1	1	1	1	3	25%	75%
Consumption	0	0	0	0	0	1	0	1	0	2	0%	50%
Totals	1	2	0	0	0	2	2	3	3	7	30%	70%
Elite Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	0	1	0	0			0	1	0	2	0%	67%
Production	0	1	0	1	0	1	0	1	0	4	0%	100%
Consumption	1	1	0	1	0	1	1	1	2	4	50%	100%
Totals	1	3	0	2	0	2	1	3	2	10	18%	91%
Case Totals	8	11	0	2	2	6	8	15	18	34	36%	68%
Total Count	15	15	11	11	9	9	15	15	50	50		
Percentage Score	53%	73%	0%	18%	22%	67%	53%	100%	36%	68%		

Table 1 *Case 1 score*

### Proxies

The remaining typological classification and proxy analyses based on this data will be conducted in the comparative case study analysis presented in Chapter 7, where

the data scores of all three cases can be compared and a significant quantitative analysis can be performed. Concluding remarks on this and the analyses to follow will be included in Chapter 8.

## CHAPTER V – EGYPT: NEW KINGDOM THEBES

### Introduction

The New Kingdom of Egypt spans the period from 1550 BCE to 1069 BCE. The beginning of this era is marked by the end of the rule of the foreign Hyksos kings that began in the Second Intermediate Period (1650 to 1550 BCE). Thebes was the capital of Egypt during most of this era, but this later moved north to Memphis. (Strudwick and Strudwick 1999), possibly during the reign of Ramses III (Romer 1984). Thebes was ultimately destroyed by an earthquake in 27 BCE (Durant 1935).

The king, or pharaoh of Egypt filled a unique role. Although bestowed with the normal absolute power of a typical king, his duties were firmly established in an Egyptian culture that spanned over three millennia. His primary focus point was on maintaining the unification of the “Two Kingdoms” of the Upper and Lower Nile. This precedent was set early in the history of Egypt, probably by the First Dynasty (Kemp 1995). His role as the priest that acted as the only liaison between humanity and the gods, in turn, was central to achieving the unification of the kingdoms under his authority. His direct connection to the gods gave him a semi-divine nature, and his ability to communicate directly with the gods was employed in an effort to maintain order in the universe. Without the intervention of the Pharaoh, chaos would reign on Earth (Velde 1995). In addition to the theme of national unity and the unified church-state, the uniform ecological features of Egypt combined with the ease of navigation of the length of the narrow floodplain along the Nile gave rise to great cities that developed along a nationally oriented rather than typical city-oriented trajectory of the typical ancient city-state (Yoffee 2005).



The New Kingdom represents the richest and most well-attested period of ancient Egypt before the Ptolemies. The period of reunification culminated in the richest period in Egyptian history to date and fostered a long period of peaceful relations with neighboring kingdoms (Van Dijk 2000). Tombs and temple-building reached new heights of grandeur. It is during this period that the temples at Karnak and Luxor and the tomb of Tutankhamun were constructed. The Ramesside period began with the succession of Ramses I (c.1292 to 1290 BCE) and lasted through the reign of Ramses XI (1096 to 1069 BCE), marking the end of the New Kingdom and the beginning of the Third Intermediate Period (1069 to 664 BCE) (Romer 1984; Strudwick and Strudwick 1999). Thebes city is divided by the Nile River into eastern and western sections. The eastern bank contained the inhabited city and the temples to the “state” gods. The west bank housed the temples of the kings and local gods. The population of Thebes contained thousands of holy men and priests and their attendants may have numbered in the tens of thousands (Romer 1984). The total area occupied by Thebes (including Karnak and Luxor) may have been as large as 4 km<sup>2</sup> and housed a population of up to 90,000 people (Meskell 2002). Housing was erected near temples wherever space was available and included elite manors and workmen’s residences more or less agglomerated together in a maze of streets and buildings (Meskell 2002; Trigger 2003). Thebes also served as the gateway to the Valley of the Kings, and the workmen’s camp there, the village of Deir El Medina. This village offers one of the best windows for modern research into the daily lives of the working classes in the New Kingdom, although given the high status and income of the skilled craftsmen that lived there, it may not be a representative snapshot of typical village life. The recovery of numerous written records of work rosters, material receipts,

and building plans as well as personal letters and artwork make this an extremely rich source of information in an otherwise sparsely represented aspect of daily Egyptian life (Romer 1984; Manniche 1987; Strudwick and Strudwick 1999; Meskell 2002; Warburton 2017). The work week was typically eight days, followed by a two- or three-day weekend. Time off for festivals was common, and the larger festivals required the men to take time off from their jobs to ensure that enough beer was brewed for the celebration (Ruiz 2001; Meskell 2002).

The structure Egyptian economy has traditionally been assumed in the literature to be highly state-controlled, with production quotas dictated by the bureaucracy, and redistribution as the primary means of provision (Trigger 2003; Roland 2020). The emerging opposing view holds that the Egyptian economy was highly integrated, entrepreneurial, and relied on local market exchange for provisioning (Romer 1984; Meskell 2002; Warburton 2007; Muhs 2016; Garcia 2021). The latter views are supported by numerous illustrations of village women and merchant ships trading the barley and emmer rations given to paid workers for various other commodities at a local market, usually located near the banks of the Nile, a location advantageous for the transportation of goods. The only other evidence of universal redistribution comes from the numerous community feasts held by the local temples to commemorate any number of gods or celestial events in which the surplus commodities collected as tax stored in the temple granaries were released for days-long celebrations and feasts (Garcia 2014; Garcia 2021). The two main annual feasts were the Opet Festival and the Feast of the Valley. Other festivals included the annual inundation of the Nile, and every full moon (Romer 1984).

This chapter is organized as follows. Following an introductory section that describes important features of the case study, the remaining sections will be grouped by the four Spheres of Influence indicated in Chapter 3, Relationships, Governance, Education, and Integration. Each of these Spheres of Influence sections begins with a brief review of the relevant features of that sphere, followed by a list of the Childean classes identified in Chapter 3 (Methodology) in the order of presentation including each of the institutional relationship subcategories identified within that criterion. The first sphere of influence, relationships, will also contain a description of that aspect of society as an introduction to the subcomponent processes. This process will continue through all of the remaining spheres of influence, each organized by the Childean component and capital flow. The final section will consist of a discussion reviewing the scoring of the model, the selection of an institutional typology for that case, and an analysis of the data in relation to the proxies for the economic spheres identified in Chapter 3.

### Relationships

The first sphere of influence to be considered for the Egyptian economy in the New Kingdom is associated with relationships. This sphere is the consolidation of the modern concepts of employee relations and industrial relations but adapted for the ancient economy in terms of how labor capital was produced, consumed, and taxed in the Egyptian economy for each economic social class. The economic social classes in the literature are generally categorized into five levels, unskilled workers (peasants), skilled workers (artisans, craftsmen, and professionals), merchants, and the elite class, comprising the royalty, bureaucracy, and temple managers (Meskell 2002). The peasant

class represents the unskilled worker class of the economic actors described in the methodology (Chapter 3).

Like the Mesopotamian economy (Chapter 4), the Egyptian economy relied on corvee labor as a primary method of taxation. This was primarily enforced at the unskilled worker level, but any member of society not specifically exempted from this duty could be called upon to provide services. The workers required for this service could be otherwise employed in any area of the economy, including some members of the elite. In some cases, peasant classes were permanently occupied as forced tenant farmers for large landowners or institutions (Katary 2011). Unskilled workers that were given their subsistence plots of land to work were also taxed on the output of the land, although at a much lower rate than the institutional tax rate of the output of the larger estates (Antoine 2014). This amounted to a tax rate for smallholders of an estimated 4 percent of output versus a rate of between 13 to 30 percent of output for larger estates. The recognition of a sliding tax scale for different segments of the population based on income indicates recognition of the ability to pay as a determinant of tax rates, although failure to pay the assessed amount of taxes would result in punishment such as a severe beating, often resulting in broken bones (Fagbore 2023). There is no indication that the taxpayer's situation or crop yield constituted any terms for negotiation of payment of assessed taxes although there are records of protestation of onerous tax assessments. The market-type score for the taxation of the unskilled worker class in the relationships sphere is controlled. The institutional legitimacy score is *de jure*.

The next relationship subcomponent of unskilled workers to consider is production. The unskilled worker was the primary source of agricultural labor but also

was required to perform the backbreaking tasks of mining, quarrying, and transportation of extremely heavy loads. Compulsory labor to work in agriculture was known as *bhw* (forced labor) and all other compulsory labor was considered *brt* (corvee labor) (Muhs 2016). Many of the skeletal remains of this class demonstrate this overburdening through the prevalence of skeletal injuries attributed to overloading (Kemp and Zink 2012; Driaux 2019). This seems to indicate that this class of labor was highly exploited, even though the ration given for his work was adequate to feed his entire family unless he was working on an expedition, such as quarrying or mining at a remote location, in which case his ration would have been considerably lower (Hikade 2006). Although the relatively high rate of pay indicates a possible labor shortage, this is far from the case. The estimated labor pool in New Kingdom Egypt far exceeded the estimated agricultural labor required to feed the entire country. Labor was difficult to procure because of the extremely hard and dangerous work involved (Warburton 2007). This is striking given that the penalties for shirking were severe. The offending worker would be sentenced to his duties anyway, often with a penalty added, and his family would be imprisoned until the successful completion of his sentence. Conversely, severe penalties were proscribed for any government or temple official that unlawfully required a worker to perform compulsory labor. These penalties included beatings, piercings, and the requirement of the official to perform the labor originally assigned to the illegally seized individual (Muhs 2016; Loktionov 2023). The rates of pay for all workers were determined by the social status (denoted by the title) of the worker instead of the output of the worker (Warburton 2007). This aspect of the determination of pay is decidedly non-market. The market-type score for the production subcategory of unskilled workers is controlled. The

fact that virtually every type of task for unskilled workers is categorized in several written sources determines the institutional legitimacy as de jure.

The consumption of the unskilled worker does not seem to have any limitations due to class. One of the key non-commodity consumables available for archaeological study is the *shabti*. The Shabti is a small anthropomorphic statuette that is placed in the tomb of the deceased that becomes alive in the afterlife and performs duties for the deceased. The numbers and quality of these statuettes found in gravesites are a good indication of the wealth of the family of the individual that places these figurines as part of the funerary ritual. This indicates that these items are purchased on the open market and indicate several levels of value-added craftsmanship that increase the cost. One of the key value-added components is whether the craftsman had access to a temple and the secrets contained therein, which conferred a much stronger magical spell on the shabti, ensuring it would perform as advertised in the hereafter (Silver 2009). The market value of this figurine indicates that everyone shared the promise of an afterlife, and the shabti was a ubiquitous figure in funeral traditions that purported to help the deceased in the necessary tasks required for a successful transition to the beyond. The lack of any known institutional limitations of what could be purchased indicates a market-type of liberal for unskilled worker consumption. The nature of the marketplace where the unskilled worker can exchange any potential surplus for other goods also appears to be unregulated in the sense that there is no institutional bureaucracy dedicated to market activity at this level, for an institutional legitimacy score of de facto.

The next group to be considered is the skilled worker class. This class includes craft specialists that occupy a specialty niche in the economy. In the Egyptian lists of

occupations found in the Wilbour Papyrus, 90 out of 162 occupations are devoted to specialties and ranked according to status (Antoine 2014). Occupational titles could be designated by the tools used, the materials used, the tasks performed, or the products created (Drenkhahn 1995). Skilled craftsmen were in high demand from the institutional economy, especially in the skills needed for tomb-building. Craftsmen and artisans were especially well-paid for their services and were exempt from the corvee duties required of ordinary citizens when institutionally employed (Meskell 2002). Often, even when not exempt, their elevated income levels allowed them to hire substitutes to work in their place (Callender 2000). Skilled workers working on public projects such as tombs for members of the royal family or other officials were paid from tax revenues, and no tax burden was placed on this income. The skilled worker was still taxed on whatever agricultural or pastoral output was produced by the lands under his control and also paid one-tenth of any production of goods outside of work for the state or temple institutions. Although there is no specific record of occupational tax, these taxes were levied against certain trades in the Third Intermediate Period, immediately following the New Kingdom. These occupations included coppersmiths, harpists, chariot warriors, stone masons, potters, and builders. Each of these was assessed 1 ox (Muhs 2016). Tax assessments on agricultural output were generally fixed, but these assessments could change based on predictions of output made relative to the seasonal flooding levels of the Nile. In addition, certain services provided to institutional estates as well as the estates themselves could be exempted from taxation and conscripted labor at the decree of the Pharaoh. For some reason, taxes on cattle were neither exempted nor subject to negotiation (Katary 2011). Exemptions from or variance in taxes do not appear to be

related to any income or market status and are probably the outcome of political patronage. The market type for taxation of the skilled class is controlled, and institutional legitimacy is *de jure*.

Specialty production of skilled classes covered a wide range of the Egyptian economy. Most of the skilled craftsmen were employed in institutional settings, such as temples and tomb-building, although craftworks commissioned by private individuals are well-attested (Drenkhahn 1995). Even when not directly employed by an institution, the institution may still purchase goods from the craftsman either as offerings to the temple or to resell at a profit. The shabtis mentioned in the previous section demonstrate this. The shabtis are purchased from the craftsman, who are paid a fair price, but the affiliation with the temple increases the value of the magical properties of the object (Silver 2009). In this case, the temple acts as an entrepreneur middleman (Muhs 2016). From the perspective of the producer, this is a free-market transaction, which although subject to a ten-percent tax rate, has no other administrative restrictions. Craftsmen selling their wares to merchants that travel up and down the Nile trading these wares are well-attested (Garcia 2021). The lack of institutional restrictions on the productive activities of craftsmen results in a market-type of liberal. The documentation of the skills recognized as specialty production results in an institutional legitimacy score of *de jure*.

The consumption of the skilled class is also unregulated. The willingness of the institutional government to pay extremely high wages attests to the value of these skills on the open market. By paying above-market rates, the government assures an adequate supply of the skills required for large-scale and ornate building projects. The skilled classes in the private sector are unrestricted in their consumption habits, including the



ability to own land, slaves, and other luxury goods as can be afforded. Craftsmen often created and exchanged their goods with other craft specialties, depending on their needs. In many cases, the utility derived from these exchanges was dictated by society (Muhs 2016). The market type for skilled class consumption is liberal, and the institutional legitimacy is *de facto*.

The prerequisite for membership in the professional class is literacy. Any trade that required literacy is included in this category. The scribal schools of New Kingdom Egypt were well-established institutions of learning where members of the elite and potential civil servants were trained (Williams 1972). Literacy alone is not adequate to qualify for membership as a professional. The elite class was widely literate, as this ability was a sign of a good upbringing and prestige (Baines 1983). The professional class describes those literates that are not elites, and that offer a specific capital to the economy. Generally, it is thought that these specialists worked as vocational apprentices in their specific field, and that entry into a field was generally based on kinship, with sons taking on the family profession of the father, although apprenticeships could be had by non-relatives (Weeks 1995). Craft specialists who required literacy included craftsmen skilled in engraving the hieroglyphic and hieratic scripts found on the numerous funerary, royal, religious, and commemorative monuments found throughout Egypt. The Egyptians developed a mathematical system that allowed some basic geometric calculations, including a novel method for calculating a circle's diameter and area and a cylinder's volume, using a calculated approximation of  $\pi$  (Robins 1995; Cooper 2011). This provided the educational content for scribes responsible for calculating land areas in various transactions, determining harvest yields for taxation, or estimating grain reserves

based on silo volumes. The mathematical proficiency of ancient Egyptian architects and engineers is evident throughout Old and New Kingdom monumental architecture. The majority of scribes appear to have been employed as civil servants (Bryan 2000) and their value in this role is attested by their exemption from compulsory labor. This essentially relieved the educated scribe from any tax obligation, although any ancillary income-producing activity, such as ownership of agriculture or livestock could be taxed on their output (Katary 2011). The exemption of the scribal class from conscripted labor duties seems to be a supply issue. It is more valuable to employ scribes at high rates of pay than to press them into service for possible menial duties, although this could occur as a punishment for any of several disgraces (Eyre 1987). In this case, the lack of tax liability is driven by an institutional inducement to recruit and retain specific valuable labor. The market type for professional taxation is controlled. Institutional legitimacy is *de jure*.

The professional class's primary capital production came in the form of services, although it can be seen that literacy among engravers of scripts onto various monuments resulted in tangible goods. These services were generally performed in an institutional setting, but the ability to read and write made the scribe a valuable commodity to the average Egyptian as a private entrepreneur providing these services. Numerous examples of scribal letter-writing exist, recording real estate transactions, or simple interpretation of documentation were services performed, presumably for a fee. In the institutional setting, the scribal services were well-paid, and the most capable and trusted scribes could rise through the ranks to become trusted members of the inner circle of the pharaoh. Generally, these positions were handed down from father to son (Eyre 1987). In terms of the management of scribal (professional) production, there seems to be no

shortage of employment opportunities, or any restrictions on providing private services. Non-institutional scribal production was driven by market demand, resulting in a market score of liberal. Although scribal positions were largely hereditary, the strict classification and qualification of scribes results in an institutional legitimacy score of *de jure*.

The consumption of capital by the professional class falls into the same category as the skilled worker class. There are no restrictions on consumption, including real estate, slaves, or luxury goods. Certain commodities are consumed based on social expectations, including garments and funerary items (Muhs 2016). The market type for professional consumption is liberal, while institutional legitimacy is *de facto* in orientation.

The merchant class is less well-defined. Unlike the merchant class of Mesopotamia and its relationship and occasional membership in the elite classes, the Egyptians generally looked upon the merchant class with scorn (Monroe 2021), although the son of Ramses II married the daughter of a wealthy shipowner (Garcia 2014). Another aspect of this class in the New Kingdom, or any other period for that matter, is that there is virtually nothing in the form of an official decree regarding the status or regulation of the marketplace. As noted in the introduction, there are two distinct schools of thought regarding the early Egyptian economy. On one side are the redistributionists that consider the economy to be entirely state-controlled with little or no private market activity, and the state providing all of the needs of its citizens, especially in the New Kingdom (Bleiberg 1995). The other side posits that a robust mercantile network of trade and production existed outside of government control (Kemp 1989; Garcia 2014; Muhs

2016). The redistributive evidence is contained in the records of rations paid to workers in work camps and expeditions, but no records exist of redistribution of any kind to the general population not engaged in institutional employment (Warburton 2017). Evidence for the latter case is compelling and represents a growing consensus among Egyptologists. Accepting this premise does not discount the fact that there are two types of trade economies, institutional trade, and private trade. Institutional trade is the traditional example of long-distance trade in which trade was conducted in highly regimented expeditions designed to procure products in demand by the pharaoh in exchange for valuable Egyptian resources. Expeditions to Punt, the Levant, and Crete are attested as successful diplomatic missions resulting in the return of great wealth and prestige (Bryan 2000). Prior to the New Kingdom, merchants entering Egypt would be required to unload their cargoes at a special site and complete their transactions under the supervision of the government officials in charge. By the start of the New Kingdom, traders entering Egypt were allowed to trade with private merchants through the normal market channels of the era but were still required to pay taxes on the goods entering Egypt (Trigger 2003). These taxes were collected as part of the toll system on Nile traffic (Garcia 2014). This relaxation of import restrictions in the New Kingdom has been attributed to carryover from a weakened central government representative of the Second Intermediate Period (Bleiberg 1995; Baines and Yoffee 1998). The evidentiary foundation for institutional trade as the sole model is built on the large body of attested official documentation chronicling the foreign trade expeditions and resulting successes of the pharaohs, as compared to the much more sporadic documentation on private enterprise and trade (Garcia 2014). The records of private exchange that do exist, as well

as evidentiary archaeological sources such as production centers of specialty products, attest to a robust private trade network. Although trade-in-kind existed as a mechanism of exchange, silver was the preferred medium of commerce, followed by gold and copper. Prices for goods were set relative to their value in metal, allowing for a price-value reference in negotiations. It is apparent from numerous funerary illustrations that merchants plied their trade in boats along the Nile, stopping to trade in the market districts in the settlements and villages along the way. The evidence provides ample validation of the existence of a merchant class (Sidebotham 2011; Garcia 2014; Garcia 2017). Later New Kingdom evidence supports the use of private merchants to provide the administration with the foreign resources in raw materials it needed. Foreign trade entering Egypt was funneled into bottlenecks on trade routes that forced merchants to pay customs duties on goods entering, usually at 10 percent in Egypt (Muhs 2016). Domestic merchants were taxed at the local level by the municipality where they were located. These municipalities paid their tax assessments to the temples who in turn paid their assessments to the pharaoh (Katary 2011; Garcia 2021). As with other classes, tax assessments were strictly enforced without regard to the economic status of the individual or the current market conditions. The market type for merchant taxation is controlled, and the institutional legitimacy is *de jure*.

From a production perspective, the merchant class supplied Egypt with raw materials that were not available domestically. These included cedar from Lebanon, lapis lazuli from Afghanistan, incense and myrrh from Punt, and copper from various locations (Bleiberg 1995; Katary 2011; Garcia 2017). In the domestic market, merchants traded commodities such as manufactured goods and textiles with the temples, providing them

with valuable resources to fulfill tax obligations to the pharaoh. There are no known restrictions on the goods the merchant could trade, and all citizens were able to trade freely and accumulate wealth, including the unskilled labor class (Muhs 2016); Garcia 2021). The market type for merchant production is liberal, the institutional legitimacy type is de facto.

Merchant consumption falls under the same perspective as production. Consumption of commodities for exchange has no regulatory restrictions other than ensuring any tax obligations are fulfilled. The market type for merchant consumption is liberal. Institutional legitimacy is de facto.

