Translational Systems Sciences 39

Jeffrey Yi-Lin Forrest

Systemic Principles of Applied Economic Philosophies II

Value, Decision, and Large-Scale Business Forces

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Volume 39

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Preface

Continuing what is left off from the first volume, this book, as the sequel of the previous one, focuses on how a wide range of applied economic and business studies can be more or less unified within the framework of systems science in terms of the logical reasoning and methodology of the science. This imagined unification is practically carried out in this book in two fronts: (a) all topics of applied business studies visited in this book should be examined in the light of and relevant conclusions restated in the language of the newly developed economics in the first volume; (b) the holistic thinking, as well advocated and developed in systems science, should permeate the effort of both reestablishing previously known and/or developing brand-new conclusions and selecting appropriate methods to deal with the particular problem in hands.

The significance of accomplishing (i) is very obvious to me, because, as a trained mathematician, I have a strong educational background and professional interest in mathematics and natural science. Specifically, in mathematics, when a particular theory does not work as expected when applied to address a real-life problem, scholars generally scrutinize carefully why the application failed. And then, if needed, scholars would simply go to the identified problematic areas of mathematical theory and see how the theory can be improved so that a greater collection of topics from a wider range of inquiries can be investigated successfully. In contrast, scholars in applied economic and business areas do not seem to put in such efforts, due more or less to the reason that many issues of concern involve business events and/or processes that had already occurred or finished. In other words, a large amount of scholarly endeavors in such applied areas represent 20–20 hindsight guess works based on speculations of what had caused the appearance of a particular event or process. One representative example of such scholarly efforts is the studies on what had led to the appearance and success of the Industrial Revolution. By looking at the revolution from different angles and perspectives, various theories had been proposed, while these theories are inconsistent with or even contradictory to each other. For more details about this end, see, for example, *The Stages of Economic Growth: A Non-communist Manifesto*, by W.W. Rostow (1960,

Cambridge University Press) or *The Making of an Economic Superpower: Unlocking China's Secret of Rapid Industrialization*, by Yi Wen (2016, World Scientific).

The importance of accomplishing (ii) above can be clearly seen when we seriously consider the recognition that each of the methods commonly employed in economic and business studies experiences its specific deficiencies, for more details, see Chap. 10 of the first volume of this monograph series. Hence, system-based holistic thinking can help a researcher effectively choose the most relevant methodology(-ies) to deal with issues in hands.

This book represents the first step toward the imagined unification of applied economic and business studies. It leaves a door open for scholars to look backward to revise and to improve the theories that have been already developed when they experience failures and inadequacies in their practical applications.

I hope you will enjoy reading and referencing to this book in your scholarly exploration and academic pursuit while making your new theories of economics and business more real-life relevant and practically useful than the conventional ones. If you have any comments or suggestions, please let me hear from you by sending an email to: jeffrey.forrest@sru.edu.

Slippery Rock, PA, USA Jeffrey Yi-Lin Forrest
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About the Editor

Jeffrey Yi-Lin Forrest also known as Yi Lin, holds all his educational degrees in pure mathematics and had one-year post-doctoral experience in statistics at Carnegie Mellon University. He had been a guest professor of economics, finance, mathematics, and systems science at several major universities in China, including Nanjing University of Aeronautics and Astronautics. And currently, he is a professor of mathematics and research coach for the School of Business at Slippery Rock University, Pennsylvania, and the president of the International Institute for General Systems Studies, Inc., Pennsylvania. He serves either currently or in the past on the editorial boards of thirteen professional journals, including "Kybernetes: The International Journal of Systems, Cybernetics and Management Science," "Journal of Systems Science and Complexity," "International Journal of General Systems," "The Journal of Grey Systems," etc. Currently, he serves as a co-editor-in-chief of the international journal "Advances in Systems Science and Application," the editor- or co-editor-in-chief of four book series, "Series on Grey System" (Springer, Singapore), "Systems Evaluation, Prediction, and Decision-Making" (CRC Press, New York), "Communications in Cybernetics, Systems Science and Engineering" (CRC Press, Balkema), and "Communications in Cybernetics, Systems Science and Engineering—Proceedings" (CRC Press, Balkema).

Some of his research was funded by United Nations, State of Pennsylvania, National Science Foundation of

China, and German National Research Center for Information Architecture and Software Technology. As of the end of 2022, he has published well over 500 research works, including over 50 monographs and special topic volumes. Some of these monographs and volumes were published by such prestigious publishers as Springer, Taylor and Francis, World Scientific, Kluwer Academic, Academic Press, etc. Over the years, his scientific achievements have been recognized by various professional organizations and academic publishers. In 2001, he was inducted into the Honorary Fellowship of the World Organization of Systems and Cybernetics. His research interests are wide ranging, covering areas like data analytics, economics, finance, management, marketing, prediction, mathematics, systems research and applications, philosophy of science, etc.

Part I
The Overview

Chapter 1
Potential Unification of Applied Economic and Business Studies

Jeffrey Yi-Lin Forrest

Abstract This chapter outlines our initial attempts to unify several different areas of applied economic and business studies. Other than endeavoring to fill a good number of gaps that exist in relevant literatures, as individual research projects aim at accomplishing generally, this chapter sketches how this book fulfills this grand purpose in two aspects. The first aspect is on how to place at least some of the known conclusions and all new results of related areas of business research on a common theoretical ground and a convenient visual intuition. And, the second aspect is the demonstration on how the holistic thinking of systems science can be directly or indirectly employed to develop generally-true conclusions, some of which might be statistically confirmed previously. After having accomplished the aforementioned objectives, this chapter turns its attention to look at the major contributions the following chapters make to their respective literatures both theoretically and methodologically.

The rest of this chapter is organized as follows. Section 1.1 outlines the issues to be addressed in this book. To make this volume as self-contained as possible, Section 1.2 introduces the basics of systems science. Section 1.3 points to the major contributions this book makes to the literature. Section 1.4 describes how this volume is organized.

Keywords Irrational decision · Reflexive nature · Systems methodology · Systemic yoyo model

1.1 Issues This Book Attempts to Address

This section describes how this book addresses a list of different issues encountered in applied economic and business studies. It consists of three subsections with the first focusing on how to understand the creation and capture of values. The second subsection looks at issues related to decision-making in the modern business world. And, the third subsection examines how large-scale economic forces interact with each other.

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1.1.1 Understanding the Creation and Capture of Values

Innovatively deciphering market signals generally helps place a firm in an advantageous position in terms of market competition. However, in practice, such theoretical advantage can be materialized only when other players in the firm's supply-chain ecosystem (Adner et al., 2013) can provide sufficient and adequate supports. For example, flying cars surely represent a solution to the problem of traffic jams in many U.S. metropolitans (Lemoussu et al., 2018). However, to make this idea a reality, the making of such cars needs different suppliers to provide necessary parts, and related agencies to develop appropriate road conditions and air traffic controls so that such cars can move and fly around in an orderly manner. So, in terms of value creation and capture, a natural question arises: When a firm creatively interprets a market signal, how will the consequent design of the firm's new product(s) pose challenges to other players within its ecosystem? In other words, how will the firm's consequent success depend on the success of other players in its ecosystem?

This question is important both theoretically and practically. In particular, any attempt to answer this question requires the researcher to holistically look at the firm of concern both internally and externally. When looking at itself internally, the firm needs to know how to make adjustment in order to embrace the newly recognized opportunities, while externally it needs to identify environmental challenges and develop corresponding countermeasures to overcome environmental difficulties. This question is addressed in Chap. 2 with the development of a series of general conclusions.