The elite class forms a distinct stratum of Egyptian society. This small group of wealthy and privileged families control the entire productive surplus of the Egyptian economy (Baines and Yoffee 1998). The positions held by these elites range from the pharaoh and his entourage, followed by the vizier (his second in command), regional mayors, royal and temple scribes, military leaders, overseers of various bureaucratic offices, and temple priests (Bryan 2000). The inclusion or exclusion of any individual in this group could be changed at the whim of the pharaoh, but the elite positions themselves are well-established over many centuries. There was no distinction between the temple and the state as understood in modern times. The temples acted as agents of the pharaoh, as he represented all of mankind to the gods. The temples were essentially the regional centers of economic management, primarily to oversee the collection of taxes from the region, and to ensure that quotas of manpower and materials were met for the construction of royal tombs and monuments (Katary 2011). Specific offices existed at the state level such as the *Great One of Assessments* and *Chief Taxing Master* that

indicate a central bureaucracy was in charge of tax collection and the temples were the next level of management. Specific decrees were issued by the pharaoh to ensure that unfair collection of taxes, or unjust conscription of labor was prevented (Katary 2011; Loktionov 2023). Individuals could appeal against what they considered to be onerous tax liabilities or unjust behavior by the elites, and the elites could appeal their tax requirements to the pharaoh. These appeals often resulted in tax exemptions for the temples, especially when the labor requirements for institutional agriculture were infringed, and temple wealth was affected. The great wealth amassed by the temples made it politically advantageous for the pharaoh to negotiate mutually advantageous arrangements (Katary 2011; Mayshar, Moav, and Neeman 2017). Although there is some evidence of modification of tax burdens in times of famine, the overwhelming evidence points to a tightly controlled centralized tax system. The market type for elite taxation is controlled. Institutional legitimacy is *de jure*.

The productive activities of the elite class provided most of the output of the Egyptian economy. Temples, bureaucrats, and royals owned or controlled most of the arable land in Egypt. Although there are no specific instructions on what must be produced on these lands, the size of the holdings dictated a crop that could be managed with a minimum of manpower. These crops were generally grains, such as barley and emmer. Based on the amount of arable land available, and the effort required to produce enough produce to feed the entire country during the New Kingdom, it is estimated that a workforce of 150,000 would suffice for the potential population of two million (Mayshar, Moav, and Neeman 2017). Because of the scale of production of the elites, much of their productive output was exchanged in the market for other commodities, such as

vegetables, dates, and textiles that could be produced at the small garden plot or household level. This did not preclude the institutional economies from producing this labor-intensive output on a large scale, but it was far more economical to trade for commodities and provided for a robust economy centered around the temple. For the elite category, market forces dictate the crops and output of elite production for a market-type score of liberal. The institutional legitimacy of elite production is *de jure*.

Elite consumption is similarly regulated. The ability of elites to consume the most expensive items available was only limited by their income and the utility they placed on the item. These included mainly funerary items and tombs, status symbols, and real estate. The house was a primary means of public display of status (Weiss 2022). Elites viewed non-elites status by their occupation (Meskell 2002). The only constraints on elite consumption or display of status are market-based and what is acceptable to society. The market score for elite consumption is liberal. Institutional legitimacy is *de facto*.

### Governance

Although the evidence for financial transactions in New Kingdom Egypt is limited, a great deal of information in the form of ostraca receipts is available that appear to be contractual receipts for loan transactions. These transactions are generally at a personal level, except for some real estate speculation that seems to be aimed at increasing productivity (Ellickson and Thorland 1995; Garcia 2014). There is no evidence of any official position on the issuance or collection of loans either in private or institutional settings. Trade missions for foreign goods were not speculative in the sense that goods were sent abroad with the idea that there would be a profitable exchange. Instead, the pharaoh would simply put in an order for the goods desired, and an



expedition would be sent forth to exchange Egyptian valuables collected through taxation and temple exchange for the desired goods (Garcia 2021). There is no indication that a merchant class intervened in any institutional profit-seeking speculation (Bleiberg 1995).

For this sphere, unskilled labor, skilled labor, and professional classes can be merged. In this sphere, these groups perform similar functions as part of a general private market for loans, differentiable only by their income level. The interpersonal loans recorded include typical exchanges for minor amounts of goods, such as food or clothing which are to be repaid later, but larger purchases are also recorded. In the case of one transaction, the borrower receives a bundle of wood, but due to the great expense of the goods, the borrower must resort to borrowing small amounts from his immediate social network. In all, around 14 individuals are recorded in the transaction (Janssen 1994). This example of social borrowing is an example of modern group loans, in which risk is distributed throughout the community, and the risk is offset by the social proximity of the borrower and the threat of social ostracization should he default (Armendariz and Morduch 2010). The second indication is that this loan is speculative, in that the purchase is for raw materials that will be transformed into some type of manufactured goods. The loan itself is for a term of one year at  $33 \frac{1}{3}$  percent interest to the primary lender. It is unclear whether each ancillary lender has a specific rate of interest, or if the overall rate is the same for all lenders. There is no record of any specific tax on the proceeds from finance other than the typical harvest tax due on leased plots of land. In this regard, the taxation subcategory for the governance sphere for all categories is null.

Both the production and consumption of loans at all socioeconomic levels are free of any regulation, and these loans are strictly the business of the parties involved. The

only involvement at the government level would be through filing a complaint for non-payment of a debt, and the involvement of the local magistrate in hearing the complaint and making a judgment. Although there is no specific legal text in most cases, the law was understood as a social constraint and based on the principle of *maat* (fairness) (Blerk 2018). The market type for all categories of governance in both production and consumption subcategories is liberal. Given the lack of any juridical document regulating finance, the institutional legitimacy is *de facto*.

### Education

The structure of Egyptian education is much like that of Mesopotamia, discussed in Chapter 4. The unskilled worker had little chance at educational attainment, although there were no specific restrictions recorded for it. The skilled craftsmen were generally educated through a kinship-based set of skills learned and passed down from father to son. Professionals were trained first in scribal schools based on scribal traditions that had roots in the predynastic period (Baines 1983) and then sent to an apprenticeship or secondary school to master a specific profession. The elementary education lasted for 4 years. Following the elementary education in literacy, craftsmen were sent to apprenticeships with master craftsmen, usually their fathers, and potential bureaucrats were sent to work in administrative offices. Other professions simply remained in specialized scribal schools for priests, astronomers, medicine, and history (Trigger 2003). In the professions, as in the crafts, occupations were generally handed down from father to son. Often fathers would bribe necessary officials to ensure their sons followed in their footsteps (Williams 1972; Baines 1983; Meskell 2002). Most of the archaeological evidence points toward the temple as the source of scribal training. Although private

lessons were likely, no record exists of this as an entrepreneurial activity. Students were generally male and elite, and classes seemed to require tuition, either in the form of apprenticeships or paid tuition (Williams 1972; Trigger 2003). Although admission was limited, there were no legal restrictions upon who could be a scribe, and examples exist of female scribes (Meskell 2002). For the four lower echelons of economic classes, no record of any tax related to education can be found. Market types and institutional legitimacy for education taxation for the categories of unskilled, skilled, professional, and merchant classes are null.

The classification of the unskilled worker automatically assumes there will be no relevant training produced within this classification. The market type for unskilled production of education is also null. There is, however, the possibility that the unskilled worker could be apprenticed into a trade, or even accepted into a local scribal school. With this possibility, the market type for unskilled consumption of education is liberal. Institutional legitimacy for the consumption of education is *de facto*.

One of the hallmarks of the Egyptian civilization is the consistency of its art across millennia and throughout the Nile valley. The lack of records of craft guilds or associations in the New Kingdom implies that there is a more structured approach that required standardized training to ensure the consistency of their secondary training remained in accordance with institutional needs (Warburton 2017). The only standardized approach available at the time is through scribal education. This possibility is supported by the estimate that over 40 percent of the craftsmen at Deir El Medina were literate (Meskell 2002). The remaining craftsmen could pursue their apprenticeships through individual training. In the skilled but illiterate class, the ability to perform basic skilled

tasks, such as masonry, painting, or carpentry was adequate for inclusion into the institutional ranks. Although the entrance to an apprenticeship program may be restricted due to societal rules, there are no restrictions to the provision or consumption of training outside of market conditions. For both provision and consumption of non-scribal craft training, the market type is liberal. Based on the qualification of the craftsman as a specific craft type with a specific documented social standing, the institutional legitimacy is *de jure*.

For the professional class, the provision of scribal training was closely regulated. The remains of ostraca that represent the discarded lessons of scribal students attest to the consistency of the training over millennia. Restriction of the provision of scribal training to the temple essentially made the provision of professional education a state-controlled institution, originally designed to train youth for entry into the civil services (Williams 1972). The provision of education for the professional class is controlled. Institutional legitimacy is *de jure*.

The consumption of scribal training by the professional class is less regulated. It is certainly an elite pursuit, but there are no official restrictions against entry by any other student. In fact, by the New Kingdom, the increased need for scribes in the expanding bureaucracy led to the recruitment of as many qualified students as possible (Trigger 2003). Societal restrictions may be present, but these are not recorded. Given that there is evidence that non-elite scribal training could be fee-based, indicates there is a market-driven component to this education, resulting in a market score of liberal. The content of education is still highly regulated, resulting in an institutional legitimacy score of *de jure*.

Given the lack of definitive evidence available, one can only speculate on the role of the merchant class in the production and consumption of training can only be speculated. The need for merchants to be literate is obvious, but whether merchants were able to take advantage of temple-based scribal schools is unknown. As entrepreneurs, there may have been enclaves of literate merchants that taught literacy for a fee. There is no sanction against this behavior, and given the fact there is definite entrepreneurial activity, it seems counterfactual to believe this could occur in a purely illiterate state. Offering unofficial classes in literacy also implies that there is no required institutional curriculum as required by an institutional setting. Working on the assumption that literacy classes are available as a for-profit enterprise to the general public under the merchant category, the market type is liberal, and the institutional legitimacy is *de facto*.

Education for the elite class is fundamentally scribal in nature, although many other skills are attested to this class such as politics, military training, fishing, hunting, falconry, and archery (Baines 1983; Bryan 2000). Entry into scribal schools was much easier for the elite, either in terms of social position or ability to pay. As early as the Fourth Dynasty, Pharaoh Snofru was educated and literate. There are many references to attending school with the children of the officials (Williams 1972). By the New Kingdom literacy was part of the elite identity. Lack of literacy for the poor was almost certainly a guarantee for a lifetime of poverty and the attainment of literacy was almost a guarantee of great success (Baines 1983). The tax component remains relative to this sphere for elites due to the provision of scribal training by the temple elites. Unless all institutional scribal training was fee-based, tax revenues were likely utilized to ensure adequate funding for the increased training quotas established in the New Kingdom. At a

minimum, these funds would be available to ensure the temple had available infrastructure and materials required to deliver the training. There is no record of any taxes earmarked for the scribal school. Market type for the potential of tax utilization in the delivery of scribal training is controlled. Institutional legitimacy is de jure.

Elite production of education is synonymous with the highly regulated professional production of training. The primary difference is in the provision of elite non-scribal training in sports, military, and politics, but this education is highly regimented by its nature. Market type is controlled, while institutional legitimacy is de jure.

Elite consumption of training is also synonymous with professional consumption, with the same differences in the educational scope listed above. In this case, the primary forces concerning the availability of this education to consume are driven by social forces rather than the market. The provision of classes for the elite is based on social status rather than demand. The market type for elite consumption of education is controlled. The institutional legitimacy score is de jure.

### Integration

In terms of public goods, Egypt represents a unique case. Other early civilizations centered authority on the founding of cities, due in part to the need or establishing large systems of irrigation to increase the arable farmland required to feed and sustain the growing populations, and then to erect defensive structures to defend the accumulating wealth of the elites. In both cases irrigation and defensive fortifications are representative of irreducible public goods. In Egypt, neither of these edifices was required (Manning 2004). The Nile basin flooded the arable farmland on a yearly and predictable basis,

providing agriculture with a regular revitalization of farmland with fertile silt and water for the growing season (Eyre 1995). In the second case, the natural isolation of Egypt, surrounded by deserts, precluded the need for elaborate defensive fortifications. Egypt as a state formed before its great cities and the theocratic monarchy created a uniform society dedicated to preparing for the afterlife, with the pharaoh filling the role of agent between humanity and the gods (Van Dijk 1995). This belief system resulted in a long succession of public buildings dedicated to creating monuments to the various gods of Egypt, and also to commemorate the pharaonic agents that had preserved order out of chaos (Leprohon 1995; Baines and Yoffee 1998). This insurance of the afterlife gave meaning to the mortal life of all men, and each monument erected in their honor served to reinforce perpetual order. The promise of the afterlife describes the public goods available to the average Egyptian, but this was just as important as a city fortification or paved road in Egyptian culture.

From a taxation perspective, all Egyptians paid for the temples and royal tombs either through corvée labor, or taxation of productive output. The demands on the temples, as regnal tax collectors, per se, could change depending on the requirements of the royal government, demands that could be passed down the chain of collection centers to the individual mayors, eventually impacting the individual producer. Often the magnitude of the wealth of the temple would make further taxation of lower echelons unnecessary (Katary 2011). Although the change in demand indicates a market-driven response to increased taxes, the fact that it is a centralized demand indicates central control of the economy. The market type for integration taxation of unskilled, skilled, professional, and market classes is controlled. Institutional legitimacy is *de jure*.

The production of public goods in arenas other than through corvee or taxation is primarily related to tomb and temple-building. Unskilled workers employed in this institutional setting were paid from the tax coffers of the temple sponsoring the construction. These workers received enough rations to support an estimated family of four (Hikade 2006). Skilled workers received substantially more, and professional workers received the highest rates of pay. The professionals were chiefly employed as overseers and maintained records of all labor and materials used on the project (Meskell 2002). In the first recorded strike in history, the failure of the temple to pay the workers at Deir El Medina over several weeks led to a work stoppage followed by a march on the temple to demand back wages (Romer 1984; Meskell 2002). However, the problem turned out to be a supply-chain issue and work soon resumed. Public construction projects were highly regulated and monitored. Merchant involvement in the production of public goods is unclear, but any involvement in provisioning would fall under the tightly controlled regime of the production of labor classes. Although high pay rates seem indicative of market conditions relative to labor demand, the pay rates were more indicative of the great wealth of the temples and the prestige of the royal family. As noted above, positions in the work crews at Deir El Medina were often obtained through kin affiliations and bribery. The market type for the provision of labor for the construction of public works for unskilled, skilled, and professional workers is controlled. Institutional legitimacy is *de jure*.

Consumption of public goods is defined as the redistribution of accumulated wealth by the government to the population. In the case of the New Kingdom economy, this occurred primarily in the distribution of food by the temples during the many



festivals that took place throughout the year. These festivals occurred often, and the two main festivals were elaborately provisioned with the goods collected by the temples in the form of taxes and offerings to the gods. These lavish celebrations were the primary means of redistribution of wealth. The only other redistribution of collected taxes was in payment of the work crews on royal or temple projects, and the workers of the temples themselves, often numbering in the thousands (Romer 1984). The festivals were open to all members of the public and, in the case of the more important state festivals, could last for many days. No other redistribution is recorded to have taken place, except in reference to occasionally providing food and clothing to the most impoverished members of society. The provision of food for festivals as a market activity seems to be driven by demand, although there is very little evidence for a solid conclusion. The festivals are community events, with everyone contributing according to their ability to supply, and free to consume at will. The unregulated nature of the festival provisioning indicates a market type of liberal. The institutional legitimacy of the festivals as a state-sanctioned event is *de jure* for all subcategories except elites.

Taxation in the integration sphere for the elite class is similar to the other classes with the exception of their dual role as both collector and payor of tax revenues. The institutions are also producers of public goods in the form of redistribution of taxes to the workers at the temples and official projects. In any case, the collection, payment, and redistribution of tax revenues are tightly controlled by the central government, and the institutional legitimacy of the elites is *de jure*.

As consumers of public goods, elites are the primary beneficiaries of tax collection. Even considering the tax assessment of the royal government against the local

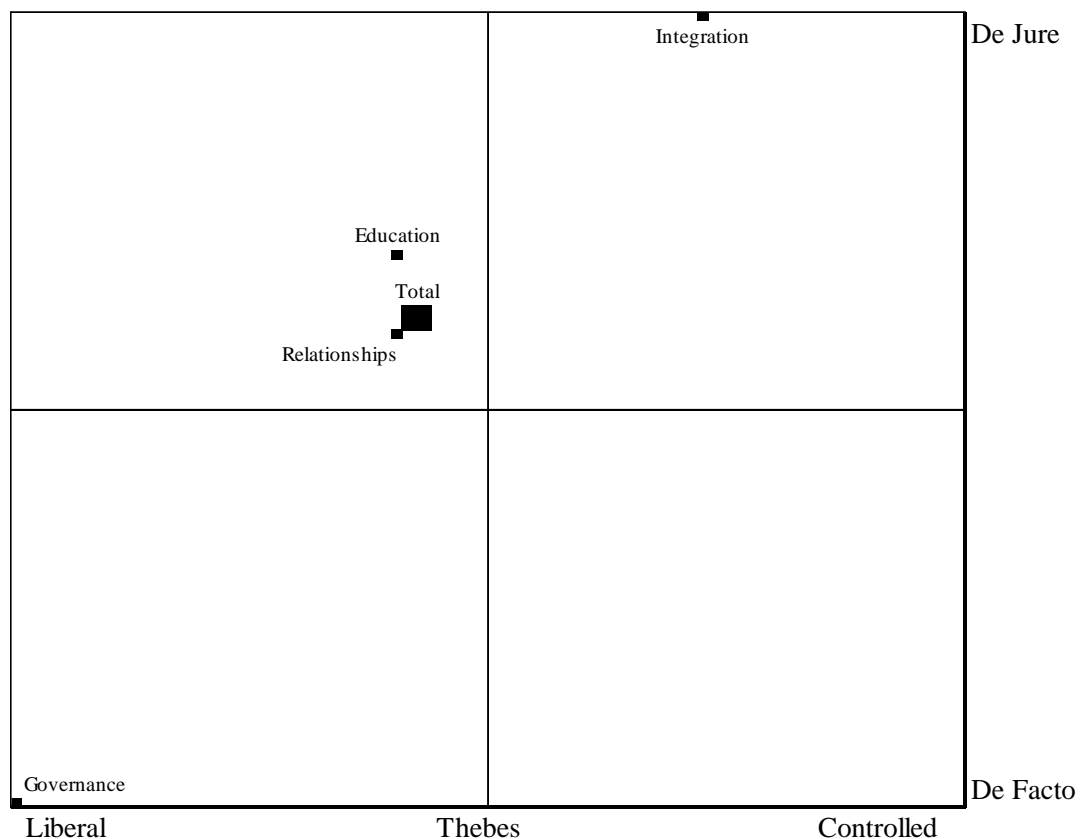
collection, the tax collection institutions are capable of amassing great wealth, in some cases rivaling the wealth of the royals. In the 20<sup>th</sup> Dynasty the pharaoh Seth endowed the temple at Medinet Habu with 150 priests, 65,000 supporting workers, and nearly 2,400 km<sup>2</sup> of land, amounting to 1/10 of Egypt's arable farmland (Grandet 2014). The highly regulated nature of elite consumption of tax income results in a market type of controlled and an institutional legitimacy score of de jure.

### Scores

The results of the individual category measurements within the spheres of influence are shown in Table 2. Totals are based on a percentage of the dichotomous measures based on the total number of positive counts divided by the total number of possible counts. Each category is made up of three subcategories. With five categories each, this results in a total possible category score (100%) of 5 categories X 3 subcategories = 15 possible outcomes. With a total of 4 spheres, the total possible outcomes = 60. Where individual measures are nulled, these counts are reduced by one for that subcategory within its sphere of influence. This can be seen in the Governance and Education spheres, and the taxation subcategory within each category, resulting in a reduction in the overall possible score of four in the Governance Sphere, where all tax subcategories except merchant class are removed, and six in the Education sphere where the additional production subcategory within the unskilled worker category is removed reducing the possible total count for Education by an additional unit.

Evaluation of the percentage score is based on the percentage of the specific measure. Each measure is in a specific typological frame. The T1 measure records the market typology where 0 equals a fully liberal economy, and 100 equals a fully

controlled economy. This same measurement scheme applies to typology 2, T2, institutional legitimacy. In this typological measurement, 0 equals a fully de facto institutional typology, and 100 = a fully de jure institutional typology. Recall that in a liberal market economy, decisions are driven by market conditions, while in a controlled market, decisions are made based on rules external to market forces. De facto institutions are the unofficial rules mandated by society and culture, while de jure rules are those that are mandated by official codified law.



*Figure 9. Case score matrix by economic sphere*

The total measure demonstrates a slight tendency toward liberal market control at 42 and a tendency toward de jure institutional legitimacy at 62. In the four spheres of influence, seen in Figure 9, Relationships (40/60) show a similar tendency toward a liberal market and de jure in institutional legitimacy (40/60) as does Education with a

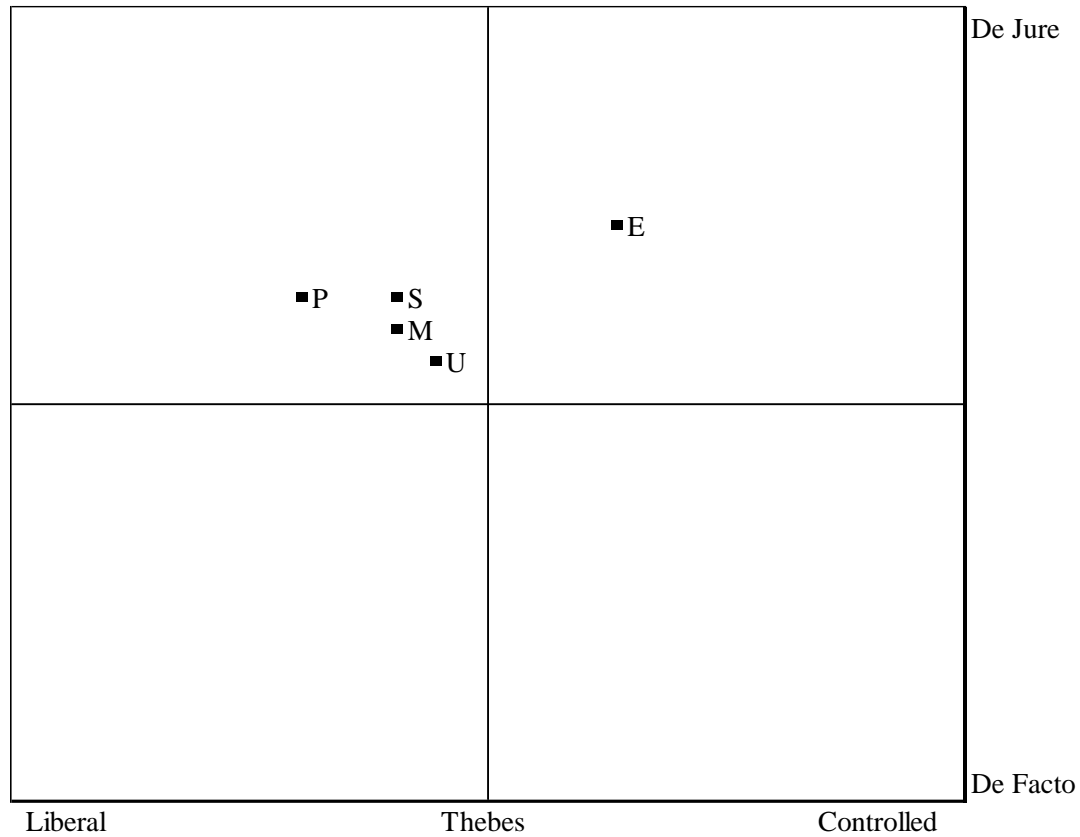
slightly higher de jure rating (40/70). Governance (0/0) receives the maximum score for liberal market type and de facto institutional legitimacy (0/0). Integration (73/100) shows a strong controlled market presence and maximum de jure institutional legitimacy.