When a firm looks at itself internally, it is suggested (e.g., McGrath, 2013) that the firm need to develop the necessary organizational culture and capability to effectively ride waves of transient competitive advantages. To accomplish this, the firm can strategically look either (1) inwardly at its nascent, heterogeneous resources and dynamic capabilities or (2) outwardly at product markets and consumer demands. In particular, task (1) helps the firm see what values it can create for consumers (e.g., Barney, 1991; Eisenhardt & Martin, 2000), while task (2) can potentially reveal where consumer synergies are located and what can then be potentially developed (Drucker, 1954). No matter whether to look inwardly or outwardly, the essence is for the firm to find potentials of different competitive advantages (Porter, 1985; Santalo & Becerra, 2008; Ye et al., 2012). One way to achieve this end is for the firm to create economies of scope by diversification at either the producer side (Porter, 1985; Santalo & Becerra, 2008) or the demand side (Ye et al., 2012) or both. If a firm adopts this approach, then the firm has to address several different, while related, questions: (1) How can producer-side synergies be created when using the strategy of economies of scope? (2) How can demand-side synergies be developed by making use of simultaneous consumer utilities and multi-sided markets, after all it is consumers who determine the success of companies (Penrose, 1959)? (3) What are the most fundamental decisions a retailer can make in terms of its offers to consumers? (4) How can collocating products and/or services lead to simultaneous consumer utilities? (5) When can the firm develop a positively

correlated multi-sided market? Aiming at addressing these questions, this book develops a cohesive theory on how to potentially develop synergistically innovative ideas at either the producer side or the demand side by developing simultaneous consumer utilities, two-sided markets, and addressing related issues.

With the development of economic globalization, new ways for wealth creation, such as the emergence of virtual markets, have appeared (Forrester Research Report, 2000). This new era of business has greatly changed the conventional way of market competition and provided unprecedented opportunities for entrepreneurs. It has also made once accustomed form and rule of competition transformed so that businesses and individuals have to adapt to the emerging formats of decision-making and inter-organizational interactions. These and other related changes in the business world have attracted the attention of scholars, front-line managers, and entrepreneurs (Hitt & Ireland, 2017), leading to enhanced information acquisition, knowledge development and sharing of know-hows (Amit & Zott, 2001). By comparing what is realistically happening and how the literature of scholarly works expands, one can see that most studies on value creation and capture provide managerial suggestions of limited validity instead of general recommendations due to various constraints inherently existing with the tools of analysis employed. Hence, this book addresses the following naturally arising question: Based on original, empirical studies on issues and matters of value, which consist of a dominating part of the literature, can generally-true conclusions be established so that they do not suffer from the inherent constraints of data- and anecdote-based analyses?

This question is very important epistemologically, because addressing it will definitely help introduce new methodologies into studies of business-related topics and issues that can be employed widely to develop useful conclusions instead of suggestions as currently done. At the same time, this question is also practically significant due to the fact that competitive advantages, at least some of which were once sustainable, have become mostly transient, short-lived. That is, the business world is currently in the era of transient competitive advantages; consumers have become less patient than ever before, while their preferences evolve rapidly (Forrest & Tallapally, 2018; McGrath, 2013).

To respond adequately to the fast-changing political and geographical environment of the world, many leading nations have made their strategic adjustments by zooming in on artificial intelligence (AI) as their next strategic direction. For example, the following two important documents, which plainly put out seven chief stratagems for the advancement of AI in the United States of America, were published in 2016 by the Obama White House: (1) Preparing for the Future of Artificial Intelligence (OWH, 2016a); (2) The National Artificial Intelligence Research and Development Strategic Plan (OWH, 2016b). To keep up with the movement started in the United States, in May of 2018, the European Commission (EC (European Commission), 2018) submitted its corresponding document, entitled "Artificial Intelligence: A European Perspective." It pronounces the EU's place in the international AI competition, while presenting a plan for corresponding actions. That plan involves the goal of increasing investment in AI related R&D and ideals on how to update the European system of education and training in order to maintain

development strength of European talents. Parallel to the United States and Europe, the Japanese government also assigns great importance to AI and relevant development. In its "Report on the 5th Science and Technology Basic Plan (2016–2020)" (Government of Japan, 2015), the Japanese government recommends to establish at the national level a relatively complete R&D promotion mechanism to center on internet of things, big data, AI, and other technologies, and the materialization of a superintelligent society through extending AI to all aspects of life. As the fastest growing nation in the world, the importance of AI also catches China's attention. The term of AI appears in the 2017 Report of the 19th National Congress of the Communist Party of China (Xi, 2017), reflecting the Chinese ambition of keeping up with the international development and to stimulate the economic restructuring by profoundly fusing internet, big data and AI with the real economy. To possibly help understand this international push for AI and its applications, this book investigates how AI may impact technological innovation by first establishing a series of general conclusions, and then confirming these conclusions empirically by using the industrial robot data from the International Federation of Robotics and the panel data of China's 14 manufacturing sectors from 2008 to 2017.

In terms of effectively organizing itself initially, surviving the next and succeeding eventually in the present increasingly fast-evolving markets, it has been widely recognized (Day, 1994; Forrest et al., 2017; McGrath, 2013; Webster, 2002) that market sensing and market reaching, particularly customer value propositions (CVPs), are important capabilities for a company to have. It is on specific understandings of market signals and effective CVPs that a firm creates values for customers and captures values from the market (Forrest & Liu, 2022; Payne & Frow, 2005). However, the existent literature on CVPs is mostly on how to define the concept of CVPs (Payne et al., 2017), while the literature on market-sensing points to inconsistent findings. For example, Ardyan (2016) finds that such capability does not have any positive effect on companies' profitability; and Lindblom et al. (2008) reveals some effect but not significant. In terms of its impacts on the quality of market entry and the creation of knowledge, scholars find the capability has either some positive or quite significant impacts (Alshanty & Emeagwali, 2019; Sugiyarti & Ardyan, 2017). Hence, this book attempts to develop a general theory of CVPs by answering the following question: what do these inconsistent empirical results on market sensing mean in theory and in practice?

The discussion in the previous paragraph indicates that this goal is both theoretically and practically important. For example, for either a manager or an entrepreneur, knowing the future direction of consumer demands is essential for a firm to plan and position itself strategically in advance. It is especially so within the current landscape of the business world where once sustainable competitive advantages have become transient (McGrath, 2013). To potentially achieve the aforementioned objective, this book adopts unconventional methodologies. The logic behind this adoption is that the existent literature is frequently empirical, and in many circumstances, inconsistencies and contradictory discoveries are simply results of the tools of analysis employed (Einstein, 1997). Additionally, beyond attempting to accomplish the objective above, this book also enables us to look at profit opportunities in

stagnant industries, as case studies, without much market growth and shows how market knowledge and relevant innovative understanding of the knowledge can assist a company to construct effective CVPs.

In terms of corporate governance, there is clearly a need to holistically understand how various decision-making units of a firm work together, interact with each other, and how stakeholders with inconsistent objectives put in their efforts to accomplish their respectively different, or even divergent goals. This book represents a first step toward the eventual materialization of this important effort.

Before developing a specific analytic model, this book first establishes a systems foundation based on the systemic yoyo model to understand some of the relevant empirical discoveries. On such a qualitative foundation, an explanation is provided for, among others, (1) why an elaborate legal system is needed for venture capital to flow smoothly and why certain governments around the world are willing to go extra miles to establish such as legal system; (2) why the agency problem, existing between the large shareholders and the CEO, cannot be resolved completely and the best one can do about this problem is to reduce its severity; (3) why outside financers still leave their money to managers in all market economies from around the world even with the knowledge of the unsolvable agency problem; and (4) why there are boards of directors in the first place.