The score for the class categories shows the unskilled class (44/56) slightly in the liberal market and even between de jure and de facto institutional quadrant (See Figure 10). Skilled labor (30/64) shows a slightly more liberal market score and a higher de jure score. The professional measure (40/64) moves closer toward the controlled market, remaining level with skilled labor in the de jure institutional section. The merchant class (30/40) shows a moderately liberal market score and a moderately de facto score. The elite class (64/73) shows a middle-range market score with a moderate de jure score.

The typological classification of the case study of Thebes shows a moderate tendency toward a liberal market economy, with a similar strength indicated in the de jure institutional legitimacy quadrant. While the liberal market may be somewhat unexpected, the de jure classification seems understandable given the highly bureaucratic nature of the Egyptian economy.

The governance score of 0/0 indicates a fully liberal and de facto score for this sphere. This indicates that the flow of financial capital in the Theban economy is essentially a grassroots activity, with no regulatory involvement of the state. Removing the governance score from the totals may give a better representation of the bureaucratic tendency toward market control and institutionalism and raises the overall scores to 53/78. This moves the market type just over the line into the controlled hemisphere, while the institutional legitimacy score moves deeper into the de jure institutional legitimacy quadrant. This is more in line with the expectations that the centralized bureaucracy in

Egypt maintains strict control over the economy, although still more liberal than might be expected.



*Figure 10. Class score matrix by economic class*

Comparing the aggregate score with the scores from the previous case, Ur III, (Chapter 4) with Thebes shows the two economies closely matched in the liberal/de jure quadrant with scores of 38/68 and 42/62, respectively. The two economies are somewhat closely matched in the total score. The relationship scores of the two economies of 53/73 and 40/60 show Ur III in the liberal/de jure quadrant and Thebes in the controlled/de jure quadrant. In the governance sphere, the scores are closely matched at 0/18 and 0/0 with Ur demonstrating slightly more de jure institutional presence and both at the maximum liberal market score. The education sphere scores at 22/67 and 40/70 show a slightly

more liberal market in Ur and a similar institutionalization in the two economies. The integration sphere shows a close match with scores of 53/100 and 73/100. Ur again demonstrates a more liberal market approach to redistribution, but both economies score the highest possible on the institutionalization of the sphere.

The two societies show a distinct heterogeneity in the comparison of the capital flows through socioeconomic classes. Unskilled workers are evenly matched with identical scores of 44/56 in the liberal/de jure quadrant. Skilled workers score 60/50 and 30/64 and fall into separate quadrants with Thebes in the liberal/de jure quadrant and Ur in the controlled market, but evenly straddling the de facto/de jure quadrants with a score of 50. The professional class is relatively close at 30/70 and 40/64 with both falling into the liberal/de jure quadrant. Although the merchant class scores identically in the liberal market type quadrant at 30, the institutional legitimacy scores are much different with Thebes in the de facto sector at 40, and Ur in the de jure sector at 70. The elite classes of the two economies show the widest disparity of scores with Ur III at 19/91, and Thebes at 64/73. The elites of Thebes are firmly in the controlled/ de jure quadrant, with Ur strongly in the liberal/de jure quadrant.

### Proxies

Proxy measures identified as attractive features in each of the economic spheres are the percentage (or predominance) of slavery in the population as a proxy for relationships, the existence of a financial market as a proxy for governance, the literate percentage of the population as a proxy for education, and large-scale manufacturing as a proxy for integration.

Slavery in Thebes is estimated to compromise 11 percent of the total population (Peacock 2000), although this estimate is for the much later Roman period of Egyptian history. Like Ur, slavery appears to be both ubiquitous and widespread, but these estimates fluctuate depending on the definition of what exactly a slave is in New Kingdom Egypt.

The practice of private borrowing and lending is prevalent in Thebes based on the large numbers of receipts discovered for this type of transaction (see the Governance section in this Chapter). There are no indications that this practice was institutionalized in any way.

Literacy appears to be a provenance of the elite, with estimates of between 1 and 4 percent of the entire population of Egypt able to read, probably closer to one percent in the New Kingdom (Baines 1983). There are indications that other classes and women were literate in certain contexts, especially craftsmen that had to inscribe royal monuments. Literacy estimates for this class raise to 40 percent (Meskell 2002).

The existence of large-scale industry in Thebes is widely attested (see skilled and elite production and consumption in the Relationships section, this Chapter). This industry is wide-scale and entirely institutionalized and occurs under the oversight of elite temple economies. Some free-lance production occurs, but not on the wide scale of the temple industries.

Institutional Focus	Sphere of Influence								Category Totals		Category Percents	
	Relationship		Governance		Education		Integration					
Unskilled Labor	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	1	1	0	0			1	1	2	2	67%	67%
Consumption	0	0	0	0	0	0	0	1	0	1	0%	25%
Totals	2	2	0	0	0	0	2	3	4	5	44%	56%
Skilled Labor	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	0	1	0	0	0	1	1	1	1	3	25%	75%
Consumption	0	0	0	0	0	1	0	1	0	2	0%	50%
Totals	1	2	0	0	0	2	2	3	3	7	30%	64%
Professional Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	0	1	0	0	1	1	1	1	2	3	50%	75%
Consumption	0	0	0	0	0	1	0	1	0	2	0%	50%
Totals	1	2	0	0	1	2	2	3	4	7	40%	64%
Merchant Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	0	0	0	0	0	0	1	1	1	1	25%	25%
Consumption	0	0	0	0	0	0	0	1	0	1	0%	25%
Totals	1	1	0	0	0	0	2	3	3	4	30%	40%
Elite Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1			1	1	1	1	3	3	100%	100%
Production	0	1	0	0	1	1	1	1	2	3	50%	75%
Consumption	0	0	0	0	1	1	1	1	2	2	50%	50%
Totals	1	2	0	0	3	3	3	3	7	8	64%	73%
Case Totals	6	9	0	0	4	7	11	15	21	31	42%	62%
Total Count	15	15	10	10	10	10	15	15	50	50		
Percentage Score	40%	60%	0%	0%	40%	70%	73%	100%	42%	62%		

Table 2 *Case 2 scores*

In addition to the typological score, the social stratification score is based on a count of the number of changes in the economic treatment of the different classes in the transactions within the economic spheres. For Thebes, these scores are taxation 1,



production 5, and consumption 2 in the market type category, and taxation 1, production 5, and consumption 3 in the institutional legitimacy category.

The remaining typological classification and proxy analyses based on this data will be conducted in the comparative case study analysis presented in Chapter 7, where the data scores of all three cases can be compared and a significant quantitative analysis can be performed. Concluding remarks on this and the analyses to follow will be included in Chapter 8.

## CHAPTER VI - GREECE: CLASSICAL ATHENS

### Introduction

The Classical Period of ancient Greek history began with the defeat of the Persians in 479 BCE and ended with the philosopher Socrates's death in 399 BCE. The defeat of the Persians demonstrated to the Greek cities the need for a unified defense against further invasions, and the Delian League was formed. The Delian League, also known as the Athenian League, consisted of an alliance of an estimated 330 Greek and some non-Greek city-states that contributed funds to the maintenance of a standing fleet of warships to defend Greece. As the largest city-state and strongest naval power in the league, Athens became the dominant power, eventually creating an extractive system whereby Athens imposed tribute taxes on the other members, refused to allow them to withdraw from the league, and enforced its will through military intervention (Durant 1939; Langer 1952; Ober 2008).

In comparison with the previous cases, the political and social structure of the Athenian state could not be more different. This political system, as an experiment with democracy on a wide scale, involved the active participation of all citizens. All citizens have equal legal rights and the right to participate in the body politic, the Assembly (Durant 1939). Decisions of the state were made by the members of the Assembly present to vote, usually several thousand. These decisions included whether to go to war, set tax rates, appoint magistrates (state officials), or whom to bestow honors on (Taylor 2018). Citizenship was limited in scope. A citizen of Athens was male, and both parents had to be Athenian. Land ownership was not a requirement, but owning land without special

permission was only allowed for citizens. The total population of citizens in Athens was probably around 50,000. The remainders were women and children, slaves, and metics (foreigners), resulting in a total population estimated at 250,000. This is in comparison with the other city-states of the league, none of which had a citizen population of over 10,000 (Bresson 2016).

Another striking difference between Athens and the first two cases, Ur and Thebes, is the market orientation of the economy. Where Ur and Thebes probably had a market presence, there was no concerted effort at increasing production for any purpose other than the extractive activities of the elite. The Athenian economy was essentially an ancient version of a modern free market with supply and demand determining prices, adequate laws protecting property rights, institutionalized dispute resolution, and impersonal transactions (Durant 1939; Bresson 2016). In many ways, the Athenian economy resembled the Open Access Order system of government (North, Wallis, and Weingast 2009; Carugati, Ober, and Weingast 2019). In Athens, the population was far more egalitarian and wealthier than in either of the previous cases. The average daily wage of the majority of the population was 6 times the subsistence level. The average house size was larger than the average detached family home in the U.S. in 1997 (Bresson 2016; Kron 2016). There was no class distinction based on social rank. Instead, Athenians were ranked into four groups according to wealth. The wealthiest were those who earned an annual income equivalent to 500 measures of agricultural produce, the second, from 300-500 the third from 200-300, and the fourth class below 200 bushels. Taxation was based on wealth class on a sliding scale. First-class citizens paid a higher percentage of their income to taxes than second-class citizens. Fourth-class citizens paid

no income tax at all (Durant 1939). Athens had a number of sources of income besides taxes on its citizens. As noted above, the tribute exacted from the Delian league was a major source of income, as was the considerable income derived from import/export taxes and harbor fees levied at the city seaport, the Piraeus. Athens retained mineral rights to surrounding territories, and the silver mines at Laurion are estimated to have produced anywhere between 25 to 40 metric tons annually. Athens leased the mines to mining operators and in addition to the lease fee took a 1/24<sup>th</sup> share of the extracted ore (Bresson 2016). Some estimates place the percentage of municipal income derived from this mine at 40 percent (Fawcett 2016).

This chapter is organized as follows. Following an introductory section that describes important features of the case study, the remaining sections will be grouped by the four Spheres of Influence indicated in Chapter 3, Relationships, Governance, Education, and Integration. Each of these Spheres of Influence sections begins with a brief review of the relevant features of that sphere, followed by a list of the Childean classes identified in Chapter 3 (Methodology) in the order of presentation including each of the institutional relationship subcategories identified within that criterion. The first sphere of influence, relationships, will also contain a description of that aspect of society as an introduction to the subcomponent processes. This process will continue through all of the remaining spheres of influence, each organized by the Childean component and institutional relationship. The final section will consist of a discussion reviewing the scoring of the model, the selection of an institutional typology for that case, and an analysis of the data in relation to the proxies for the economic spheres identified in Chapter 3.

## Relationships

The first sphere to be considered is relationships. In this economic domain, the productive capital of labor, consumption, and extraction of taxes from the various actor classes is discussed. The first class is unskilled labor, and the first transaction subcategory is extraction.

Unskilled labor in Athens exists, but the most onerous and dangerous unskilled work is performed by slaves. The primary difference other than training between skilled and unskilled workers is how they are paid. The unskilled worker is paid a daily wage, in contrast to the skilled worker that is paid by the job (Bresson 2016). The daily wage itself was not specifically taxed, but taxes were imposed according to wealth and citizenship status. Citizen unskilled workers, at the bottom of the pay scale, were not required to pay an annual tax. Non-citizen metics were assessed an annual tax of 12 drachmae, evidently not related to income level (Halkos and Kyriazis 2010). The primary income source of the majority of the peasant class was farming. With the productive capacity of agriculture in the Athenian countryside estimated at 25 percent of the needs of the population, there was always a ready market for agricultural output (Acton 2014; Bresson 2016). Agricultural tax rates were 10 percent of the output, in kind (Bresson 2016). These institutional rates remained fixed regardless of the extra profits that could be realized in times of high prices for grain. The market type for unskilled labor taxation is controlled. Institutional legitimacy is *de jure*.

The productive output of the unskilled labor class was completely unregulated. As a citizen, an unskilled worker had the same status in the *demos* as any other Athenian, regardless of wealth. The rate of pay for a citizen peasant was the same as that for a metic

or a slave (Halkos and Kyriazis 2010). The key difference in slave labor was the work they were required to do. Slaves often performed the worst and most dangerous tasks, but there are records of slaves in Athens that worked as civil servants, and even bankers, eventually rising through the social ranks to become elite citizens (Rosivach 1993; Halkos and Kyriazis 2010). Unskilled workers' freedom of production allowed them to provide any service or labor that they were capable of and earn wages, but also to act as entrepreneurs, such as fishermen, in which they could earn substantial profits in the right market conditions (Lytle 2016). The unregulated nature of unskilled production results in a market score of liberal. The same lack of regulations results in an institutional legitimacy score of *de facto*.

The consumption of unskilled workers is similarly unregulated. Athenians had full access to the market and were free to consume any goods which they could afford. The market score is liberal. Institutional legitimacy is *de facto*.

The skilled labor class is composed of workers with marketable skills requiring some legitimization of mastery. Athenian architects tended to hire large numbers of craftsmen and artisans for piecemeal work to maintain quality through job site competition and to keep costs down (Bresson 2016). The craftsman or artisan was free to work as an independent contractor to create commissioned works or to work on public monuments but was also free to establish his factory for mass production of marketable items, such as sandals, furniture, jewelry, or fine ceramics (Bitros and Karayiannis 2008). In the case of ceramics, the archaeological records indicate that almost every neighborhood had at least one local potter for the creation of housewares, and local demand was enough to keep these small workshops of approximately 10 employees

prosperous. Other potters chose differentiation as a strategy and fashioned works that created demand through the quality and beauty of their workmanship (Onians 1991; Acton 2014). The income from these enterprises determined whether the craftsman was wealthy enough to pay taxes on his income. There are no records of taxes on productive output before sales in the market. As in the unskilled worker group, taxation of the skilled class is strictly based on income on a sliding scale and receives a market score of controlled. Institutional legitimacy is *de jure*.

As noted above, the productive activities of the skilled classes were unregulated in terms of what work could be performed, or what industries they could establish, often based in the home, such as textiles. Textiles represent one of the main production activities of Athens and many other production centers in Greece. Wool cloth in particular is an early example of horizontal production integration on a wide scale, with rural producers supplying raw wool, and various workshops performing the specialized steps involved in processing the wool into cloth. Different specialties created different grades of cloth, and in many cases, provided finished products in the form of tunics or sailcloth. (Dimova, Harris, and Gleba 2021). It is estimated that a single trireme sail for a standard-sized vessel (approximately 120 m<sup>2</sup>) would take approximately 4,300 man-hours of labor. The production functions of the skilled workers were provided on the open market based on the demand for their product and the prices they could charge. Cloth-making as a traditionally female occupation in the household allowed women to participate in the workforce, earn wages, and accumulate wealth (Bundrick 2008). No institutional barriers to market entry are known (Acton 2016). There were regulations on where certain industries could be located based on their effects on the neighborhood, such

as tanneries. This was not a restriction on entry, per se, but could be construed as one if no suitable locations could be found after other competitors had occupied the most lucrative spots. Barriers to entry were market-based. Saturated markets could only be competed in if the product were differentiated in some way or prices were lowered (Acton 2016; Bresson 2016). Manufactured products were controlled only for quality through inspection in the market by special magistrates. The unregulated nature of skilled production results in a market type of liberal and an institutional legitimacy score of de facto.

Consumption of skilled production is entirely market-based. Taxes on consumer goods in the marketplace were paid by the merchant, who assumably passed these costs on to his customers as an indirect cost. The market score for skilled consumption is liberal. Institutional legitimacy is de facto.

In the previous case studies, the professional class was easily identified as simply a literate class of scribes. Considering the great difficulty in mastering the art of reading and writing the arcane cuneiform and hieroglyphic scripts of Mesopotamia and Egypt, the simplicity of the Greek alphabet was a significant enabler for mass literacy. Literacy in Athens beginning at the end of the 6<sup>th</sup> century BCE grew steadily throughout the classical period (Burns 1981). Most citizens that participated in the political system had at least a minimum competency in reading and writing. Widespread literacy precludes any class distinction derived from it. Instead, for Athenian society, the professional class is composed of those that have received higher education in a field such as medicine or philosophy. Medicine and architectural training for professionals were done according to the standard practices of the day, either in the form of a private school run by a noted



professional in which the student served an apprenticeship or knowledge handed down from father to son.

For the Greeks, the fame and renown of both physicians and architects were widely cited centuries later by the Romans. Most of the physicians in early Rome were of Greek origin (Kostoff 1986; Cilliers and Retief 2006). Even as trained professionals, there was no distinction in terms of any certification of competence. The individual calling himself a physician or architect, or any other professional relied on reputational legitimacy. Many towns employed a “civic doctor,” paid for by the municipality and chosen by the Assembly. These professionals were hired to provide medical care to the community. They also received various perks, depending on the locality, including free admission to the theater, but also received certain tax exemptions and reductions (Cilliers and Retief 2006). The archaeological records indicate that doctors from the Cos region were in high demand. It does not appear that tax relief was a systemic practice based on market demand that occurred in sufficient quantity to alter the market type for professional taxation. The market type remains controlled, and the institutional legitimacy of taxation is *de jure*.

With no official qualification as a professional, the only legitimization of the professional came from the notoriety of his source of training or social recognition of his competence in his field. (Note the use of male pronouns here is for expediency. There are many examples of female professionals in the medical profession.) Otherwise, the professional was free to do his trade, and in the case of the physician, remained in high demand. The market type for the provision of professional services is liberal. The institutional legitimacy is *de facto*.

Consumption of professional services is also entirely unregulated, with the value determined by the market. In ancient Athens as today, the majority of quality medical care was a luxury for the rich, except in the case where civic doctors were available. The market type for the consumption of professional services is liberal. The institutional legitimacy is *de facto*.

Greek merchants have been well-represented in the Mediterranean region since the 7<sup>th</sup> century BCE (Lyttkens 2010) and represent an important sector of the economy. One of the early accomplishments of the Classical era was the improvement of the Athenian port at Piraeus to provide better facilities for sea-borne trade such as safe harbors and warehouse facilities (Durant 1939; Bitros and Karayiannis 2008; Carugati, Ober, and Weingast 2019). The improvements and institutions designed to protect foreign traders and property rights and provide rapid dispute resolution made Athens one of the most prosperous trading centers in the ancient world (Whitby 1998). The marketplace, *agora*, offered a diverse array of domestic and imported goods and services, including labor (and slaves), for sale and provided employment opportunities for a similarly diverse array of merchants. No barriers to entry existed for merchants, and records indicate that merchants came from every economic group, including metics and slaves. The agora was subdivided into sections that specialized in a specific category of goods, services, or a specific form of labor. This was an institutionalized arrangement designed to facilitate the activities of the magistrates as official overseers of the market (Bresson 2016) as well as provide an efficient method for locating goods, thereby lowering transaction costs. These magistrates were responsible for ensuring the orderly operation of the agora. This included ensuring the quality of the products being sold and the accuracy of the weights

and measures used by the merchants. They were also the first line of dispute resolution and arbitration. The magistrates also ensured that a tax was levied on all sales and that grains such as barley and wheat were sold at fair prices (Stroud 1998; Whitby 1998). Import and export tax rates for foreign trade were 2 percent, but there were no fees for bringing domestic production into the marketplace other than the entry fee charged to all sellers. For the merchant class, taxation was highly regulated and institutionalized by the state. Market type for merchant class taxation is controlled, and institutional legitimacy is *de jure*.

Production of the merchant class into the Athenian economy can be interpreted as the importation of goods from abroad. Athens was dependent on grain imports for the bulk of its food and as a result, restrictive policies on grain imports and exports were enacted (Whitby 1998; Bitros and Karayiannis 2008; Lyttkens 2010; Carugati, Ober, and Weingast 2018). One of the ways grain prices could be kept low was through the importation of enough grain to ensure a surplus. First, the merchant could only import grain at the Piraeus, the seaport of Athens. Any merchant in Attica was subject to this constraint. Second, all ships carrying cargoes of grain passing through the Piraeus had to have at least 2/3 of their cargo offloaded and were only allowed to reexport 1/3. Third, no loans could be made to finance grain cargoes not destined for Athens (Fawcett 2016). The restrictions were relatively unenforceable. If grain prices were lower in Athens than elsewhere, merchants could simply redirect their cargo to other ports, but often, agreements between states would result in the reduction or exemption of import taxes, further increasing the profits of the merchant (Fawcett 2016). Although large quantities of other imported goods were required for Athenian industry, such as timber, hemp, flax,

pitch, iron, and bronze (Halkos and Kyriazis 2010), no restrictions on the importation of any goods besides grain are known. No data exists for a definitive assessment of the percentage of imports of grain versus all others, but if the percentage is changed relative to the other products to grain, the result is overwhelmingly in favor of non-grain imports. In this case, the market type for merchant production (imports) is liberal but institutionalized since all importers and exporters were required to obtain a license. Institutional legitimacy is *de jure*.

The consumption function of the merchant class must follow as exports of domestically produced goods to offset the balance of trade. There appears to be a large market for the luxury goods produced in Athens, especially textiles, jewelry, statuary, perfume, and foodstuffs, especially wine, honey, and olive oil (Halkos and Kyriazis 2010). Again, the only institutional restrictions on the commodities that could be exported are those that regulate trade in grain. No other restrictions exist, other than the requirement for the merchant to obtain an export license (Bresson 2016). With the same conditions as production, the merchant-class consumption market type is liberal. Institutional legitimacy is *de jure*.

The elite class for this chapter is borrowed from the Athenian income-based class detailed in the introduction of this chapter. These represented the wealthiest Athenian citizens, estimated to number between 1,500 and 2,000 (Fawcett 2016). The principal distinction of the elite class is the increased burden of taxation. Although this implies disproportionate contributions to the public good, the elite also enjoys greater benefits in the form of both economic and social capital (Caraguti 2020). One of these benefits was the privilege of higher levels of education, especially in rhetoric, where a skilled orator

would be in greater demand as a leader of the democracy than someone less skilled in letters (Ober 1989). Departing from the traditional perspective of the elite as the leaders or aristocracy of society, the democratic system relied on the Aristotelian view that the masses were better able to make decisions than a small cadre of well-educated elites. This tension between the elite and common citizens manifested itself in the occasional distrust of the eloquent speaker, but also in decreased tax burdens on the lower classes at the expense of the elite. The elite in theory shared the political landscape equally with all levels of society in Athens. The fact is that most of the working class could not afford to give up wages to participate in the Assembly for a day (Lyttkens 2010).

Two main forms of taxation existed for the wealthy elite. The first is the *eisphora*, which is a direct tax on all citizens for emergency expenditures, usually warfare. This was a graduated tax, with the four classes of income deciding the specific tax rates. For the elite, the wealthiest were required to pay the taxes of the lower classes in order to ensure the funding requirements were met promptly. This prepayment, *proeisphiora*, was intended to be in the form of a loan, to be collected at a later date by the wealthy, although it is not clear whether these funds were ever recovered (Kaiser 2007; Lyttkens 2010; McCannon 2017). The second tax was in the form of *liturgies*. In this redistributive tax, the wealthy provided funding for some aspects of public need, usually in the form of providing free theatrical or choral festivals or funding an athletic team's expenses while competing. These costs were generally greater than the annual salary of a well-paid craftsman. Elites were usually chosen by lot to provide liturgies, but there were service-related exemptions and individuals could not be required to perform liturgies more than once every two years. Elites could choose to provide liturgies on a voluntary basis as a

means of garnering social approval. This was a common tactic during campaigns for public office. Another form of the liturgy was a *trierarchy*. In the trierarchy, an elite provided the expenses of commanding, outfitting, and maintaining an Athenian warship for a year (Kaiser 2007; McCannon 2017). Any elite selected for a liturgy could challenge his selection if he felt that another wealthier individual should have been selected through a process called *antidosis*. The defendant can either admit that he is indeed wealthier and should have been selected or choose to exchange his wealth with the plaintiff to prove that he was not wealthier. The outcome could also be decided by a jury of 500 citizens. The extraction of taxes from the elite is a highly structured and institutionalized process. Market type is controlled, and institutional legitimacy is *de jure*.

Production in the elite class is unregulated. Elites often invest their wealth in any number of profit-seeking ventures, with no scrutiny from the state. There are records of elite landowners growing fodder for their horses rather than grains, even in times of famine, further attesting to the liberal nature of the productive market of the elite (Whitby 1998). With no market controls or institutionalized rules governing production, the market type is liberal, and the institutional legitimacy score is *de facto*.

The same is true of consumption. The only rules that govern the consumption of goods in the elite class are the Athenian societal disdain for ostentatious displays of wealth (Bundrick 2008). The market type remains liberal and institutional legitimacy is *de facto*.

### Governance

The practice of venture capital investing was widespread in Classical Athens. One of the primary sources of financing was the loan obtainable through the *eranoi*, or

friendship group. The *eranoi* was an association of individuals with no distinctive charter, but whose collective assets enabled them to provide loans to the borrower. Generally, it is thought that these associations had some relationship with the borrower, such as family or professional ties, but there is no clear attestation that this is the norm. Usually, these loans required collateral, and failure to repay them could result in a lawsuit (Cohen 1992; Bresson 2016). Loans were also available from banks. Individuals acting as bankers were widespread in Classical Athens, and virtually all maritime contracts refer to a bank as a source of funds or a middleman between maritime investors and merchants. There are also numerous instances of bank failures, although the exact causes and outcomes of these failures are vague (Cohen 1992). Other sources of loans are through temples using their deposits of precious metals to earn interest through small to medium-sized loans, and through the various organizations or social groups the borrower belonged to (Bresson 2016). It is important to note that the practice of finance was widespread in Classical Athens and entirely unregulated by the state. The market determined the rules of finance. High-risk borrowers paid higher interest rates, and high-risk investments stood to return high returns, especially in maritime ventures. Normal interest rates generally hover around 8 ½ percent. Usurious rates were considered immoral, but no regulations control interest or repayment terms (Karayiannis and Hatzis 2012). In fact, the high rates of taxation of the wealthy elite seem to have prompted many of them to convert obvious signs of wealth such as large, landed estates, into banking in order to conceal wealth. This is because the citizens of Athens were required to declare their wealth, and there were no accounting systems in place to prove or disprove these declarations. Large estates were obvious indicators of wealth, whereas cash deposits hidden in secret accounts were much

easier to conceal. The large amounts of financial capital available in these banks are considered to be a major source of economic growth during the classical period (Engen 2011). In fact, from anecdotal evidence, it appears loans for productive purposes were much easier to obtain than simple consumer loans for non-productive purchases (Bresson 2016). For governance, the egalitarian nature of Athenian society allows the combination of each class category. There are no distinctions in activity that differentiate these classes in this domain. There is no specific taxation activity indicated, except the possibility that participation in lending activities by the wealthy may be a form of tax shelter. Using governance as a tax avoidance device is irrelevant to the market. The tax subcategory is assigned a null value for the governance sphere. For the other classes, the complete lack of state oversight of this activity results in a market score of liberal for all classes. The social stigma of usurious practices is the only institutional constraint noted, resulting in an institutional legitimacy score of de facto.

### Education

Education in classical Athens has very little in the way of archaeological evidence the researcher can utilize to create a comprehensive view of its availability or how it was delivered. The broad literacy of the Athenian citizenry is widely held, but how this literacy came about is not yet understood (Burns 1981). The comparative ease of learning the Greek alphabet when compared with the earlier forms of writing does not result in the huge collection of the shards of repetitive practice required of earlier students. The widespread literacy of the classical period is attributed to the efficiency of their alphabet (Lyttkens 2010). This same assumption regarding the literacy of the average citizen also assumes that the level of this literacy was only what was required for a minimum



efficiency as a citizen. There is some indication that this basic literacy was derived from special theatrical plays for very young people that instilled these basic skills at an early age, perhaps the first evidence of public education.

One source of evidence of communal training is the institution of the “rite of passage.” This was not a clearly delineated process of universal membership, but a highly differentiated process that depended on the individual’s group membership. These groups could be civic associations, kinship groups, ancient tribal affiliations, or any number of the numerous clubs, guilds, and cults that most Athenians belonged to (Durant 1939; Griffith 2001). One of the universal rites of passage of all youth was the passage to adulthood which came, presumably, at the conclusion of compulsory *Ephebeia* training. This training included gymnastics, military strategy, and possibly more academic pursuits such as arithmetic, geometry, and astronomy (Hritzu 1948; Griffith 2001).

The schools that are known to exist are private and only available to those that can afford them although it is not clear if those gifted students identified in compulsory military training were offered opportunities to attend. Since most of the military training seems to have been provided as a liturgy by a wealthy Athenian, it seems likely that sponsorships could have occurred, especially given the wealthy elite practice of providing interest-free loans to the less fortunate as a symbol of civic virtue. Most schools are private enterprises, taught by those that had some prestige or standing as wise and virtuous men. There is no specific curriculum, as in the case of the scribal schools described in Chapters 4 and 5. Training in gymnastics, music, poetry, and grammar was the focus of primary education. More specialized training, usually reserved for the wealthy, occurred through further institutions run by private individuals in their fields of

expertise. Training in athletics was especially prized. Athletic games were extremely popular, and the best athletes competed with those in other cities. The trained athletes competing were known as *athletai*, while the untrained athlete was known as *idiotai*. The victories were a source of great civic pride, and if a young athlete showed promise, he may be sponsored for athletic training and subsidized for the expenses of traveling to other venues to compete. Largely it was only the elite wealthy that could afford the training and had the leisure time to pursue it (Pritchard 2013). Even where public mandates for education were in effect, the schools remained privately owned and unregulated.

For the skilled crafts, training was handed down along family lines. This was also evident in household skills. Mothers trained their daughters and fathers trained their sons. One of the institutions that tried to guarantee that parents raised children with marketable skills was the requirement that for any father or mother that did not teach their children a skill or trade, the child would not be liable for their care and support in old age, although this is purely anecdotal (Griffith 2001).

In the sphere of education, the economic classes are largely homogenous in their taxation, production, and consumption functions, with the exception of the unskilled labor class. This class can receive any education he can afford, and move to a skilled class, but the production of training by an unskilled worker is improbable since the unskilled worker would have to have the skill to be accepted as an educator. The score for the production of training for unskilled workers is null. No allocation of public tax for the provision of education is known. Any provisions of public training such as the theatrical training of young Athenians or the compulsory military training of the youth

are the results of wealthy liturgies. In this regard, only the wealthy elite have any tax burden associated with education. The tax subcategory for unskilled, skilled, professional, and market classes are null. For Elite taxation in the educational sphere, the market type is controlled, and the institutional legitimacy is de jure.

In terms of the production and consumption of education, this appears to be strictly market regulated. There are no institutional restrictions on the provision or consumption of educational services. Education is available according to demand, and consumption is available according to the ability to pay. The market type for production and consumption in the education sphere for all classes is liberal, and institutional legitimacy is de facto.

### Integration

The provision of public goods in Classical Athens is unique in the ancient world. The leadership of Athen is not preoccupied with erecting monumental edifices glorifying the leadership, freeing the bulk of public funds available for necessities. These necessities include the development of the port facilities at Piraeus and extending the defensive wall that encircled Athens down to the sea to incorporate and protect the port. Other primary public goods provided to the inhabitants of Athens came in the form of the provision of a military, and funding of the numerous festivals that occurred each year (Fawcett 2016). In addition, welfare payments to the disabled and children of slain soldiers were provided. The remainder came in the form of public officials whose primary purpose was to ensure the smooth operation of the market, including dispute settlement, and the collection of taxes. These officials, or magistrates, were not part of a centralized bureaucracy but managed a specific aspect of the provision of public goods (McCannon

2017). Taxes were also used to pay for citizen participation in the democratic government and on juries, but this stipend was too low for the poorest Athenians to give up a day's wages for (Lyttkens 2010). The greatest expense was for the military and defense. The land forces of the Athenians were comprised of the citizen-soldier, the Hoplite. These citizens were eligible to be drafted into compulsory military service in times of need (Durant 1939). Most hoplites supplied their own military gear, such as armor, shields, swords, and pikes. These draftees were also expected to supply some of their own rations. Victorious soldiers could count on personal enrichment from the looting of valuables from their opponents, as well as ransoming hostages taken in battle (Bresson 2016).

Taxes on the consumption of public goods appear in the form of usage fees, although these fees are specific to trade infrastructure. The first fee applicable to all Athenians would be the charge that accompanies the permission to set up a spot to conduct business in the agora. This charge applied to all Athenians equally. The next fee is charged for import and export licenses. These fees are also applied equally but probably apply more to the merchant class. Finally, port fees are charged for any vessel that uses the facilities at the port, in addition to the cargo tariffs. Often these fees were waived for diplomatic purposes (Bresson 2016). The usage fees are institutionally mandated without regard for market conditions. The market type for taxation of public goods is controlled for all classes. The institutional legitimacy is *de jure*.

The provision of public goods for all classes is the requirement for compulsory military service the requirement. This requirement applies to all Athenians and is organized into three main categories. The first is for light infantry. These soldiers are mainly those that cannot afford the heavy armor of the hoplite and instead are lightly

armed with slings and bows in a supporting role for the hoplites. The hoplites serve in both the army and the navy. These are the troops mentioned in the previous section and consist of heavy infantry for the land-based forces and rowers for the navy. Both are highly trained for their respective duties. The hoplites are proficient in the phalanx formation, providing a nearly impenetrable front (Tejada 2004). The rowers are a highly coordinated group capable of maneuvering the ship in battle conditions and were highly sought after. Often, these specialists would have to be hired from other city-states to provide enough adequately trained crews (Kaiser 2007). In addition to the mandatory military service, the elite class was also required to provide the liturgies and trierarchies described in the Relationships section of this chapter. These provisions are notable for shifting the burden of the provision of public goods from taxation of the working classes to the wealthy. This was one of the features of the democratic process adopted in Classical Athens (Asmonti 2015). In all classes, the provision of public goods in terms of both military service and the obligations of the elite is highly institutionalized. The market type for the provision of public goods is controlled. The institutional legitimacy is *de jure*.

Consumption of non-excludable public goods is unregulated. Community goods in the form of limited shared infrastructure such as port facilities are regulated as necessary to ensure adequate access. It is unlikely the average Athenian that did not engage in long-distance maritime trade had any need for scheduling the resource of the harbor facilities, but these facilities were available should he have the need to in the future. For all classes, the market type for public goods consumption is liberal. The

institutionalized nature of the public goods listed above results in an institutional legitimacy score of de jure for all economic classes.

### Scores

The results of the individual category measurements within the spheres of influence are shown in Table 2. Totals are based on a percentage of the dichotomous measures based on the total number of positive counts divided by the total number of possible counts. Each category is made up of three subcategories. With five categories each, this results in a total possible category score (100 percent) of 5 categories X 3 subcategories = 15 possible outcomes. With a total of 4 spheres the total possible outcomes = 60. Where individual measures are nulled, these counts are reduced by one for that subcategory within its sphere of influence. This can be seen in the Education sphere, and the taxation subcategory within each category in particular, resulting in a reduction in the overall possible score of five in this column. Additionally, the production subcategory within the unskilled worker category in the education sphere reduces the possible total count for Education by an additional unit.

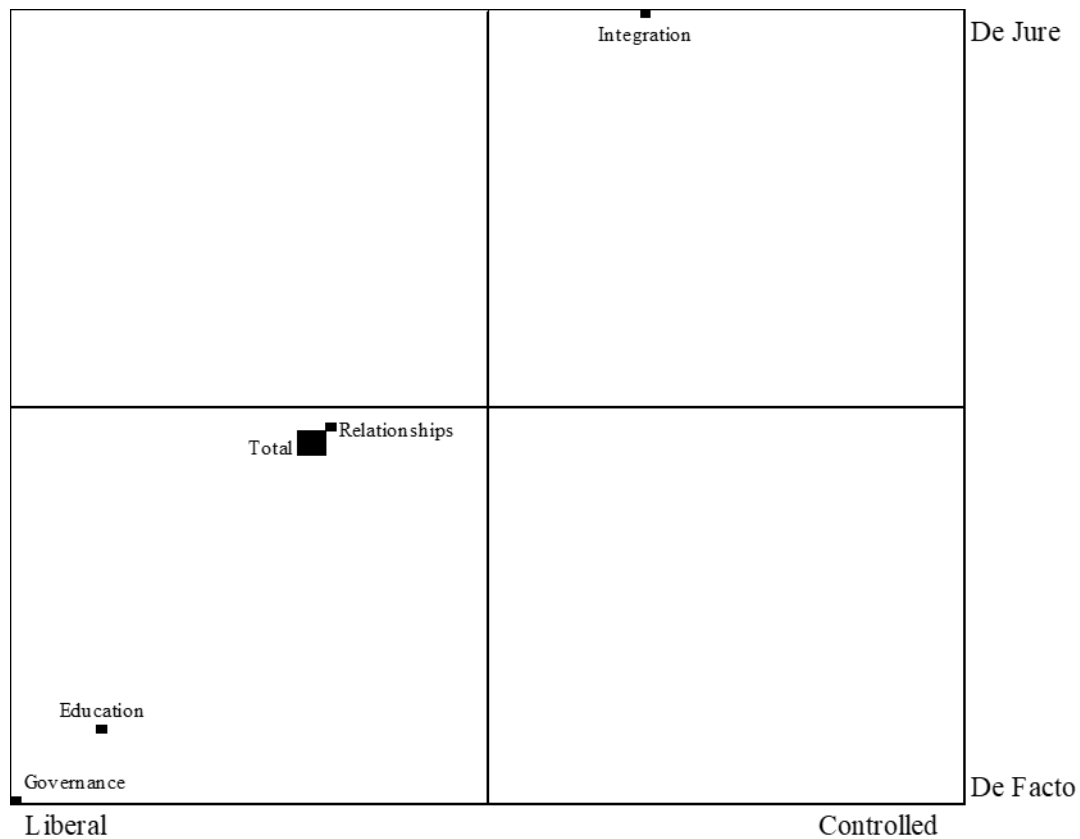
Evaluation of the percentage score is based on the percentage of the specific measure. Each measure is in a specific typological frame. The T1 measure records the market typology where 0 equals a fully liberal economy, and 100 percent equals a fully controlled economy. This same measurement scheme applies to typology 2, T2, institutional legitimacy. In this typological measurement, 0 equals a fully de facto institutional typology, and 100 percent = a fully de jure institutional typology. Recall that in a liberal market, market decisions are driven by market conditions, while in a controlled market, decisions are made based on rules external to market forces. De facto

institutions are the unofficial rules mandated by society and culture, while de jure rules are those mandated by official codified law.

The total measure (32/46) demonstrates a moderate tendency toward liberal market control and a slight tendency toward de facto institutional legitimacy. In the four spheres of influence, seen in Figure 11, Relationships (33/47) are moderately liberal market and very slightly de facto in institutional legitimacy. Governance (0/0) is a completely liberal market and shows a complete de facto institutional legitimacy. Education (10/10) falls near Governance with a nearly complete presence in both the liberal market and de jure institutional legitimacy quadrants, and Integration (67/100) shows a moderately controlled market presence and very high de jure institutional legitimacy.

The score for the class categories shows a nearly identical outcome for unskilled labor (33/44), and skilled labor and the professional classes (30/40), at a moderately liberal market type and a slightly de facto institutional legitimacy. The elite class (36/45) is nearly identical, with only a slight movement toward a more controlled market type and de jure institutional legitimacy. The merchant class (30/60) stays almost even with the other classes in the liberal market score but moves independently into the de jure institutional legitimacy quadrant.

The typological classification for the Athens case study shows a slight tendency toward a liberal market economy, with a very slight tendency toward a de jure institutional efficiency.



*Figure 11. Case 3 score matrix by economic sphere*

The governance score of 0/0 indicates a fully liberal and de facto score for this sphere. This indicates that the flow of financial capital in the Athenian economy is essentially a grassroots activity, with no regulatory involvement of the state. This score is probably a better reflection of the liberal market and de facto institutionalization prevalent in the Athenian economy. Removing this score from the total shifts the overall scores to 40/58, remaining in the liberal market quadrant and only slightly moving up into the de jure quadrant.

Comparing the Athens aggregate score with the average scores from the two previous cases, Ur, (Chapter 4) and Thebes (Chapter 5) show the average scores of 39/65 and the total Athens score of 32/46. This places Athens in the liberal/de facto quadrant



with the previous average in the liberal/de jure quadrant. The relationship score comparisons (47/67 and 33/47) of the previous average and the current Athens score shows Athens in the liberal/de facto quadrant compared to the average of the previous scores in the liberal/de jure quadrant. In the governance sphere comparison (0/9 and 0/0), the scores are almost identically matched with the average score exhibiting a slightly more de jure institutional presence and all three cases at the maximum liberal market score. The education sphere scores comparison (31/68 and 10/10) show a wide difference between Athens and the average score of the previous cases with Athens firmly in the liberal de facto quadrant and the average much further toward a controlled market type and solid de jure score resulting in a liberal/de jure score. The integration sphere comparison (63/100 and 67/100) shows a near identical match. Athens demonstrates a very slightly more controlled market approach to redistribution, but all three cases score the highest possible on the institutionalization of the sphere.

The comparisons demonstrate a distinct heterogeneity in the capital flows through socioeconomic classes. Unskilled workers are in different quadrants with the average score of 44/56 in the liberal/de jure quadrant and Athens at 33/44 both liberal/de facto quadrant. Skilled workers score 45/57 and 30/40 falling into separate quadrants with the average in the liberal/de jure quadrant and Athens in the liberal/de facto quadrant. The professional class scores at 35/67 and 30/40 with the average in the liberal/de jure quadrant and Athens in the liberal/de facto quadrant. Although the merchant class scores are very close with the market scores identical in the liberal market type quadrant at 30, the institutional legitimacy scores are slightly different with the average at 55, and Athens slightly higher at 60, with both in the de jure sector. The elite classes of the two

economies show a wide disparity of scores with the average at 41/82, and Athens at 36/45. The average elite score lands in the liberal/ de jure quadrant, with Athens in the liberal/de facto quadrant.

### Proxies

Proxy measures identified as attractive features in each of the economic spheres are the percentage (or predominance) of slavery in the population as a proxy for relationships, the existence of a financial market as a proxy for governance, the literate percentage of the population as a proxy for education, and large-scale manufacturing as a proxy for integration.

Slavery in Athens is estimated to compromise between 40 and 50 percent of the total population (Bresson 2016). This figure demonstrates the importance of this population in the productivity of the Athenian economy.

The practice of private borrowing and lending is prevalent in Athens based on the large numbers of receipts discovered for this type of transaction (see the Governance section in this Chapter). There are no indications that this practice was institutionalized in any way.

Circumstantial evidence points toward widespread literacy in classical Athens (Griffith 2001; D'Anjour 2013), but literacy was not the golden key to success that it was in Ur III and Thebes (Morgan 1999). Most evidence point toward fee-based education, implying that literacy was only available to the middle and upper-income groups.

The existence of large-scale industry in Athens is widely attested (see skilled production in the Relationships section, this Chapter). This industry is wide-scale and

mostly unregulated and occurs as market-driven individual entrepreneurial productivity.

Elite activity in this sector is primarily in the form of capital investment.