With these new and deepened understandings about the mutual interactions and restrictions between the board of directors and the CEO, this book then turns its attention to establish a simple analytic model, on which it studies the price behaviors of different investment projects, the dynamics between long-term and short-term projects and assets, and the power struggle between the board and the CEO. The developed analytical reasoning indicates that when assets are undervalued, the mispricing of the long-term asset in equilibrium is worse than that of the short-term asset. When the assets are overpriced, the mispricing of the short-term asset in equilibrium is worse than that of the long-term asset. With this result in place, an explanation is given to illustrate why CEOs would prefer, among different kinds of projects, undervalued short-term investment projects.

1.1.2 Decision-Making in the Modern World

With the blossoming of online retail businesses, traditional, storefront-based retails get hit big time. Currently, a massive number of retail stores are closing and a huge number of employees are laid off from the retail industry ..., as the news goes. That is only a snapshot of avalanche changes in the present business world, where markets change faster, competitive advantages of companies become much shorter lived, and business entities are reconfigured as more cohesive wholes than before. Looking at the dramatic development in the business world, other than mustering comprehensive conjectures about what is underneath the fast-changing practices behind magnificent successes and devastating failures based on anecdotes and data, a natural question for decision-making managers and entrepreneurs arises as follows: can a

general theory be developed, from which managers and entrepreneurs can plausibly and deductively explain what is happening with reliability?

This book addresses the question theoretically by examining such issues as (1) how firms compete for customers who switch from the product of one company to that of another by adjusting prices; (2) how firms' expected profits stay stagnant; and (3) why firms' bases of loyal customers deteriorate while customers become less patient than ever before. By employing the intuition of systemic thinking and the rigor of game theory, this book establishes the following results, among others: (1) Within an oligopoly market, in the Nash equilibrium, when the competition of the market grows with an increasing number of firms entering the market, the base of loyal customers for each incumbent firm will gradually diminish; (2) in a developed market place, risk neutrality would lead to stagnation in profits and irrational decision on pricing. And, it uses systemic models to explain why competitive advantages of the past seem to be sustainable, while present competitive advantages transient.

Although change is considered by many as a good thing, it does cause difficulties for people to cope with. Generally, change means uncertainty; and uncertainty brings forward unexpected risks along with the potential of unanticipated benefits. Such uncertainty and unexpected risks challenge the established status quo, while they can easily appear and do occur. Nevertheless, the modern world of business is changing fast, and evolving faster than ever before. And, competition in the marketplace is increasingly intensifying due to the globalization of international economies and unification of international finances. With these accelerating changes and developments, once sustainable competitive advantages have become transient, short-lived (McGrath, 2013). In other words, if a business organization does not or cannot transform itself along with the shifting landscape of the business world, it will be obsolete and become history in no time. In the 1980s, Michael Porter (1985) developed a theory of competitive advantages, which soon since then has been widely used by managers and entrepreneurs when they need to find "a way to conceptualize the firm that would expose the underpinnings of competitive advantage and its sustainability."

Looking at the long list of once-storied business organizations that are either gone or no longer relevant, a natural question arises: Are there necessary steps that a firm need to go through in order for the firm to ready itself potentially for successfully riding waves of transient competitive advantages?

One characteristic of the market economy is the constantly and widely existing competition in the marketplace. To continuously find a new profitable market niche, an entrepreneurial mentality that makes competition increasingly intensive is the key for successfully running business enterprises. So, two natural questions arise as follows for anyone who dreams to acquire success in the business world: (1) what characterizes a market that begets new opportunities or competition? And, (2) how should a firm motivate and compensate its sales force in order to win market competitions against its rivals? To possibly address these questions, this book investigates such a condition under which market competition will intensify, how the existing loyal consumer base of an established firm will start to deteriorate, and

how a firm can gain an upper hand in the market competition internally by looking at how a firm's sales associates should be appropriately compensated (or the problem of sales force compensation).