Institutional Focus	Sphere of Influence								Category Totals	Category Percents		
	Relationships		Governance		Education		Integration					
Unskilled Labor	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	0	0	0	0			1	1	1	1	33%	33%
Consumption	0	0	0	0	0	0	0	1	0	1	0%	25%
Totals	1	1	0	0	0	0	2	3	3	4	33%	44%
Skilled Labor	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	0	0	0	0	0	0	1	1	1	1	25%	25%
Consumption	0	0	0	0	0	0	0	1	0	1	0%	25%
Totals	1	1	0	0	0	0	2	3	3	4	30%	40%
Professional Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	0	0	0	0	0	0	1	1	1	1	25%	25%
Consumption	0	0	0	0	0	0	0	1	0	1	0%	25%
Totals	1	1	0	0	0	0	2	3	3	4	30%	40%
Merchant Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1					1	1	2	2	100%	100%
Production	0	1	0	0	0	0	1	1	1	2	25%	50%
Consumption	0	1	0	0	0	0	0	1	0	2	0%	50%
Totals	1	3	0	0	0	0	2	3	3	6	30%	60%
Elite Class	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Taxes	1	1			1	1	1	1	3	3	100%	100%
Production	0	0	0	0	0	0	1	1	1	1	25%	25%
Consumption	0	0	0	0	0	0	0	1	0	1	0%	25%
Totals	1	1	0	0	1	1	2	3	4	5	36%	45%
Case Totals	5	7	0	0	1	1	10	15	16	23	32%	46%
Total Count	15	15	10	10	10	10	15	15	50	50		
Percentage Score	33%	47%	0%	0%	10%	10%	67%	100%	32%	46%		

Table 3 Case 3 scores

In addition to the typological score, the social stratification score is based on a count of the number of changes in the economic treatment of the different classes in the transactions within the economic spheres. For Thebes, these scores are taxation 1, production 0, and consumption 0 in the market type category, and taxation 1, production 3, and consumption 3 in the institutional legitimacy category.

The remaining typological classification and proxy analyses based on this data will be conducted in the discussions of comparative case study analysis presented in Chapter 7, where the data scores of all three cases can be compared and a significant quantitative analysis can be performed. Concluding remarks on this and the analyses to follow will be included in Chapter 8.

## CHAPTER VII – COMPARATIVE CASE STUDY ANALYSIS

### Introduction

The cases under consideration in this dissertation, Ur III, Thebes, and Athens, provide a wide range of components for comparative analysis. The individual case studies analyzed the economic components of the ancient city/states in terms of the three flows of capital, production of capital, consumption of capital, and extraction of capital in the form of taxes. These flows are categorized into five distinct socioeconomic groups: unskilled workers, skilled workers, professionals, merchants, and elites. The capital flows are further categorized into four economic spheres representing labor capital (relationships), financial capital (governance), human capital (education), and redistributed capital (integration). Each sphere contains the five socioeconomic classes, and each class contains the three capital flows measured across two dimensions, market type, and institutional legitimacy. The market type is measured by the amount of market disruption of state intervention. A liberal market score indicates no state intervention, with a market driven by economic forces of supply, demand, and value, and a controlled market score indicates some level of institutional state control, disrupting the unregulated market. Institutional legitimacy scores measure the source of institutional legitimacy of the component. This score ranges from de facto, in which the institutional controls over the capital flow are entirely social in nature, to de jure, where state institutionalization governs the fundamental transaction in some form. The scores are dichotomous, with 0 for liberal and 1 for controlled in the market type dimension, 0 for de facto, and 1 for de jure in the institutional legitimacy dimension. Overall scores are calculated as a

percentage of the total actual score divided by each class', economic sphere, capital flow, and measurement dimension, with corresponding totals for each. The scores are then used to rank the economy of the case study as a typology, ranging from a liberal to controlled market economy on the x-axis, and a de facto to de jure institutional legitimacy on the y-axis (see Figure 1). For each economic sphere, a proxy has been chosen to provide a dependent variable for further analysis: the percentage of slavery in the population for the relationship sphere, the availability of financial capital in the economy for the governance sphere, the literate percentage of the population for the education sphere, and the prevalence of large-scale industry for the integration sphere. The case scores will provide the independent variables for the analysis.

### Organization

This chapter organizes, compares, and analyzes the typologies derived from the scores of the individual cases. Each comparison includes a brief discussion of the object of comparison, including a comparison of the component scores of those components as an explanatory factor in the overall score. The validity of the hypothesis will be discussed, and further analysis will be conducted on whether the combined scores have any relationship with the proxies chosen to represent the outputs of the individual economic spheres. The analyses will be conducted using the proxies mentioned above as the dependent variables and both the raw case data and the data derived from the count of changes between the socioeconomic classes as a measure of social stratification.

The remainder of the chapter is organized as follows. After the review and introduction, a comparison of the cases based on their scores and typologies will follow, with a discussion of the similarities and differences noted between the cases. The case

review will begin with a section discussing the overall case scores, followed by sections for each of the economic spheres. The next section will discuss the data and the calculation of the socioeconomic stratification levels for use as continuous independent variables. This section will be followed by a section on analyses of the proxy outcomes on the case scores and socioeconomic scores, including a discussion of the findings for each test. The chapter will close with a section discussing the findings of the research.

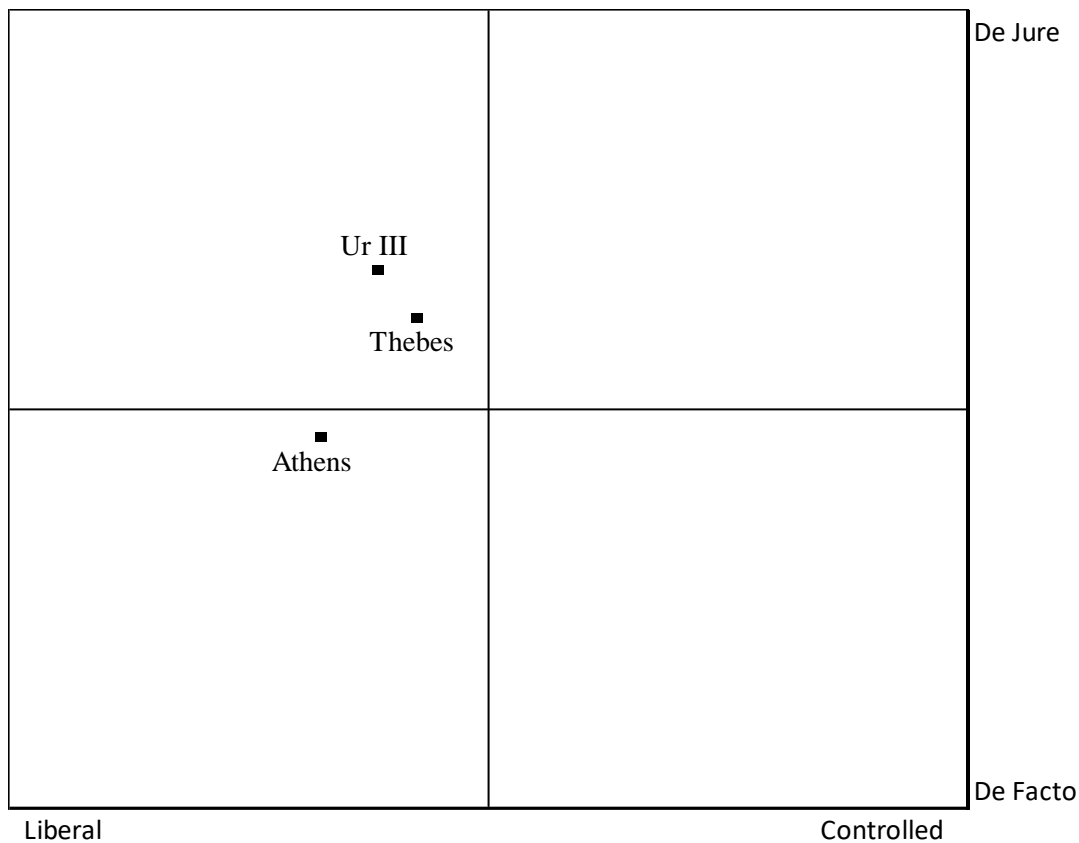
### Comparative Scores

<b>Totals</b>	Relationships		Governance		Education		Integration		Totals	
<b>Case</b>	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
<b>Ur III</b>	53%	73%	0%	18%	22%	67%	53%	100%	36%	68%
<b>Thebes</b>	40%	60%	0%	0%	40%	70%	73%	100%	42%	62%
<b>Athens</b>	33%	47%	0%	0%	10%	10%	67%	100%	32%	46%

Table 4 *Comparative case total scores by class*

The initial case comparison shows Ur and Thebes in the Liberal Market and De Jure Institutional quadrant. Athens lies in the Liberal Market and De Facto Institutional quadrant. This equates to scores of 36/68 for Ur III, 42/62 for Thebes, and 32/46 for Athens. These scores show a range of 32-42 for market typology and 46-68 for institutional typology. The typology matrix for all cases is illustrated in Figure 12.

The total scores are a calculated sum of all four economic spheres in the research framework, for all five economic classes. Each class is scored in the three economic capital flows of production, consumption, and extraction. Scores record the type of market control and the institutional legitimacy, 0 for a liberal market 1 for a controlled market and 0 for a de facto institutional legitimacy, and 1 for a de jure institutional legitimacy. Percentages are calculated by dividing the sum of the scores by the maximum possible score.



*Figure 12. Typology matrix by case*

To understand how the total scores were reached, it is necessary to review the scores for the individual economic spheres to further compare and differentiate the cases. Table 2 shows the total scores for each case by economic sphere. Table 3 illustrates the total score by economic class for each case.



Case Totals		Ur III		Thebes		Athens	
Class	Capital Flow Type	T1	T2	T1	T2	T1	T2
Unskilled Labor	Taxes	100%	100%	100%	100%	100%	100%
	Production	67%	67%	67%	67%	33%	33%
	Consumption	0%	25%	0%	25%	0%	25%
	Class Score	44%	56%	44%	56%	33%	44%
Skilled Labor	Taxes	100%	100%	100%	100%	100%	100%
	Production	75%	50%	25%	75%	25%	25%
	Consumption	25%	25%	0%	50%	0%	25%
	Class Score	60%	50%	30%	64%	30%	40%
Professional	Taxes	50%	100%	100%	100%	100%	100%
	Production	50%	75%	50%	75%	25%	25%
	Consumption	0%	50%	0%	50%	0%	25%
	Class Score	30%	70%	40%	64%	30%	40%
Merchant	Taxes	100%	100%	100%	100%	100%	100%
	Production	25%	75%	25%	25%	25%	50%
	Consumption	0%	50%	0%	25%	0%	50%
	Class Score	30%	70%	30%	40%	30%	60%
Elite	Taxes	0%	67%	100%	100%	100%	100%
	Production	0%	100%	50%	75%	25%	25%
	Consumption	50%	100%	50%	50%	0%	25%
	Class Score	18%	91%	64%	73%	36%	45%
Case Score		36%	68%	42%	62%	32%	46%

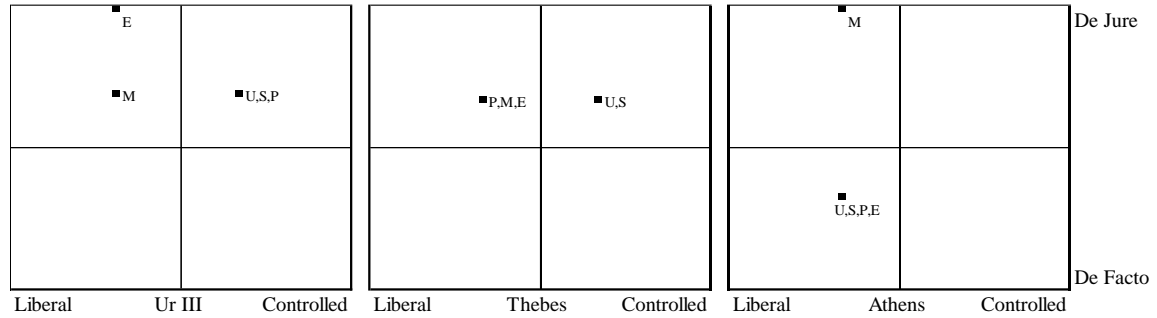
Table 5 *Total Scores by Economic Class*

### *Relationships*

The relationships economic sphere measures the market type and institutional legitimacy of labor capital in the different economic classes of the research framework.

The scores range from 33-53 for market type and 47-73 for institutional legitimacy. The score detail for the relationship sphere is illustrated in Table 3. The comparative

relationship score matrices are illustrated in Figures 13 and 14. The scores indicate that



*Figure 13. Relationships class comparison*

the cases demonstrate three separate typologies within the relationship sphere. Ur III is situated just into the controlled market type and midway up the de jure institutional legitimacy quadrant. Thebes is slightly more into the liberal market type and lower in the de jure institutional legitimacy quadrant. Athens falls just into the liberal market type and de facto institutional legitimacy quadrant. The typology designations for the relationship sphere are that Ur is a controlled/de jure type, Thebes is a liberal/de jure type, and Athens is a liberal/de facto type.

#### *Relationship Taxation*

The taxation score is 1/1 for all classes in all three cases, with the exception of the Ur III elite class, which has a score of 0/1. In general, the 1/1 score for taxation is to be expected as the extractive functions of the state are rarely based on ad hoc market conditions or rely on sociocultural pressure to ensure that taxes will be paid. The flexibility of the taxation of the elite in Ur III achieves a score of liberal market type due to the relationship of the ruling class with the powerful elite and the need for this class to maintain good relations through concessions in taxation (Oppenheim 1977). Relationship taxation in Thebes receives a score of 1/1 for all classes. This level of control is

indicative of the centralized management of the Egyptian economy (Mayshar 2017). The relationship taxation score for Athens is also 1/1 for all classes. In this case, the heaviest Athenian tax burden was not placed on the working classes, but on the wealthy (Bresson 2016). Each class was taxed based on specific institutional rules and without regard for economic conditions.

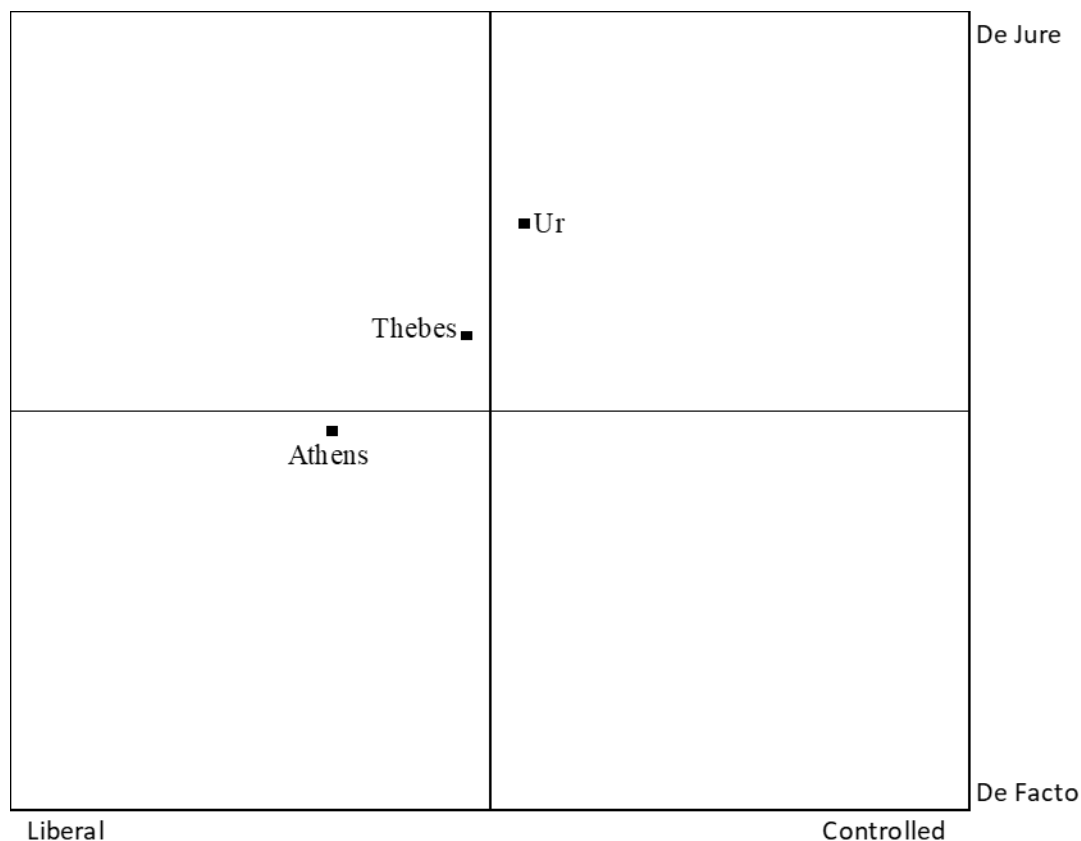
Relationship Scores per Case		Ur III		Thebes		Athens	
Class	Capital Flow Type	T1	T2	T1	T2	T1	T2
Unskilled Labor	Taxes	1	1	1	1	1	1
	Production	1	1	1	1	0	0
	Consumption	0	0	0	0	0	0
	Class Score	67%	67%	67%	67%	33%	33%
Skilled Labor	Taxes	1	1	1	1	1	1
	Production	1	1	1	1	0	0
	Consumption	0	0	0	0	0	0
	Class Score	67%	67%	67%	67%	33%	33%
Pro-fessional	Taxes	1	1	1	1	1	1
	Production	1	1	0	1	0	0
	Consumption	0	0	0	0	0	0
	Class Score	67%	67%	33%	67%	33%	33%
Merchant	Taxes	1	1	1	1	1	1
	Production	0	1	0	0	0	1
	Consumption	0	0	0	0	0	1
	Class Score	33%	67%	33%	33%	33%	100%
Elite	Taxes	0	1	1	1	1	1
	Production	0	1	0	1	0	0
	Consumption	1	1	0	0	0	0
	Class Score	33%	100%	33%	67%	33%	33%
<b>Case Score</b>		<b>53%</b>	<b>73%</b>	<b>47%</b>	<b>60%</b>	<b>33%</b>	<b>47%</b>

Table 6 Relationship Scores by Economic Class

#### *Relationship Production*

The production functions of unskilled labor for the three cases are diverse. For unskilled labor, the scores are Ur III 1/1, Thebes 1/1, and Athens 0/0. Ur III and Thebes indicate a highly controlled and institutionalized labor force of unskilled workers that

provide a great deal of labor for the state in the form of corvee labor. The highly institutionalized nature of these economies also indicates that the institutional economy was the primary employer in both of these societies (Mayshar 2017). Unskilled workers had few opportunities to follow a market-driven labor market and little job mobility. Athens demonstrates a fully liberal job market with no corvee labor of the lower classes, and the opportunity for the unskilled class to pursue any market-based opportunities available (Hudson 2000).



*Figure 14. Relationships Case Comparison Matrix*

The production scores for skilled labor and the professional class are also diverse, with Ur III 1/1, Thebes 0/1, and Athens 0/0 for both classes. Again, the institutional dominance of the economy is demonstrated by the controlled market and de jure legitimacy of skilled and professional workers in Ur III. Thebes is a slightly more liberal

market in this respect, and these workers are unrestricted in the pursuit of market opportunities for their goods, although still institutionally legitimized. Athens maintains an unconstrained labor market for skilled and professional workers.

The productive activities of the merchant class in the relationship sphere are more liberal across all three cases with scores Ur III 0/1, Thebes 0/0, and Athens 0/1. The Ur III score is reflective of the freedom of the merchant to take advantage of market conditions, even when in the employ of an institution (Orlin 2007). As an agent of the institutional economy, the Ur III merchant is legitimized by de jure institutional rules. For Thebes, the existence of the merchant class is inferred through a modern interpretation of archaeological evidence, but no institutional presence of this class can be determined (Garcia 2021). It is assumed that all merchant activity in the New Kingdom is unrestricted, either by market controls or institutionalization, resulting in a liberal and de facto score.

The production subcategory of the elite class in the relationship sphere is also more liberal, with scores Ur III 0/1, Thebes 0/1, and Athens 0/0. For all three cases, the productive activity of this class is unrestricted, and any production is ostensibly undertaken with market conditions as a motivating factor. For both Ur III and Thebes, the productive activities of the elite class are institutionally legitimized (Mayshar 2017; Svizzero and Tisdale 2019). The egalitarian nature of the Athenian economy relegates the legitimization of the elite class to social recognition (Kron 2016).

### *Relationship Consumption*

Consumption in the relationship sphere is largely unregulated. For the Ur III case, the unskilled labor, skilled labor, professional, and merchant classes all receive a score of 0/0, indicating a market-driven, unregulated consumption function for most classes, with

the only constraints consisting of those imposed by societal rules. For the Ur III elite class, as the primary producer of goods (Algaze 2008), the tightly controlled and institutional nature of consumption of capital receives a score of 1/1. In Thebes, the relationship consumption score for all classes is 0/0, indicating no regulation of individual consumption by the state. For Athens all classes except the merchant class receive a score of 0/0, also indicating an unregulated market. The Athenian merchant score is 0/1. This is due to the institutional requirements for merchants that import goods to have an import license (Bresson 2016).

### *Governance*

The governance sphere relates to the economic production, consumption, and extraction of financial capital. The scores range from 0-18, with only Ur III achieving a non-zero score in the institutional legitimacy dimension. This equates to a typology of liberal/de facto for all cases. Each case demonstrates a strong tendency in this quadrant, with all market-type scores at 0, and institutional legitimacy scores at 0 for Thebes and Athens. The score detail across cases is illustrated in Table 5. Figure 15 compares the governance score by class. Figure 16 demonstrates the convergence of these economies.

### *Governance Taxation*

The only case with any form of taxation with regard to financial capital is the elite class in the Ur III case. In this case, the interest on personal loans to the king can be used to defray tax liability based on individual agreements between the parties (Steinkeller 2013). There is no official regulation of this practice, and the terms are strictly market-based, and not mandated by the ruler, resulting in a score of 0/0. Governance taxation of

all other classes is null. There is no reference to taxation on financial instruments separate from normal taxes.