These and other related questions have been active areas of research with a great potential of direct applications in real life. And, from a specific angle this book attempts to jointly address these questions and several other issues, such as (1) when the consumer surplus of the market, which is the totality of all price switchers, is sufficiently large, market competition will intensify with additional profits to be made; (2) when the number of competing firms increases, the number of loyal customers will decline and eventually approach zero; (3) how different pricing strategies could be employed to potentially double expected profits; and (4) how the competitive spirits of a firm's sales associates can be lifted to a different height.

The importance of innovation has been acknowledged since the time of Smith (1776) when he treated innovation as a critical factor in enhancing wealth. Owing to the fierce world-wide competition in manufacturing, innovation is inevitable for manufacturing companies' survival and healthy growth (Stock et al., 2002). Hence, it is compelling for decision-making managers, entrepreneurs, and scholars alike to find answers to the following questions, given that organizational culture, structure, leadership, and what strategy to employ represent the crucial foundation of an organization: (1) what are the main strategic tactics that underlie the innovative activities of a manufacturing firm? (2) How do the organizational culture, corporate structure, and leadership of a manufacturing firm influence the firm's degree of innovativeness?

In the present business world, innovation is increasingly inevitable for every company that wishes to remain competitive, develop comparative advantages, and enter profitable markets (Stock et al., 2002). That explains why the topic these questions represent has remained one of the most popular and hottest ones investigated over many decades by researchers, managers of firms, and policy makers.

International business activities and performance of firms have been a hot topic of research in recent years; and the relevant literature, both empirical and theoretical, has been growing exponentially (Melitz & Redding, 2014; Wagner, 2016). The empirical branch of the literature was initiated by Bernard and Jensen (1995), and the theoretical branch by Melitz (2003). Due to the ongoing globalization of regional and natural economies from around the world, investigations on this research topic have been helping not only relevant academic discussions but also public debates and policy decision-making. Evidently, such studies are vitally important for local, regional, national, and international economic developments. Therefore, it is both theoretically and practically important for us to establish a general theory that integrates the findings reported in the literature while providing guidelines for practical applications and future research. To this end, this book concentrates on the following topics: (1) the dynamics of competition of the domestic market; (2) exports to either less developed markets or more advanced markets or both; and (3) development of a general theory regarding the relationship between international trades and the performance of firms, where such firms' outcomes as

productivity, profitability, employees' wages, and survival are specifically considered.

1.1.3 Interactions of Large-Scale Economic Forces

Opposite to Becker (1974) famous rotten kid theorem, when the rotten members of the family are the parents instead of the kids (Bommier & Dubois, 2004; Lin, 2009), the question of child labor and its efficiency arises. To this end, this book introduces three independent variables—child labor, formal schooling, and level of maturity—into the study of this question. It shows that as long as children's disutility or utility of labor or formal schooling is concerned, the laissez faire triple of child labor, formal schooling, and level of maturity, which maximizes the parents' utility function, can never be efficient. In fact, such a laissez faire triple is always inefficiently too high. On the other hand, if the efficiency of parent's chosen (for their children) levels of child labor, formal schooling, and level of maturity is determined by the impact on the children's lifetime earnings potential, it then finds that (1) if all externalities of the parents' decision made for the children could be internalized by their interior transfers in terms of savings (if the capital markets are imperfect) and bequests to their children, then the children would have the potential to obtain their optimal lifetime earnings; (2) if the parents could borrow money in the capital markets, and if the child lives below his means when he is an adult, then the parents' decision made for the child, when he was a kid, about the child's labor, formal schooling, and level of maturity, would be efficient in terms of the child's lifetime earnings potential; and (3) if the capital markets are imperfect and if the parents' bequests are at a corner or their savings are at a corner, then the laissez faire triple of child labor, formal schooling, and level of maturity is inefficiently high.

To help resolve some of the inefficiencies, which cannot be resolved by individual families, this book places the systemic yoyo fields of individual families in a much mightier yoyo, representing the government. In this way, the spin field of the government yoyo forces families and individuals to modify their behaviors accordingly. In particular, if a government regulation is introduced to impose a marginal ban on child labor, then such a ban could be either welfare reducing for both the child and the parents or a Pareto improvement for both the child and the parents, under different sets of specific conditions.