Governance Scores per Case		Ur III		Thebes		Athens	
Class	Capital Flow Type	T1	T2	T1	T2	T1	T2
Unskilled Labor	Taxes						
	Production	0	0	0	0	0	0
	Consumption	0	0	0	0	0	0
	Class Score	0%	0%	0%	0%	0%	0%
Skilled Labor	Taxes						
	Production	0	0	0	0	0	0
	Consumption	0	0	0	0	0	0
	Class Score	0%	0%	0%	0%	0%	0%
Professional	Taxes						
	Production	0	0	0	0	0	0
	Consumption	0	0	0	0	0	0
	Class Score	0%	0%	0%	0%	0%	0%
Merchant	Taxes						
	Production	0	0	0	0	0	0
	Consumption	0	0	0	0	0	0
	Class Score	0%	0%	0%	0%	0%	0%
Elite	Taxes	0	0				
	Production	0	1	0	0	0	0
	Consumption	0	1	0	0	0	0
	Class Score	0%	67%	0%	0%	0%	0%

Table 7 Governance Case Scores by Economic Class

E								De Jure
U.S.P.M			U.S.P.M,E			U.S.P,M,E		De Facto
Liberal	Ur III	Controlled	Liberal	Thebes	Controlled	Liberal	Athens	Controlled

Figure 15. Governance class comparison

### *Governance Production*

Production of financial capital is uniform across the cases. The unregulated nature of loan production spans all classes. Anyone with capital to lend is eligible to produce financial capital. For Ur III, the score for all classes except the elite is 0/0. The elite class has a score of 0/1, indicating that the provision of financial capital was market-driven, and institutional capital was legitimized by the institution. In Thebes and Athens, the governance score for all classes is 0/0, indicating that in these economies, the provision of financial capital was completely unregulated by the state, and entirely governed by market demand.

### *Governance Consumption*

The consumption of financial capital mirrors the production score in the previous paragraph. Ur III scores 0/0 for all classes except the elite. The elite class scores 0/1, reflecting the official legitimacy of the institutional nature of the elite class in the economy. For Thebes and Athens, all classes receive a score of 0/0, indicating that any individual can consume financial capital without official regulation.

### *Education*

The education economic sphere relates to the production, consumption, and extraction of human capital in the economy. The measures for this sphere are related to the production, consumption, and taxation of education. The results varied among the cases. The scores are Ur III 33/67, Thebes 40/70, and Athens 10/10, resulting in typological classifications of liberal/de jure for Ur and Thebes, and liber/de facto for Athens. The score detail for the education sphere is illustrated in Table 6, and the score



typology matrix is illustrated in Figure 17. Side-by-side case comparisons are illustrated in Figure 18.

		De Jure
<div> <div>■</div> <div>Ur</div> <div>Thebes,</div> <div>Athens</div> </div>		De Facto
Liberal	Controlled	

*Figure 16. Governance case comparison matrix*

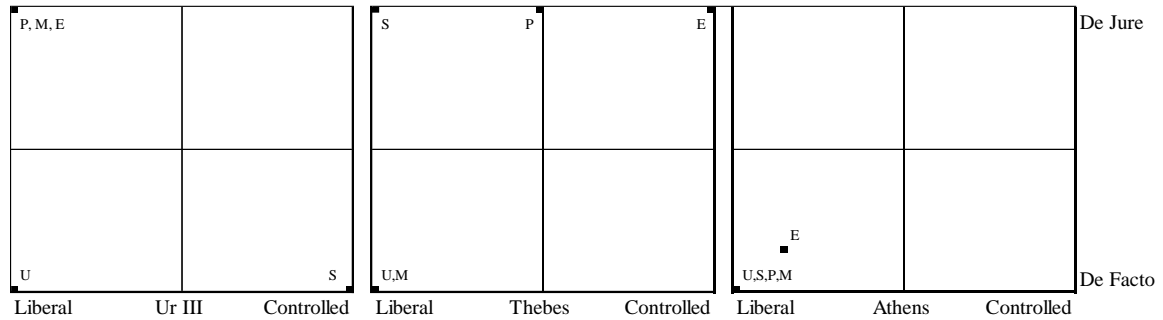
Education Scores per Case		Ur III		Thebes		Athens	
Class	Capital Flow Type	T1	T2	T1	T2	T1	T2
Unskilled Labor	Taxes						
	Production						
	Consumption	0	0	0	0	0	0
	Class Score	0%	0%	0%	0%	0%	0%
Skilled Labor	Taxes						
	Production	1	0	0	1	0	0
	Consumption	1	0	0	1	0	0
	Class Score	100%	0%	0%	100%	0%	0%
Professional	Taxes						
	Production	0	1	1	1	0	0
	Consumption	0	1	0	1	0	0
	Class Score	0%	100%	50%	100%	0%	0%
Merchant	Taxes						
	Production	0	1	0	0	0	0
	Consumption	0	1	0	0	0	0
	Class Score	0%	100%	0%	0%	0%	0%
Elite	Taxes			1	1	1	1
	Production	0	1	1	1	0	0
	Consumption	0	1	1	1	0	0
	Class Score	0%	100%	100%	100%	33%	33%
Case Score		33%	67%	40%	70%	10%	10%

Table 8 *Education case scores by class*

#### *Education Production*

The production of education for unskilled labor in all cases is null, supporting the logic that an unskilled worker does not possess the requisite skillset to provide training. The remaining class scores are diverse among the cases. Ur III skilled class education production is scored 1/0. This reflects the controlled nature of both the production and consumption of skilled crafts training (Postgate 1994). Skilled training in Ur III was primarily kinship-based, creating a highly restrictive and controlled environment for both production and consumption. The non-institutional nature of the training results in a de

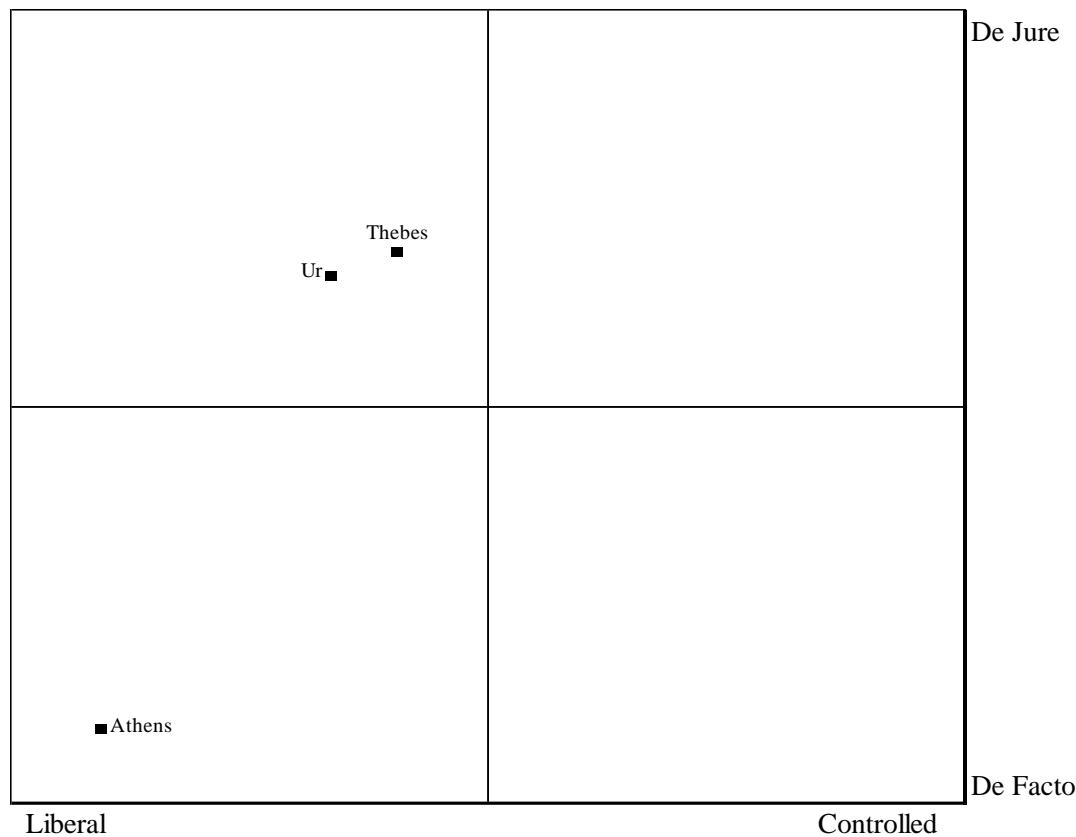
facto score. In Thebes, the skilled class receives a score of 0/0. For the skilled worker, there are no restrictions on the provision of training, especially where literacy is not a requirement (Baines 1983). In many cases skilled craftsmen and artisans must also be



*Figure 17. Education class comparison*

literate, requiring elementary scribal training. The score for the provision of training by the skilled labor class in Thebes is 0,1. The legitimacy score reflects the institutional nature of the scribal curriculum. In Athens, the education score for all classes is 0/0. Education in Athens is private and delivered on a fee basis. All education is open to all students who can afford the cost, and in some cases, there appears to have been publicly provided education in early childhood education (Burns 1981).

For the Ur III professional, merchant, and elite classes, education production receives a score of 0/1. This reflects the ability of a scribe of any of these classes to set up a private school based on market demand (Robson 2001). Institutional legitimacy remains de jure due to the highly institutionalized curriculum of a scribal school. In Thebes, the score for professional production of education is 1/1. This reflects the institutional nature of the scribal training provided by the temple economy (Trigger 2003). This is a tightly controlled market and de jure institution.



*Figure 18. Education case comparison*

The merchant class in Thebes receives a score of 0/0. It appears that the merchant class was able to provide its own fee-based literacy training in the merchant community based on market demand. The non-institutional nature of the training results in a de facto legitimacy score. The elite provision of training in Thebes receives a score of 1/1. This reflects the location of the elite in the temple economy, resulting in highly restrictive market conditions and high institutional control of the provision of training by this class.

### *Education Consumption*

For Ur III, Thebes, and Athens, the unskilled labor class consumption of education score is 0/0. This demonstrates the ability of the unskilled worker to learn a skill if training is offered and he can afford it. However unlikely, this reflects a liberal

market and de facto institutional legitimacy. In Athens, the consumption score for all classes is 0/0 reflecting the egalitarian, market-based nature of education in that society.

The Ur III consumption of education score for skilled labor is 1/0. This indicates the controlled entry of this type of training by the kinship group that offers it, which (Parker 2012). is reinforced by an institutional legitimacy score of de facto. In Thebes the skilled labor consumption score is 0/1, reflecting the liberal market score for consumption of skills training, and the highly institutionalized nature of the curriculum (Trigger 2003).

For the Ur III and Theban professional classes, consumption of education scored 0/1. This reflects a market-driven acceptance rate for scribal education (Meskell 2002; Orlin 2007). The highly institutionalized curriculum in both societies results in a de jure legitimacy score. The Ur III merchant class and elite classes are scored 0/1. It is assumed that basic literacy was a requirement for the merchant class, and it is assumed that this was in the form of elementary scribal training delivered through kinship or professional merchant associations based on demand and the ability to pay (Postgate 1994). The highly institutional nature of scribal training is due to the highly institutionalized scribal curriculum, resulting in a legitimacy score of de jure. The Theban merchant class education consumption score is 0/0, indicating a market-driven availability and a de facto legitimacy. The Theban elite education consumption score is 1/1, reflecting the temple-based training of this class and the controlled market. Institutional legitimacy remains de jure due to the institutionalized nature of the scribal training curriculum.

## Integration

Integration Scores per Case		Ur III		Thebes		Athens	
Class	Capital Flow Type	T1	T2	T1	T2	T1	T2
Unskilled Labor	Taxes	1	1	1	1	1	1
	Production	1	1	1	1	1	1
	Consumption	0	1	0	1	0	1
	Class Score	67%	100%	67%	100%	67%	100%
Skilled Labor	Taxes	1	1	1	1	1	1
	Production	1	1	1	1	1	1
	Consumption	0	1	0	1	0	1
	Class Score	67%	100%	67%	100%	67%	100%
Professional	Taxes	0	1	1	1	1	1
	Production	1	1	1	1	1	1
	Consumption	0	1	0	1	0	1
	Class Score	33%	100%	67%	100%	67%	100%
Merchant	Taxes	1	1	1	1	1	1
	Production	1	1	1	1	1	1
	Consumption	0	1	0	1	0	1
	Class Score	67%	100%	67%	100%	67%	100%
Elite	Taxes	0	1	1	1	1	1
	Production	0	1	1	1	1	1
	Consumption	1	1	1	1	0	1
	Class Score	33%	100%	100%	100%	67%	100%
Case Score		53%	100%	73%	100%	67%	100%

Table 9 *Integration case scores by class*

The Integration economic sphere in this analysis is the production, consumption, and extraction of public goods. The scores range from 53-72 for market type, and from 93-100 for institutional legitimacy. These scores indicate a highly controlled and institutionalized economic sphere. Individual scores are Ur III 53/100, Thebes 73/100, and Athens 73/93. All of these cases fall into the controlled/de jure quadrant, with Ur III demonstrating a lower market control score than either Thebes or Athens, and all three exhibiting a strong de jure institutional presence. Athens demonstrates a slightly lower

institutional legitimacy score but still remains quite high in this dimension. Score detail for all cases and classes in this economic sphere can be seen in Table 7. The comparative matrix is illustrated in Figure 19.

Liberal	Ur III	Controlled	Liberal	Thebes	Controlled	Liberal	Athens	Controlled	De Jure
									De Facto

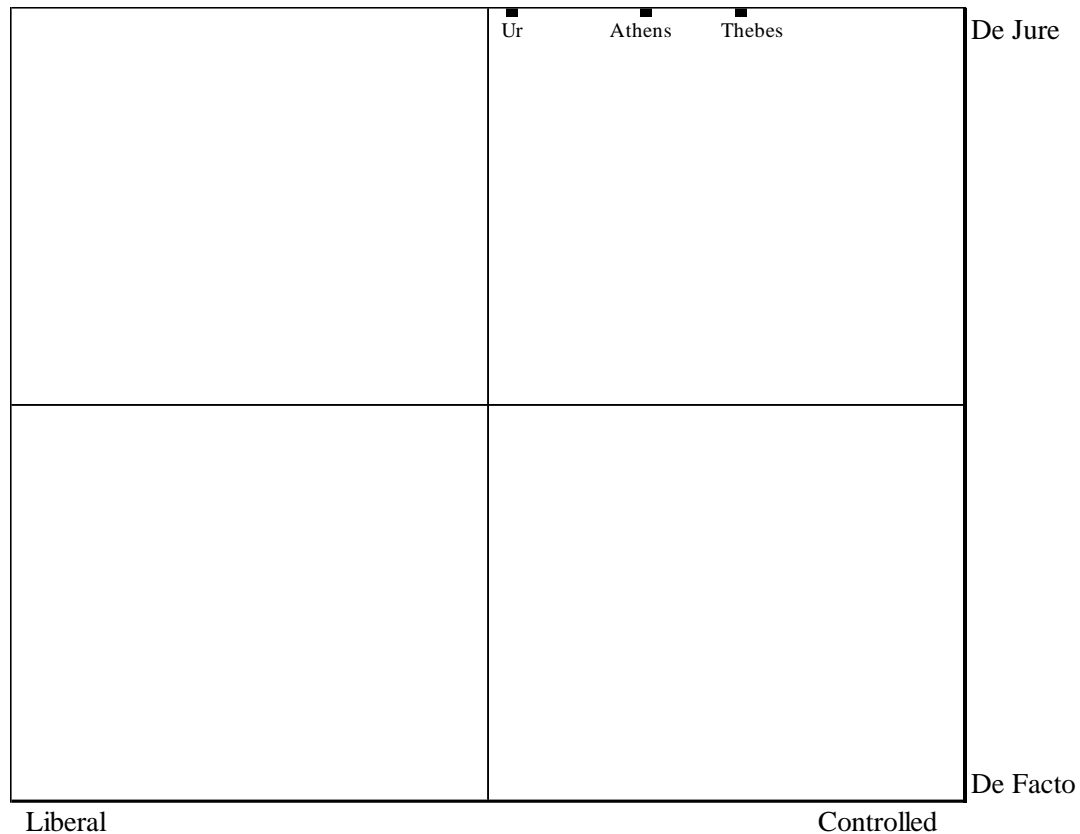
Figure 19. Integration case comparison

### Integration Taxation

Taxation of public goods is scored at 1/1 for the skilled and unskilled classes for all three cases. For Ur III this tax is in the form of required maintenance on public works, such as irrigation canals, which the workers are required to maintain (Steinkeller 2013). For Thebes, this score extends to both professional and merchant classes. The requirements of taxation are similar to Ur III. Individuals were required to provide taxes as mandated by the temple economies to provide labor or materials for public edifices. The imposition of these requirements could be arbitrary without regard to market conditions (Katary 2011). In Athens, the score extends through professional, merchant, and elite classes. This tax is in the form of the fees charged to use public amenities such as the marketplace or the port facilities (Bresson 2016). These fees were applicable to all classes.

The professional and elite classes in Ur III score 0/1 for integration taxation. This score reflects the ability of these classes to hire workers to perform their obligatory labor

contribution, but these individuals are hired based on market constraints. These classes could choose to purchase labor when demand and cost were low (Steinkeller 2013). The merchant class receives a score of 1/1. This score reflects a similar score in Athens whereby taxation on public goods comes in the form of fixed tolls and import/export fees (Bresson 2016).



*Figure 20. Integration case comparison*

#### *Integration Production*

Production score for the integration sphere are 1/1 for Ur III skilled, unskilled, professional, and merchant classes. This reflects the obligation of non-elite citizens to be available for conscription as labor in the construction of public works projects (Maekawa 1987). This institutionalized requirement is without regard for economic conditions. The score for all classes below elite status in Thebes is also 1/1. Egyptian citizens were also



institutionally required to provide labor for the construction of public projects with no regard for economic conditions (Katary 2011). The score for Athenian citizens in the four lower classes is also 1/1. For the Athenian citizen, this score is based on the institutional requirement to serve in the military at his own expense, without regard to economic conditions (Durant 1939).

The elite class in Ur III has an integration production score of 0/1. This score indicates the ability to provide public goods in the form of rations redistributed from in-kind tax collections. These goods were allocated dependent on supply and distributed according to need (Maekawa 1987). In Thebes, the elite class scores 1/1. This score illustrates the control of production and redistribution of public goods exercised by the central bureaucracy (Romer 1984). In Greece, the score for elite production of public goods is 1/1. This institutional requirement is based on the requirements of the wealthiest Athenian citizens to provide a substantial portion of the public goods of the city in the form of temples and festivals, and also in the provision of warships (McCannon 2017).

#### *Integration Consumption*

Integration consumption scores for unskilled labor, skilled labor, professional, and merchant class are 0/1 for all cases. Those scores reflect the expected market type for public goods consumption as unrestricted, and the institutional legitimacy of these goods as de jure, reflecting their official origins. For Ur III and Thebes, the elite class achieves a consumption score of 1/1. This reflects the controlled nature of the institutional market with respect to the elite class as both producers and consumers of public goods (Barjamovic 2019; Grandet 2014). In Athens, the elite receives a score of 0/1 reflecting

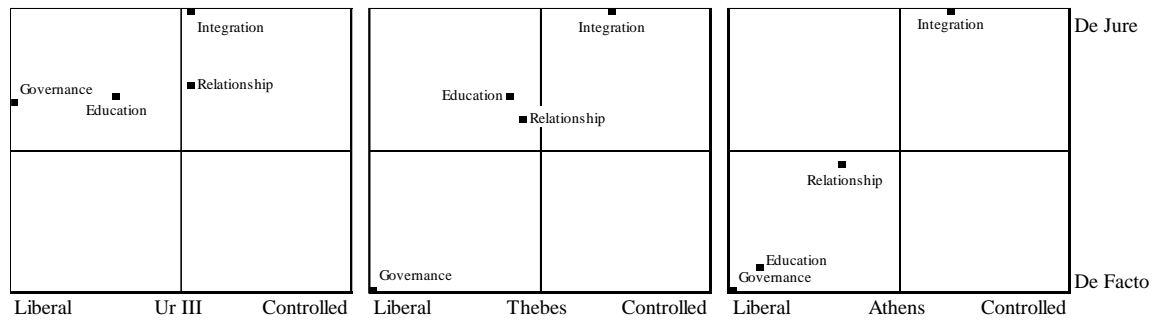
the egalitarian nature of the Greek society in which all citizens' consumption of public goods is unrestricted.

### Discussion

From a purely typological perspective, within this group of cases and in the context of the research framework, there are only two typologies identified – liberal/de jure, and liberal/de facto. Two societies fall into the former quadrant, Ur III and Thebes, while only Athens falls into the latter. If the scales of the typology were absolute, the casual observer may conclude that Ur and Thebes were free-market economies with a highly institutionalized bureaucracy, while Athens was a free-market economy with very little centralized authority. The matrix in Figure 12 tells a different story. Instead of extremes in any dimension, the cases are clustered close to the center. From this perspective, it appears that relatively minor changes in the measurements of capital flow could shift any of the cases into any other quadrant. Ur is within 14 points of becoming a controlled economy, Thebes is 8 points away, and Athens is the furthest at 18. For institutional legitimacy, Ur is 12 points away, and Thebes is 12 points from becoming a de facto type. Athens is 4 points away from becoming de jure.

Looking at the individual cases in terms of the scores in their respective economic spheres shows a greater divergence. The relationship sphere (labor capital) illustrates a roughly centralized score for all three cases. Ur III is 3 points into the controlled market quadrant, while Thebes and Athens fall into the liberal market side by 10 and 17 points respectively. Ur is approximately halfway up the de jure institutional legitimacy quadrant with 23 points. Thebes is in the de jure quadrant by 10 points, and Athens is just over the de facto line by 3 points. The governance sphere is far less diverse. This sphere indicates

a strong free market and non-institutional environment for all three cases, with a liberal market score of 0 (50 points inside the liberal quadrant), and only Ur III with a non-zero in institutional legitimacy, with a score of 18 (32 points into the de facto quadrant).



*Figure 21. Case comparison by economic sphere*

The education sphere shows more heterogeneity. Ur III and Thebes are closely positioned in the liberal market quadrant by 17 and 10 points, respectively, while Athens is firmly in the liberal market quadrant by 40 points. Ur III and Thebes are also relatively closely matched in institutional legitimacy in the de jure quadrant by 17 and 20 points, respectively. Again, Athens remains firmly entrenched in the de facto quadrant by 40 points. The integration sphere also shows highly clustered cases. Ur falls slightly into the controlled market quadrant by 3 points, while Thebes and Athens are firmly situated in the controlled market quadrant by 23 and 17 points, respectively. All three cases have the maximum possible de jure institutional legitimacy score.