Over 50 years ago, economists started to notice stable wage differentials existing inter-industrially over time and across national borders. Some industries pay their workers more than other industries (Slichter, 1950). And, the differentials apply across all occupations. That is, if one occupation in an industry is highly paid, then all other occupations of the same industry tend to be so, too; and such wage differentials appear stably over time and exist internationally. Hence, over these years, many scholars, including Nobel laureates George Stigler of 1982 (Stigler, 1958), Robert Solow of 1987 (Solow, 1979), George Akerlof of 2001, and Daniel Kahneman of 2002 (Kahneman et al., 1986), have contributed to the understanding

of this inter-industrial wage pattern. However, it is found (Thaler, 1989) that none of the established theories actually explains the pattern satisfactorily without assuming something difficult to accept. To help ease the situation, this book provides a new theory that not only is intuitive and plausible but also assumes nothing difficult to swallow.

To successfully accomplish the aforementioned goal, this book models each commercial firm as a specific spinning yoyo, and reveals how these economic yoyos interact with each other through combinations and breakups on the basis of the evolution of a flow of such yoyos. Then, it develops a simple profit maximization model to study large and small firms and their differences in the areas of production, determination of the selling prices, and cost bases of their products. By employing this simple profit maximization model to the study of inter-industry wage differentials, it is found that financially resourceful companies have a large array of advantages over those companies that are limited by their resources. One example of such advantage is that the former companies bring in handsome profits in two dimensions—the product dimension and the personnel dimension, while the latter companies could only produce their profits from a single dimension—the products—with an invisible glass ceiling.

According to discussions in the first volume of this monograph series, not all firms attempt to maximize its profit. Instead, they all maximize the realization of their respective missions. However, considering the fact that the present world of business is still mostly composed of such firms that aim at maximizing profits, the simple profit maximization model developed for the described purpose above is appropriate for our purpose.

To maximize their profit in the human resource dimension, financially resourceful companies need to spend extra money on their employees. This end provides the long-sought-after explanation for the stable wage differentials existing inter-industrially over time and across national borders (Thaler, 1989). Beyond this wonderful outcome, the model derived herein also provides plausible economic reasons for other relevant questions, including, but not limited to, (1) why high-wage industries tend to have low quit rates; (2) why profits and market power are reliable predictors of industry wages; (3) why the association between wages and labor's share of costs in an industry is negative; (4) why industries with high capital–labor ratios tend to pay higher wages, and (5) why unionization rate increases wages for both union and nonunion members in a firm. And, what is worth noticing here is that in the labor market, the law of one price does not hold true for job opportunities that look identical in their job descriptions.

Because the present-day regional economies are closely intertwined with each other due to a high degree of globalization, when a nation or geographic region suffers from economic and financial shocks, in terms of their damaging effects and adverse impacts, the shocks tend to possess international and global characteristics. Since the 1920s, there had appeared many large-scale financial crises with cross regional effects (Hein et al., 2016; Wang & Hu, 2005). This book (specifically, Chap. 15) looks at such financial crises that are purposefully caused or created by certain group(s) of people in order to acquire economic and political gains.

For the purpose of this book, by financial crises, they mean all those with respect to, either individually or jointly, currency, credit, bank, debt, and the markets of stocks, bond, and financial derivatives, etc. They generally mean severe fluctuations that appear in the financial area of an economy. The chaos interferes negatively with the operation of the real economy. Each of such crises is accompanied by sudden deterioration of all or most financial indexes, stock market crash, capital flight, credit destruction, extremely tight money supply, rising interest rate, bank runs, bankruptcy of a large number of financial institutions, major decrease in the official reserves, inability to repay the interest and principal of maturing debt, currency devaluation both internally and externally, etc.