### Test for Social Stratification

One of the outcomes of this research is the accumulation of quantitative data. This data can be used to validate some of the assumptions required for the design of the research framework. The first of these is the translation of the Childean criteria of an ancient city into economic classes. Measuring economic stratification can be done through nonparametric analysis. A simple test for rating the level of stratification in a

society is the Runs test (Naghshpour 2016a). The Runs test measures the number of times a variable changes in a sample. The data set created by measuring types of capital flow in different economic classes and in different economic spheres results in a sizable sample of dichotomous data. This type of data is perfectly suited to understanding the number of changes within a sample, especially when the sample is differentiated by the object of interest, in this case, the economic class of the actor. Recall that the classes are divided into unskilled workers, skilled workers, professionals, merchants, and elites. Each row of the dataset corresponds to one of these classes, providing an ideal snapshot into whether classes received different treatments for the same capital flow in the economy.

The measurements of interest for the egalitarianism of a society are the zeroes, especially those that occur both in the market and institutional measures. Zero shifts in economic treatment indicate that there is no class distinction within that sphere for that economy. Increasing rates of heterogeneous treatment are the measures of a society's movement toward greater socioeconomic stratification. The measurements of change are not qualified with regard to typology. The only variable of concern is the homogeneity of the measures for that case within a specific sphere, capital flow, and type. The outcomes are taken from the individual scorecards for each case. These scorecards can be found in the chapter specific to the case: Chapter 4 for Ur III, Chapter 5 for Thebes, and Chapter 6 for Athens. A compilation of individual score changes can be found in Table 8.

Case	Sphere	Type	Tax	Prod	Cons	Case	Sphere	Type	Tax	Prod	Cons	Case	Sphere	Type	Tax	Prod	Cons
Ur	Relat	Market	1	1	1	Thebes	Relat	Market	0	1	0	Athens	Relat	Market	0	0	0
		Inst	0	2	1			Inst	0	2	0			Inst	0	2	2
	Gov	Market	0	0	0		Gov	Market	0	0	0		Gov	Market	0	0	0
		Inst	1	1	1			Inst	0	0	0			Inst	0	0	0
	Educ	Market	0	1	2		Educ	Market	1	4	1		Educ	Market	1	0	0
		Inst	0	2	1			Inst	1	3	3			Inst	1	1	0
	Int	Market	3	1	1		Int	Market	0	0	1		Int	Market	0	0	0
		Inst	0	0	0			Inst	0	0	0			Inst	0	0	0

Table 10 *Social stratification score detail*

The counts of the zeroes in the case criteria in increasing order are Ur III, total = 9; Thebes, total = 15, and Athens, total = 19. Ur III shows one entry for zeroes in both market and institutional measures, taxation for the education sphere. The institutional component of relationships taxation, all three market flows in governance, and all three institutional measures of integration are zero. Thebes shows seven categories with both market and institutional measures of zero: relationships taxation, relationships consumption, all three governance categories, and the taxation and production components of integration. Athens shows eight categories with both market and institutional measures of zero: relationship taxation, all three components of governance, education consumption, and all three components of integration.

In terms of the most changes within a measurement category, Ur III leads in this category as well with integration market taxation at 3 changes; relations institution production, education market consumption, and education institutional production at 2 changes each. All categories of relations market, relations institution consumption, all three components of governance institution, market education, production, and integration, market production and consumption show 1 change each. For Thebes, the highest number of changes occurs in education market production with 4 changes.

Education institution production and consumption score 3 each. Relationship institution production shows 2 changes, and relationship market production, education market taxation and consumption, education institution taxation, and integration market consumption all score 1 change each. In Athens, relationship institution production and consumption lead with 2 changes each. Education market taxation, and education institution taxation and production have 1 change each.

Ur III leads in the inegalitarian score with 20 changes between socioeconomic classes, followed closely by Thebes with 17 changes. Athens rates as the most egalitarian society with 7 changes between classes.

The sphere scores across all types and capital flows for each case include Ur III, tied at 6 for both relationship and education, followed closely by integration at 5. The lowest sphere score is 3 in governance. The highest sphere score for Thebes is also education at 13 changes, with governance the lowest at 0. The highest sphere score for Athens is relationship at 4, with the lowest tied between governance and integration at 0. The highest capital flow subcategory scores across all spheres and types are in production with Ur III, 8, Thebes 10, and Athens 3. The lowest subcategory scores are Ur III taxation, 5, Thebes taxation, 2, and Athens taxation and consumption, tied at 2.

The capital flow components in the analysis can be ranked as well. In the capital flow subcomponents, institutional production has the most changes at 13, followed by institutional consumption at 8, tied with market production at 8, and market taxation and consumption at 6. Institutional taxation is the lowest at 3. In the economic spheres, education leads at 22, followed by relationships at 13, integration at 6, and governance at 3. In the types, market type leads at 24 and institutional legitimacy follows at 20.

These analyses provide rank order for egalitarianism. From a case perspective, Athens has the lowest changes between socioeconomic groups at 7, Thebes at 17, and Ur III at 20. Across all cases, institutional legitimacy scores are the most egalitarian at 20 changes followed by market type with 24. Governance is the most egalitarian sphere, and taxation is the most egalitarian capital flow subcomponent.

### Proxy Tests

Economic treatment changes between classes represent a variable for determining an index of socioeconomic stratification. For the ancient society, the economic class is largely conceptual, including increasingly specialized skill sets, merchants, and elites. Modern researchers use various measurable categories to determine levels of socioeconomic status such as access to resources, environment, and asset ownership (Kolenikov and Angeles 2009), but these discrete measurements are rarely available to the historical researcher. In order to understand whether the data generated for this dissertation has any relevance to an outcome in the economic sphere, a series of proxy variables representing outcomes have been chosen. These are the prevalence of slavery for relationships, the availability of finance for governance, the literacy rate for education, and the prevalence of large-scale manufacturing for integration. Each of these proxies is evaluated in the case chapters.

#### *Relationship – Prevalence of Slavery*

For the relationships outcome proxy, the percentage of the population considered to be slaves is chosen for its obvious effect on labor capital. In the case Ur III, the prevalence of slavery is variously listed as unimportant to the economy and limited (Oppenheimer 1977), and conversely, as very important to the economy and widespread

(Algaze 2008). Either way, there is no definitive estimate with regard to the percentage of the population in Ur III that is subjected to slavery. In Thebes, this percentage is estimated at 11 percent (Shaw 2000), and in Athens, between 40-50 percent (Bresson 2016). Given the similarity shown in the typology scores between Ur and Thebes, the best estimate for the Ur percentage is probably close to that of Thebes. This is based on the close typological relationship between the two, and also on the identical scores for unskilled labor in the relationships sphere. This class is most closely related to slave labor, so the estimated percentage of slavery for Ur is 10 percent. Granted, this is simply an educated guess. Choosing the midpoint of the Athens estimate gives rates of Ur III at 10%, Thebes at 11%, and Athens at 45%. These values form the dependent variable to test the relationship between the raw scores and the calculated socioeconomic stratification measure.

Raw database labels are Proxy1 for the percentage of the population in slavery, SphCode for economic sphere (1=relationships, 2=governance, 3=educations, 4=integration), TypCode is the dimension of typology (1=market type, 2= institutional legitimacy), Tax = taxation, Prod = production, and Cons = consumption. Running a correlation test between the variables shows that production and consumption have the highest apparent correlation with slavery.

	Proxy1	SphCode	TypCode	Tax	Prod	Cons
Proxy1	1.0000					
SphCode	0.0844	1.0000				
TypCode	-0.0000	-0.0000	1.0000			
Tax	0.1981	-0.0169	0.1718	1.0000		
Prod	-0.1881	0.5388	0.2277	0.1732	1.0000	
Cons	-0.0688	0.4677	0.4770	-0.1511	0.3631	1.0000

*Figure 22. Correlation test for Proxy1*



Regressing slavery on production and consumption demonstrates that neither variable is statistically significant to the prevalence of slavery. For production and consumption both the p-values are too large, and the correlation coefficients are too small to be significant.

Source	SS	df	MS	Number of obs = 114		
Model	.127413323	2	.063706662	F( 2, 111) = 2.52		
Residual	2.80413054	111	.025262437	Prob > F = 0.0849		
Total	2.93154386	113	.025942866	R-squared = 0.0435		
				Adj R-squared = 0.0262		
				Root MSE = .15894		

Proxy1	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Prod	-.0602152	.0359848	-1.67	0.097	-.1315214	.011091
Cons	-.0128447	.0411536	-0.31	0.756	-.0943933	.0687039
_cons	.2447692	.0202292	12.10	0.000	.2046836	.2848547

*Figure 23. Proxy1 Regression on Raw Data*

Checking for a correlation between the slavery proxy and the measure of socioeconomic stratification demonstrates a possible high correlation between Proxy1 and production and consumption.

	Proxy1	Sphere	Type	Tax	Prod	Cons
Proxy1	1.0000					
Sphere	0.0000	1.0000				
Type	-0.0000	0.0000	1.0000			
Tax	-0.1325	0.2410	-0.1796	1.0000		
Prod	-0.3213	-0.1877	0.1908	0.2809	1.0000	
Cons	-0.2933	-0.0000	0.1026	0.2764	0.6459	1.0000

*Figure 24. Correlation Test on Proxy1 and Calculated Data*

Regressing Proxy1 on the Production and Consumption variables in the calculated data shows similar results as the previous regression. Neither independent variable has a high coefficient or a low enough p-value to be considered statistically significant.

Source	SS	df	MS	Number of obs = 24			
Model	.073580804	2	.036790402	F( 2, 21) =	1.38		
Residual	.561619196	21	.026743771	Prob > F =	0.2745		
				R-squared =	0.1158		
				Adj R-squared =	0.0316		
Total	.6352	23	.027617391	Root MSE =	.16354		

Proxy1	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Prod	-.0337066	.0400367	-0.84	0.409	-.1169675	.0495543
Cons	-.0294653	.0538326	-0.55	0.590	-.1414162	.0824856
_cons	.2666814	.0436652	6.11	0.000	.1758745	.3574882

*Figure 25. Regression of Proxy1 on Calculated Data*

### *Governance – Availability of Financial Capital*

In the governance sphere, the availability of financial capital is chosen as the proxy measurement for the dependent variable. In all of the cases studied, financial capital is readily available to all segments of society, with completely liberal market scores and almost complete de facto institutional legitimacy. The homogeneity of the societies in this economic sphere indicates that the dependent variable is also homogenous, rendering any tests of correlation to either raw or calculated data sets redundant.

### *Education – Literacy Rates*

In the education sphere, literacy rates as a percentage of the population have been chosen as the proxy measurement. Ur III is difficult to assess in terms of the numbers of literate, but the consensus is that due to the difficulty of the cuneiform scripts in use, the percentages were quite low (Boyes 2022). Estimates for Thebes range between 1 and 4 percent. In Athens the overall rates for Greece are estimated at between 5 and 10 percent (Baines 1983), but probably closer to 10 percent in urban Athens (Harris 1989). For this review, the lack of knowledge regarding Ur, but assuming again that it is similar to Egypt in terms of literacy, the estimated score is 1 percent. For Thebes and Athens, the higher

estimate will be chosen. For the literacy proxy, the variable Proxy3 will be populated in the databases for both raw and calculated data.

Running a raw data correlation test on Proxy3, ShpCode, TypCode, Tax, Prod, and Cons shows a correlation between taxation, production, and consumption.

	Proxy3	SphCode	TypCode	Tax	Prod	Cons
Proxy3	1.0000					
SphCode	0.0758	1.0000				
TypCode	0.0000	-0.0000	1.0000			
Tax	0.3004	-0.0169	0.1718	1.0000		
Prod	-0.2487	0.5388	0.2277	0.1732	1.0000	
Cons	-0.1382	0.4677	0.4770	-0.1511	0.3631	1.0000

*Figure 26. Correlation Test of Proxy3 with Raw Data*

Regressing Proxy3 on Tax, Prod, and Cons shows no statistically relevant correlation. Although the p-value of both taxation and production is less than the 5% threshold, the coefficients are too low to be statistically relevant. For consumption, the p-value is too high, and the coefficient is too low.

Source	SS	df	MS	Number of obs = 66		
Model	.013754699	3	.0045849	F( 3, 62) =	3.86	
Residual	.073627119	62	.001187534	Prob > F =	0.0134	
Total	.087381818	65	.001344336	R-squared =	0.1574	
				Adj R-squared =	0.1166	
				Root MSE =	.03446	

Proxy3	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Tax	.0495512	.0167381	2.96	0.004	.0160923	.08301
Prod	-.0221447	.0100883	-2.20	0.032	-.0423109	-.0019784
Cons	.0054656	.0098251	0.56	0.580	-.0141744	.0251057
_cons	.0155785	.0164171	0.95	0.346	-.0172388	.0483957

*Figure 27. Regression of Proxy3 on Raw Data*

Running a socioeconomic scores correlation test on Proxy3, Sphere, Type, Tax, Prod, and Cons show the two variables with the highest coefficients are production and consumption.

	Proxy3	Sphere	Type	Tax	Prod	Cons
Proxy3	1.0000					
Sphere	0.0000	1.0000				
Type	0.0000	0.0000	1.0000			
Tax	-0.1920	0.2410	-0.1796	1.0000		
Prod	-0.2753	-0.1877	0.1908	0.2809	1.0000	
Cons	-0.3153	-0.0000	0.1026	0.2764	0.6459	1.0000

*Figure 28. Correlation Test of Proxy 3 with Calculated Data*

Regressing Proxy3 on production and consumption demonstrates no statistically relevant correlation between the variables. For both variables, the p-value is too high and the coefficients are too low.

Source	SS	df	MS	Number of obs = 24	
Model	.003636956	2	.001818478	F( 2, 21) =	1.27
Residual	.029963044	21	.001426812	Prob > F =	0.3003
Total	.0336	23	.00146087	R-squared =	0.1082
				Adj R-squared =	0.0233
				Root MSE =	.03777

Proxy3	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Prod	-.0042114	.0092476	-0.46	0.653	-.0234429	.0150201
Cons	-.0108691	.0124342	-0.87	0.392	-.0367274	.0149892
_cons	.0600252	.0100857	5.95	0.000	.0390508	.0809997

*Figure 29. Regressing Proxy 3 on Calculated Data*

### *Integration – Manufacturing*

The final sphere is integration. The proxy chosen for this sphere is large-scale manufacturing. All of the cases exhibit this feature, so the relevance of this proxy is whether this production is entrepreneurial or institutional. In the case of Ur III and Thebes, all large-scale production is managed by the institutional temple economies (Oppenheim 1977; Katary 2011). In Athens virtually all production was entrepreneurial (Bitros and Karayiannis 2008). This distinction allows the dependent variable to differentiate between entrepreneurial production and institutional production. This variable is named Proxy4 in the database and is populated with Ur and Thebes = 0, and Athens = 1.

Testing the correlation of Proxy4 SphCode, TypCode, Tax, Prod, and Cons shows taxation, production, and consumption with relevant correlations.

	Proxy4	SphCode	TypCode	Tax	Prod	Cons
Proxy4	1.0000					
SphCode	0.0848	1.0000				
TypCode	-0.0000	-0.0000	1.0000			
Tax	0.1888	-0.0169	0.1718	1.0000		
Prod	-0.2574	0.5388	0.2277	0.1732	1.0000	
Cons	-0.1363	0.4677	0.4770	-0.1511	0.3631	1.0000

*Figure 30. Correlation Test of Proxy4 with Raw Data*

A logistic regression is appropriate for regressing Proxy4 on Prod, and Cons because of the dichotomous dependent variable, Proxy4 (Naghshpour 2016b). Note: Tax generated an error in Stata for predicting failure and was dropped from the specification. This model demonstrates that changes in Prod indicate a likelihood of affecting the type of industrial control indicated in the Proxy4 variable, although the confidence level is slightly smaller than 95%. The coefficients Cons is high enough for relevance, but the p-value is too high for a statistically relevant confidence level.

Logistic regression	Number of obs	=	114
	LR chi2(2)	=	6.68
	Prob > chi2	=	0.0355
Log likelihood = -69.224592	Pseudo R2	=	0.0460

Proxy4	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
Prod	2.590533	1.322508	1.86	0.062	.9524394 7.045972
Cons	1.24753	.7706145	0.36	0.720	.3717518 4.186476
_cons	1.287239	.3306976	0.98	0.326	.7780036 2.12979

*Figure 31. Logistic Regression of Proxy4 on Raw Data*

Correlation testing against the calculated data for Proxy4, Sphere, Type, Prod, and Cons shows correlation with Proxy4, production and consumption.

	Proxy4	Sphere	Type	Tax	Prod	Cons
Proxy4	1.0000					
Sphere	0.0000	1.0000				
Type	0.0000	0.0000	1.0000			
Tax	-0.1270	0.2410	-0.1796	1.0000		
Prod	-0.3237	-0.1877	0.1908	0.2805	1.0000	
Cons	-0.2902	-0.0000	0.1026	0.2764	0.6459	1.0000

*Figure 32. Correlation Test of Proxy4 with Calculated Data*

Regressing Proxy4 on production and consumption using logistic regression shows no statistical relevance. Again, although the correlations show high enough values for interest, the p-values in this regression are far too high for any statistical confidence.

Logistic regression		Number of obs	=	24
		LR chi2(2)	=	3.34
		Prob > chi2	=	0.1882
Log likelihood = -13.605926		Pseudo R2	=	0.1093

Proxy4	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Prod	-.6324108	.727785	-0.87	0.385	-2.058843 .7940215
Cons	-.5046948	.9538844	-0.53	0.597	-2.374274 1.364884
_cons	-.0306223	.5623645	-0.05	0.957	-1.132837 1.071592

*Figure 33. Logistic Regression of Proxy4 on Calculated Data*

## Conclusions

The evaluation of the results of this dissertation research can be approached in three ways, the research framework, the typological assessment, and the evaluation of the proxy outcomes.

The research framework results from an effort to understand how the flow of capital worked in the various cities chosen for the comparative case study, Ur III, Thebes, and Athens. The framework accomplished two things. First, in the development of a method for measuring typologies. This method provided a valid method for determining both the typology of the economy overall, as a result of the aggregate scores, but also resulted in typologies specific to the economic spheres, socioeconomic classes, and capital flows. Second, the data for each of the measured components of the research framework provided the researcher with a relatively large volume of dichotomous quantitative data for further analyses. In addition, the data provided the raw data required to create another set of data based on value changes between socioeconomic classes, building another set of quantitative data of continuous variables.

The typological determination of the cases shows a distinct heterogeneity between the three cases overall, but also demonstrates a distinct homogeneity in certain aspects of the measured capital flows, especially in the governance and integration spheres. The remaining typologies demonstrate a relatively close grouping of relationships and a wider divergence in education. The ability to provide typological scores at the most atomistic level provided this research with a method for comparing economies and filling the lacuna in the percentage scores for the dependent variables in the proxy analysis of slavery. Due to the identical score in unskilled labor relations between Ur and Thebes a rational selection of similar rate of slavery was selected. In all cases, both Ur III and Thebes showed a general similarity in typological scores. The scores reflect the differences in governmental oversight between the economies. Ur III and Thebes represent highly centralized economies centered on the absolute rule of a divine monarch, while Athens represents the much more liberal market-based economy that one would expect from the world's first experiment with democracy.

The final aspect of the analysis is the evaluation of proxies for theoretical outcomes for each of the economic spheres. The analyses checked for statistically relevant correlations between the theoretical proxies and the two data sets mentioned above, the raw dichotomous data in the typological measurement, and the continuous data derived from the number of changes between socioeconomic classes. Although the tests revealed no correlation in any of the 6 regressions performed, the tests did provide a robust demonstration of the use of the quantitative data derived from the qualitative research.

The original hypothesis of the dissertation was that using a qualitative case comparison, a differentiated economic typology could be discerned for each of the cases. In this regard, the research is a success. There are distinct two-dimensional typologies identifiable for each of the cases studied. For this aspect of the research, the null hypothesis is rejected. In addition, the research also demonstrated that the typologies have a functional value, as in the determination of filling the lacunae previously identified, as well as the capacity of the research framework to generate usable quantitative data from the qualitative data being studied.



## CHAPTER VIII CHAPTER VIII - CONCLUSIONS

### Introduction

This final chapter of the dissertation contains concluding remarks concerning the overall architecture of the research, the findings of the research, issues encountered during the research, suggestions for future research using this configuration, and concluding observations.

First, the validity of the hypothesis in terms of how it defined the research framework will be summarized, including a review of the research framework and the supporting academic works from which it was adapted. This will be followed by a brief discussion of the research results including any additional research made possible by adapting the data generated in the case studies. The following section discusses any issues with the research approach and with obtaining the data required for the scoring of the cases, especially the issues encountered with using and interpreting archeological data.

The section on Recommendations for Future Research highlights the adaptability of the research framework as an analytical tool. Using this adaptability, future research based on this preliminary dissertation is couched in terms of how this framework can be adapted to accommodate these future research goals.

The final section discusses the conclusions to be drawn from the research and the utility of the research framework.

### Extent of Validity of the Hypothesis

The overarching focus of this research was built on the central hypothesis that a research framework could be developed that allowed the researcher to measure and compare salient economic aspects of three historic ancient cities within three distinct civilizations, Ur III representing Mesopotamia, Thebes representing Egypt, and Athens representing Greece, and to develop a resulting descriptive typology of the economy based on these measurements. The two-dimensional typology developed to describe these economies is based on the capital flow in an economy, divided into three specific flows within four different economic spheres, for five socioeconomic classes, providing a broad range for component-level analyses. The typological dimensions of the components are the type of market, controlled or liberal, and its institutional legitimacy, *de jure* or *de facto*. The dissertation achieved this goal and demonstrated that there are distinct typologies of economies based on market types and institutional legitimacy.

The validity of the hypothesis rests on the assumption that the economic measurements identified in the research framework are adequate to provide a causal inference of the typological outcomes. The components selected for measurement are specific to the analysis of capital flows, and the criteria for measurement are designed around the limitations of available information on ancient economies. These measurements are also configured so that where there is a lack of a defining characteristic in the data required for a specific measurement or 1, the measurement defaults to 0. In the case of market type, the lack of a clearly specified institutional market disruption results in a score of 0 – liberal. Where these official disruptions exist to receive a score of 1 – controlled. The same holds true for institutional legitimacy. Any official institutional rule

applicable to the economic component being measured results in a score of 1 – de jure. The lack of this type of institutionalism assumes the institutional rules governing the component are de facto, resulting in a score of 0. This is possible due to the dichotomous nature of the measurements, which allow only 0 or 1 in the score. This dichotomy reduces ambiguity in the measurement through the literal interpretation of the archaeological evidence. In most cases, attested records exist of laws that govern the community as a whole, and receipts of transactions exist that define the economic behavior of the different classes of individuals. The measurements are also designed so that where there is no specific evidence of the existence of institutional controls, the measurements default to zero with no loss of relevance to the research.

All three major dimensions of the research framework were combined and adapted from similar approaches in the literature. The differentiation of socioeconomic classes was a translation of V. Gordon Childe's (1951) widely accepted definition of the components common to an ancient city. Most of these components were direct references to a specific sector of society that could be differentiated along economic lines. The economic spheres were adaptations of the spheres of relationships defined by Hall and Soskice (2001) in their work to define typologies of capitalism based on institutional configurations. The three flows of capital are adopted from virtually all economic literature since Adam Smith ([1776] 1909) and describe production, consumption, and taxation. The creation of a typological framework was adapted from the guiding principles of Collier, LaPorte, and Seawright (2012).

The outcome of the research validated the approach of defining a typology based on the measurements of economic components. The most surprising feature wasn't the

relative homogeneity of the cases. Although each case was clearly differentiated by its score, when summarized by the typological quadrant, little such differentiation existed. In the summary view, Ur and Thebes scored in the same liberal/de jure quadrant, and Athens scored in the liberal/de facto quadrant. For the casual observer, this is only a minor difference.

The closeness of the scores is possible due to the homogeneity between the cases for the governance and integration spheres. The governance scores were nearly unanimous in the liberal/de facto, with only Ur III demonstrating a slight tendency toward a de jure rating in institutional legitimacy. All three scored full liberal in the market type category, and both Thebes and Athens scored full de facto in the institutional legitimacy score. At the other end of the spectrum, integration, all three cases scored full de jure in the institutional legitimacy measurement, and Thebes and Athens scored within 6 points in market type, strongly situated in the controlled market/de jure legitimacy quadrant. The closeness of these scores warrants a closer look at these specific aspects of capital flow to determine if there are more effective measurements of differentiation between the cases. This is discussed in greater depth in the Recommendations section below.

The analytical framework provided an additional measure to contrast the case studies, although it is not a specifically stated goal of the research. The number of changes in the dichotomous measures between classes provides the interested researcher with a gauge of social stratification. The changes indicate how much difference exists between different socioeconomic classes in how capital flows through the economy in the various economic spheres.

In total, the goals of the research were met. The primary goal of developing a research framework based on previous efforts at identifying typologies adapted well to this research. Tertiary benefits such as demonstrating the effectiveness of the research approach and structure, as well as providing quantitative data from the qualitative comparative analysis, will prove useful for future research. Finally, the broad approach to the case studies resulted in a number of questions that may lead to future research, informing a logical design philosophy for research frameworks yet to be developed.

#### Shortcomings of the Research Approach and Data Used

Using varied archaeological evidence to create a uniform framework has a number of challenges. In education, for instance, there are clay tablets from Mesopotamia, ostraca from Egypt, and very little from Athens. The Athenian information derives from interpretations of the available literature and is subject to interpretation based on the researcher's appreciation of the directness or subtlety of Greek literature based on the Greek penchant for satire and irony. Researchers can be forced to take a stance, that is to adopt a position that is not based on empirical evidence but is an argument that derives from circumstantial evidence that can be interpreted in at least two ways. Due to the nature of archeological discovery, new findings can completely alter the research landscape, providing new previously unknown aspects of society, or completely disproving established axioms.

The cases compared in this research were chosen to a large extent by the availability of information in the archaeological record. This information can be somewhat fragmented and is prone to interpretation by the researcher. The available literature on these ancient sites demonstrates a number of conflicting interpretations

about what the evidence means. In many cases, the written records chronicle some type of transaction that seems relatively straightforward, but in many others, the arcane usage of language eludes easy translation. This disparity in translation extends beyond individual documents to entire segments of society. For instance, in Athens, the existence of an impersonal marketplace is universally recognized, but there is debate as to whether such an institution existed at all in Ur or Thebes, much less the role it played in the economy.

### Recommendations for Further Research

One of the interesting outcomes of the typological matrix is the distribution of the cases. The cases seem to demonstrate a relative closeness in their typological distribution. From the analysis in Chapter 7, it is clear that both the governance and integration spheres showed a marked similarity between cases. It would be interesting to analyze and compare these societies diachronically to determine whether there is a common origin typology, whether a trend exists over time to convergence or divergence, and whether that trend continues to manifest itself in the modern global economy.

The comparison of the similarities and differences between the individual economic spheres between the cases is also a topic of interest. Additional research to understand this phenomenon would be appropriate for further research. In the governance sphere, a framework for research that seeks to understand the ubiquity of the approaches to this practice among the cases could include variances in interest rates, various types of loans, repayment terms, and penalties for default. The existing socioeconomic class analysis would be appropriate for this investigation. Instead of economic spheres, the governance element could be subdivided into the purpose of the loans. These data

elements are available in the numerous receipts remaining from both Ur and Thebes.

Differentiating loans by purpose includes loans for speculation, such as merchant loans, loans for commissioning craft work, agricultural loans against crop yield, and antichretic loans, to name a few.

Further investigation into the similarities in the educational sphere is also warranted. This sphere is largely measured against a highly institutionalized curriculum for Ur and Thebes, and a mostly liberal market. The non-institutional nature of the Athenian educational system is attributed to the use of the modern Greek alphabet and the subsequent ease in achieving literacy, however, this does not explain the education of the individuals responsible for the achievements of the Athenian civilization in the fields of engineering, mathematics, art, and philosophy. Restructuring the existing matrix should revolve around understanding the different levels of education, from early childhood to adulthood, as spheres of relationships. Various curricula such as literacy, mathematics, science, and history provide subcategories to replace capital flow. The class structure may be able to remain the same, although it is probably more informative to adapt the classes to better reflect the society in terms of its education groupings. As noted above, the availability of data for this research may limit the scope of the inquiry.

The sphere of integration relates to the capital flows surrounding redistribution. Analyzing this sphere along the entire socioeconomic spectrum may be too broad of a focus. The mechanisms within the elite class are of primary interest in terms of how the ruling hierarchy extracted resources and then redistributed the resources in the form of goods and public works. For this inquiry, replacing socioeconomic class with levels of bureaucracy and leadership will provide greater insight into this fundamental economic

sphere. The spheres of relationship for this research can include the types of public goods provided to the citizens in the form of redistributed production, such as agriculture and textiles, public works, such as granaries and irrigation systems, and temples and monuments reserved for the exclusive use of the elite classes. The original capital flows remain.

Using the existing research framework, analysis of capital flow could be framed around specific commodities. It is clear that within each of the case studies, grain was the crop that the civilization relied on for subsistence. Additionally, all the societies studied used alcoholic beverages as a commodity. Replacing the economic spheres with both basic commodities and non-essential production utilizing the existing capital flow and socioeconomic classes provides the researcher with a better understanding of the economic functions of the system that ensure both adequate resources for survival but also the market for manufactured non-essential items. Institutional legitimacy in this case could be replaced by import and export percentages of these goods. The market type remains. Contrasting the flow of these commodities, as well as the output of other major sectors of production between cases, informs the researcher as to the institutionalized method used to ensure survival, as well as the value structure of the society in terms of the non-essential goods produced and consumed.

This brief discussion of possible future research exposes the potential possibilities based on the broad framework presented in the dissertation. In many cases, small adaptations to the existing research framework are adequate for a number of inquiries, but the adaptability of the method allows the development of more granular questions on how ancient (or modern) economies operate.



## Concluding Observations

The research framework developed for this dissertation proved to be adequate for the establishment of a typology that clearly differentiated the cases under study. Perhaps more importantly, the dissertation also demonstrated the development of an algorithmic research framework. The framework is algorithmic in the sense that it can be adapted to build a research framework for the measurement of a virtually unlimited array of quantitative subject matter. Any topic requiring analysis of a multidimensional treatment component can thus be adapted to this framework. A comparative analysis of how society meets its basic resource needs could be accomplished by changing dimensions. As noted above, the socioeconomic class could be replaced by civilization, capital flow could be replaced by principal commodities, and economic spheres could be replaced by factors of production. The market type could become embedded or disembedded transactions, institutions could become monopolistic or competitive firms. The domain of research does not have to be archaeological, nor do the measurements have to remain dichotomous. The cities chosen for this case comparison met a research requirement that they be classified as ancient. They could just as easily have been classified as totalitarian or medieval.

Whether the measurements of ancient economies using modern concepts are appropriate may be open to debate. What these measurements indicate is how these ancient economies worked across socioeconomic classes within recognized economic domains. It seems apparent that all of these domains existed to some degree in the ancient economy, although perhaps in different capacities. Weighting the different economic spheres is not a design flaw, but a refinement based on what was learned from this

research. The main output of the research will be the questions that arise, and the subsequent research based on these questions. This dissertation measures what factors contribute to the chosen typological framework. Questions remain regarding how and why these factors evolved into the forms that are illustrated in this dissertation.

## APPENDIX A – Raw Data

Case	Sphere	Class	Type	CasCode	SphCode	ClassCode	TypCode	Tax	Prod	Cons	Proxy1	Proxy2	Proxy3	Proxy4	Case	Sphere	Class	Type	CasCode	SphCode	ClassCode	TypCode	Tax	Prod	Cons	Proxy1	Proxy2	Proxy3	Proxy4
Ur	Relat	Unskilled	Market	1	1	1	1	1	1	0	0.1	0	1	1	Ur	Relat	Unskilled	Inst	1	1	1	2	1	1	0	0.1	0.01	0.01	1
Ur	Relat	Skilled	Market	1	1	2	1	1	1	0	0.1	0	1	1	Ur	Relat	Skilled	Inst	1	1	2	2	1	1	0	0.1	0.01	0.01	1
Ur	Relat	Prof	Market	1	1	3	1	1	1	0	0.1	0	1	1	Ur	Relat	Prof	Inst	1	1	3	2	1	1	0	0.1	0.01	0.01	1
Ur	Relat	Merch	Market	1	1	4	1	1	0	0	0.1	0	1	1	Ur	Relat	Merch	Inst	1	1	4	2	1	0	0	0.1	0.01	0.01	1
Ur	Relat	Elite	Market	1	1	5	1	0	0	1	0.1	0	1	1	Ur	Relat	Elite	Inst	1	1	5	2	1	1	1	0.1	0.01	0.01	1
Ur	Gov	Unskilled	Market	1	2	1	1	1	0	0	0.1	0	1	1	Ur	Gov	Unskilled	Inst	1	2	1	2	1	0	0	0.1	0.01	0.01	1
Ur	Gov	Skilled	Market	1	2	2	1	1	0	0	0.1	0	1	1	Ur	Gov	Skilled	Inst	1	2	2	2	1	0	0	0.1	0.01	0.01	1
Ur	Gov	Prof	Market	1	2	3	1	1	0	0	0.1	0	1	1	Ur	Gov	Prof	Inst	1	2	3	2	1	0	0	0.1	0.01	0.01	1
Ur	Gov	Merch	Market	1	2	4	1	1	0	0	0.1	0	1	1	Ur	Gov	Merch	Inst	1	2	4	2	1	0	0	0.1	0.01	0.01	1
Ur	Gov	Elite	Market	1	2	5	1	0	0	0	0.1	0	1	1	Ur	Gov	Elite	Inst	1	2	5	2	0	1	1	0.1	0.01	0.01	1
Ur	Edu	Unskilled	Market	1	3	1	1	1	0	0	0.1	0	1	1	Ur	Edu	Unskilled	Inst	1	3	1	2	1	0	0	0.1	0.01	0.01	1
Ur	Edu	Skilled	Market	1	3	2	1	1	1	1	0.1	0	1	1	Ur	Edu	Skilled	Inst	1	3	2	2	1	0	0	0.1	0.01	0.01	1
Ur	Edu	Prof	Market	1	3	3	1	1	0	0	0.1	0	1	1	Ur	Edu	Prof	Inst	1	3	3	2	1	1	1	0.1	0.01	0.01	1
Ur	Edu	Merch	Market	1	3	4	1	1	0	0	0.1	0	1	1	Ur	Edu	Merch	Inst	1	3	4	2	1	1	1	0.1	0.01	0.01	1
Ur	Edu	Elite	Market	1	3	5	1	1	0	0	0.1	0	1	1	Ur	Edu	Elite	Inst	1	3	5	2	1	1	1	0.1	0.01	0.01	1
Ur	Integ	Unskilled	Market	1	4	1	1	1	1	0	0.1	0	1	1	Ur	Integ	Unskilled	Inst	1	4	1	2	1	1	1	0.1	0.01	0.01	1
Ur	Integ	Skilled	Market	1	4	2	1	1	1	0	0.1	0	1	1	Ur	Integ	Skilled	Inst	1	4	2	2	1	1	1	0.1	0.01	0.01	1
Ur	Integ	Prof	Market	1	4	3	1	0	1	0	0.1	0	1	1	Ur	Integ	Prof	Inst	1	4	3	2	1	1	1	0.1	0.01	0.01	1
Ur	Integ	Merch	Market	1	4	4	1	1	1	0	0.1	0	1	1	Ur	Integ	Merch	Inst	1	4	4	2	1	1	1	0.1	0.01	0.01	1
Ur	Integ	Elite	Market	1	4	5	1	0	0	1	0.1	0	1	1	Ur	Integ	Elite	Inst	1	4	5	2	1	1	1	0.1	0.01	0.01	1
Thebes	Relat	Unskilled	Market	2	1	1	1	1	1	0	0.1	0	1	1	Thebes	Relat	Unskilled	Inst	2	1	1	2	1	1	0	0.11	0.04	0.04	1
Thebes	Relat	Skilled	Market	2	1	2	1	1	0	0	0.1	0	1	1	Thebes	Relat	Skilled	Inst	2	1	2	2	1	1	0	0.11	0.04	0.04	1
Thebes	Relat	Prof	Market	2	1	3	1	1	0	0	0.1	0	1	1	Thebes	Relat	Prof	Inst	2	1	3	2	1	1	0	0.11	0.04	0.04	1
Thebes	Relat	Merch	Market	2	1	4	1	1	0	0	0.1	0	1	1	Thebes	Relat	Merch	Inst	2	1	4	2	1	0	0	0.11	0.04	0.04	1
Thebes	Relat	Elite	Market	2	1	5	1	1	0	0	0.1	0	1	1	Thebes	Relat	Elite	Inst	2	1	5	2	1	1	0	0.11	0.04	0.04	1
Thebes	Gov	Unskilled	Market	2	2	1	1	1	0	0	0.1	0	1	1	Thebes	Gov	Unskilled	Inst	2	2	1	2	1	0	0	0.11	0.04	0.04	1
Thebes	Gov	Skilled	Market	2	2	2	1	1	0	0	0.1	0	1	1	Thebes	Gov	Skilled	Inst	2	2	2	2	1	0	0	0.11	0.04	0.04	1
Thebes	Gov	Prof	Market	2	2	3	1	1	0	0	0.1	0	1	1	Thebes	Gov	Prof	Inst	2	2	3	2	1	0	0	0.11	0.04	0.04	1
Thebes	Gov	Merch	Market	2	2	4	1	1	0	0	0.1	0	1	1	Thebes	Gov	Merch	Inst	2	2	4	2	1	0	0	0.11	0.04	0.04	1
Thebes	Gov	Elite	Market	2	2	5	1	1	0	0	0.1	0	1	1	Thebes	Gov	Elite	Inst	2	2	5	2	1	0	0	0.11	0.04	0.04	1
Thebes	Edu	Unskilled	Market	2	3	1	1	1	0	0	0.1	0	1	1	Thebes	Edu	Unskilled	Inst	2	3	1	2	1	1	0	0.11	0.04	0.04	1
Thebes	Edu	Skilled	Market	2	3	2	1	1	0	0	0.1	0	1	1	Thebes	Edu	Skilled	Inst	2	3	2	2	1	1	1	0.11	0.04	0.04	1
Thebes	Edu	Prof	Market	2	3	3	1	1	1	0	0.1	0	1	1	Thebes	Edu	Prof	Inst	2	3	3	2	1	1	1	0.11	0.04	0.04	1
Thebes	Edu	Merch	Market	2	3	4	1	1	0	0	0.1	0	1	1	Thebes	Edu	Merch	Inst	2	3	4	2	1	0	0	0.11	0.04	0.04	1
Thebes	Edu	Elite	Market	2	3	5	1	1	1	1	0.1	0	1	1	Thebes	Edu	Elite	Inst	2	3	5	2	1	1	1	0.11	0.04	0.04	1
Thebes	Integ	Unskilled	Market	2	4	1	1	1	1	0	0.1	0	1	1	Thebes	Integ	Unskilled	Inst	2	4	1	2	1	1	1	0.11	0.04	0.04	1
Thebes	Integ	Skilled	Market	2	4	2	1	1	1	0	0.1	0	1	1	Thebes	Integ	Skilled	Inst	2	4	2	2	1	1	1	0.11	0.04	0.04	1
Thebes	Integ	Prof	Market	2	4	3	1	1	1	0	0.1	0	1	1	Thebes	Integ	Prof	Inst	2	4	3	2	1	1	1	0.11	0.04	0.04	1
Thebes	Integ	Merch	Market	2	4	4	1	1	1	0	0.1	0	1	1	Thebes	Integ	Merch	Inst	2	4	4	2	1	1	1	0.11	0.04	0.04	1
Thebes	Integ	Elite	Market	2	4	5	1	1	1	1	0.1	0	1	1	Thebes	Integ	Elite	Inst	2	4	5	2	1	1	1	0.11	0.04	0.04	1
Athens	Relat	Unskilled	Market	3	1	1	1	1	0	0	0.5	0.1	0	0	Athens	Relat	Unskilled	Inst	3	1	1	2	1	0	0	0.45	0.1	0.04	0
Athens	Relat	Skilled	Market	3	1	2	1	1	0	0	0.5	0.1	0	0	Athens	Relat	Skilled	Inst	3	1	2	2	1	0	0	0.45	0.1	0.04	0
Athens	Relat	Prof	Market	3	1	3	1	1	0	0	0.5	0.1	0	0	Athens	Relat	Prof	Inst	3	1	3	2	1	0	0	0.45	0.1	0.04	0
Athens	Relat	Merch	Market	3	1	4	1	1	0	0	0.5	0.1	0	0	Athens	Relat	Merch	Inst	3	1	4	2	1	1	1	0.45	0.1	0.04	0
Athens	Relat	Elite	Market	3	1	5	1	1	0	0	0.5	0.1	0	0	Athens	Relat	Elite	Inst	3	1	5	2	1	0	0	0.45	0.1	0.04	0
Athens	Gov	Unskilled	Market	3	2	1	1	1	0	0	0.5	0.1	0	0	Athens	Gov	Unskilled	Inst	3	2	1	2	1	0	0	0.45	0.1	0.04	0
Athens	Gov	Skilled	Market	3	2	2	1	1	0	0	0.5	0.1	0	0	Athens	Gov	Skilled	Inst	3	2	2	2	1	0	0	0.45	0.1	0.04	0
Athens	Gov	Prof	Market	3	2	3	1	1	0	0	0.5	0.1	0	0	Athens	Gov	Prof	Inst	3	2	3	2	1	0	0	0.45	0.1	0.04	0
Athens	Gov	Merch	Market	3	2	4	1	1	0	0	0.5	0.1	0	0	Athens	Gov	Merch	Inst	3	2	4	2	1	0	0	0.45	0.1	0.04	0
Athens	Gov	Elite	Market	3	2	5	1	1	0	0	0.5	0.1	0	0	Athens	Gov	Elite	Inst	3	2	5	2	1	0	0	0.45	0.1	0.04	0
Athens	Edu	Unskilled	Market	3	3	1	1	1	0	0	0.5	0.1	0	0	Athens	Edu	Unskilled	Inst	3	3	1	2	1	0	0	0.45	0.1	0.04	0
Athens	Edu	Skilled	Market	3	3	2	1	1	0	0	0.5	0.1	0	0	Athens	Edu	Skilled	Inst	3	3	2	2	1	0	0	0.45	0.1	0.04	0
Athens	Edu	Prof	Market	3	3	3	1	1	0	0	0.5	0.1	0	0	Athens	Edu	Prof	Inst	3	3	3	2	1	0	0	0.45	0.1	0.04	0
Athens	Edu	Merch	Market	3	3	4	1	1	0	0	0.5	0.1	0	0	Athens	Edu	Merch	Inst	3	3	4	2	1	0	0	0.45	0.1	0.04	0
Athens	Edu	Elite	Market	3	3	5	1	1	0	0	0.5	0.1	0	0	Athens	Edu	Elite	Inst	3	3	5	2	1	0	0	0.45	0.1	0.04	0
Athens	Integ	Unskilled	Market	3	4	1	1	1	1	0	0.5	0.1	0	0	Athens	Integ	Unsk												

## APPENDIX B - Calculated Data

Case	Sphere	Type	Tax	Prod	Cons	Proxy1	Proxy3	Proxy4
1	3	1	0	1	2	0.1	0.01	0
1	2	1	0	0	0	0.1	0.01	0
1	4	1	3	1	1	0.1	0.01	0
1	1	1	1	1	1	0.1	0.01	0
1	3	2	0	2	1	0.1	0.01	0
1	2	2	1	1	1	0.1	0.01	0
1	4	2	0	0	0	0.1	0.01	0
1	1	2	0	2	1	0.1	0.01	0
2	3	1	1	4	1	0.11	0.04	0
2	2	1	0	0	0	0.11	0.04	0
2	4	1	0	0	1	0.11	0.04	0
2	1	1	0	1	0	0.11	0.04	0
2	3	2	1	3	3	0.11	0.04	0
2	2	2	0	0	0	0.11	0.04	0
2	4	2	0	0	0	0.11	0.04	0
2	1	2	0	2	0	0.11	0.04	0
3	3	1	1	0	0	0.45	0.1	1
3	2	1	0	0	0	0.45	0.1	1
3	4	1	0	0	0	0.45	0.1	1
3	1	1	0	0	0	0.45	0.1	1
3	3	2	1	1	0	0.45	0.1	1
3	2	2	0	0	0	0.45	0.1	1
3	4	2	0	0	0	0.45	0.1	1
3	1	2	0	2	2	0.45	0.1	1

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