This book makes use of the systemic yoyo model, concepts of control theory and Bernanke-Gertler model of fundamental value of capital to show that when a large amount of foreign investments gathers in one place over either a long period or a short period of time and then leaves suddenly and massively, that local economy will suffer through a positive bubble, caused by the increased money supply as a consequence of foreign investments, and then a following negative, disastrous bust, caused by the sudden dry-out of the money supply. Because a large number of economic activities are either unexpectedly delayed or totally impossible to complete, the local investors are actually unable to continue to collect their originally expected dividends for many time periods to come. In other words, foreign investments can be employed as a weapon of mass destruction, if they leave strategically and suddenly, no matter whether they come quickly in a short period of time or slowly over a relatively longer period of time.

By combining the theoretical analysis on how financial crises could be caused or created by certain group(s) of people with the recent cases of speculative attacks in the arena of international finance, the following predicament can be readily seen. When a nation tries to develop itself economically, due to its loosening economic and monetary policies, large amounts of foreign investments would be welcomed; and at the same time, a lot of such foreign investments would strategically rush into the nation in order to ride along with the forthcoming economic boom. Now, what have been shown earlier is that if a large amount of foreign investments leaves suddenly, then the host nation would most likely suffer from a burst of the economic bubble with a large percentage of economic activities interrupted either temporarily or indefinitely. So, a natural question at this junction is: How could policy makers possibly design a measure to counter such sudden leaves of foreign investments in order to avoid the undesirable disastrous consequences? This book addresses this question by providing a possible strategy of defense.

1.2 A Brief Introduction to Systems Science

Based on the previous discussions, this section illustrates the reason why systems science and methodology are appropriate for us to address the large array of questions, as listed above, that appear in a wide range of areas in business studies.

In particular, the contents of this book are presented in a similar fashion as a scientific theory by using the systemic yoyo model as the intuition and playground, and a set of axioms and rigorously established game-theoretic results as the starting points. Here, such a logical reasoning as the one commonly used in mathematics and natural science will be used to derive generally-true conclusions by relating each newly introduced concept to the starting points or previously established conclusions.

This section is included here for the purpose of making this book as self-contained as necessary so that the reader does not have to go back and forth between this and the previous volume within this monograph series.

1.2.1 Numbers and Their Limitations

The concept of numbers appeared initially and naturally in daily lives, as people pursued activities for survival, such as hunting, where recording and counting were necessary. And then in ancient Greece, Pythagoras treated numbers as the origin of everything, while believing that through numbers and their properties, the mankind can comprehend all things under heaven. Such belief in the west led to the development of the traditional science as the religious foundation (Kenny, 2012). At roughly the same time, in ancient China of the east, Zhan Yin, a scholar of the warring states time, realized that the use of numbers is limited, because there are things numbers just cannot describe (Qu, 1985). Such recognition about the limitations of numbers led to how later generations of Chinese people treated numbers and why they did not appreciate numbers as much as Westerners, for more details, see Wu and Lin (2002).

Beyond their limited power to describe things, such as organizations, events and processes, numbers cannot appear before existence, reflecting their original purpose—measurement and recording. This reality greatly affects how well and useful numbers can be employed to predict the future and study the evolution and interaction of organizations, two key issues heavily dealt with in applied business studies. In particular, since the time of Pythagoras, numbers have been identified as points on the real-number line, which is an imaginary linear axis, leading to the appearance of the infinity ∞. That explains why analysis and reasoning based on numbers or numerical variables must be of bounded validity, because the natural world is curved so that it never reaches this imaginary ∞ (Lin, 2009, p. 21–22). That indicates that such a new science and methodology that can be utilized to describe organizations and their interactions need to be introduced to the study of various business issues. While systems science meets this requirement, therefore, it needs to be adopted as the tool of analysis and language of reasoning for the planned theory that will be presented in this book. In particular, by system, it means an organization or a structure where components are related somehow to each other to form an organic whole.

To know how consumer preference evolves and what is going to be favored next, one has to consider the attributes and systemic structures of the forever changing