

CHAPTER 10

A Theory of Systems of Political Economy, Part 2; Rise and Decline

Rise and decline is the result of two main sets of causes: an internal set and an external one. First I will inquire as to the internal causes, that is, how the structure, elements, and processes of the domestic system of political economy lead to rise or decline. Then I will explore the external causes, involving the interactions among nations in the international system.

Internal causes of rise and decline

There are two main cycles of positive feedback processes within a nation that cause absolute rise and absolute decline. One I will call an *expansion* cycle, leading to absolute rise, and another I will label a *depletion* cycle, leading to absolute decline. After investigating the nature of *absolute* rise and decline, I can address the issue of *relative* rise and decline, which is the focus of this study.

In order to discuss these processes, I will construct a model of the domestic system of political economy. As alluded to in Chapter 9, I will not use national niches as the elements in the models for these cycles. Instead, I will use the level of the hierarchy of domains that exists just below the political and economic systems. The retail/wholesale sector will be ignored. Without the retail/wholesale sector, the

distribution system becomes synonymous with the financial system, and thus I will use the financial system, not the distribution system, as one of the elements of the model.

The following is a full representation of the hierarchy of systems, as elaborated in the previous chapters:

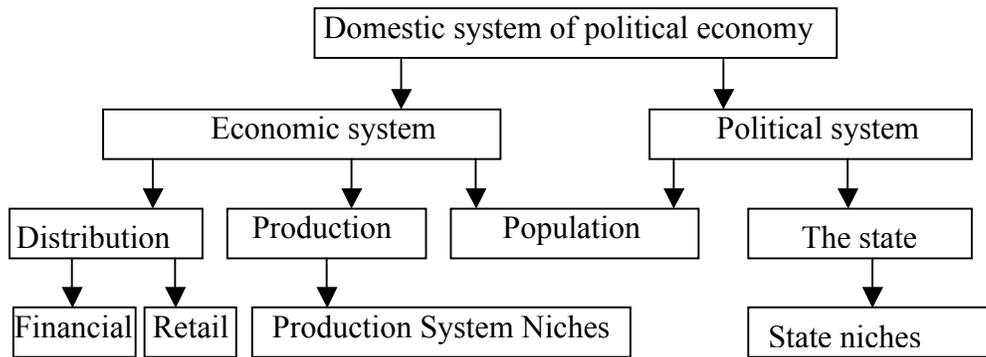


Fig. 49. Hierarchy of domestic system of political economy.

In order to explore the internal processes of rise and decline, the production system, population, financial system and state will be examined. Thus, the hierarchy of the model will be simplified into the following model:

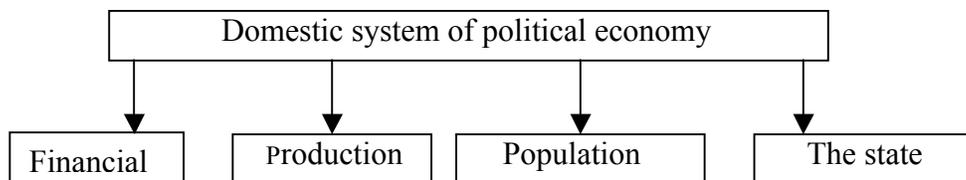


Fig. 50. Simplified hierarchy

There are three positive feedback loops which lead to growth in an expansion cycle (growth is synonymous with absolute rise in this model). First, the production system grows because of the positive feedback processes inherent within it, involving

reproduction machinery and the mutual symbiosis of the categories of production. These are the processes explored in the chapters on economic systems, chapters 6 through 8.

The interaction of the financial system with the production system is also a positive feedback process in an expansion sequence. In an expansion sequence the financial system is allocating resources back into the appropriate niches in the production system, leading to greater growth within the production system. In turn, more output from the production system makes more resources available for the financial system, and in an expansion cycle, the financial system recycles this greater resource flow back into the production system; the production system then grows larger, and the feedback loop begins again.

The third positive feedback process involves the interaction of the state with the economic system, which is composed of the financial system and the production system. In an expansion cycle the state provides security, rule of law, and management of the economy; these services lead to greater growth of the production system and the financial system, both of which provide the state with greater resources, and the feedback loop begins again.

These interactions are diagrammed below:

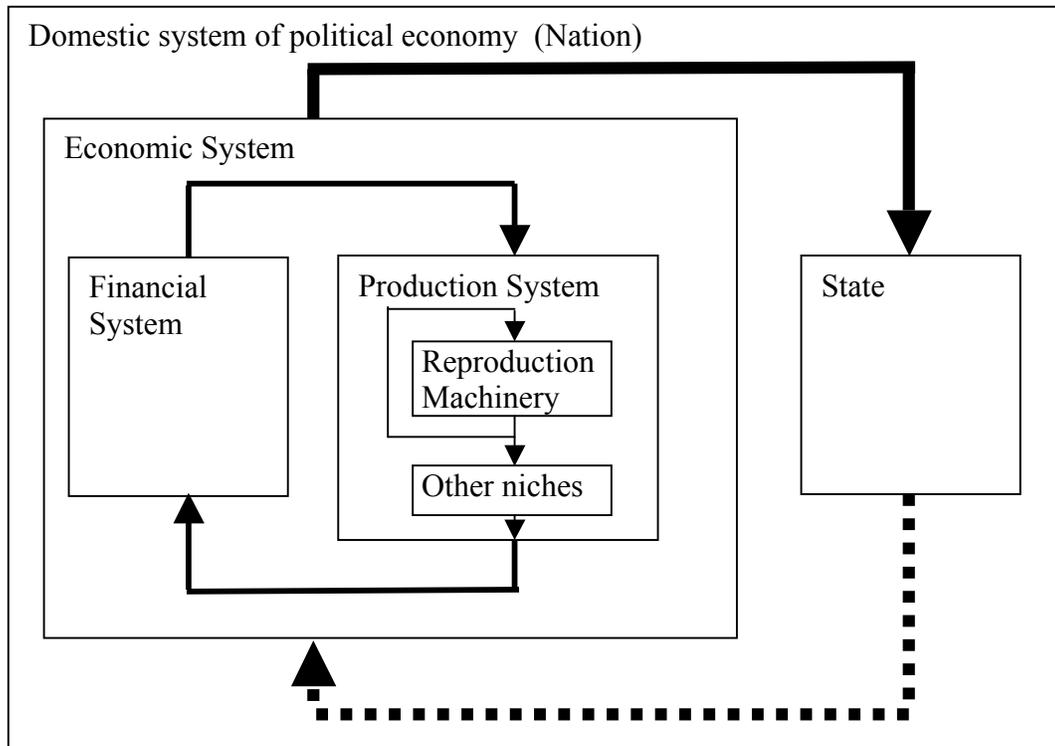


Fig. 51. Positive feedback loops during absolute rise.

Resources flow out of the reproduction machinery niches and back into the reproduction machinery niches (red line); this is the first positive feedback process (the categories of production also form a positive feedback loop, but for simplicity, this loop is not shown). Resources flow out of the production system, into the financial system, and then back into the production system (green lines); this is the second positive feedback process. Finally, resources flow out of the economic system and into the state (solid blue line); the state provides protection, rule of law, and management, as shown by the dotted blue line. The role of the population will be dealt with later.

These loops of mutual reinforcement move from the production system outward, starting with the positive feedback loops of the production system. This production system then forms a positive feedback loop with the financial system, giving rise to growth of the economic system as a whole. Finally, the economic system forms a positive feedback loop with the state, giving rise to growth of the nation as a whole. Thus, growth progresses from production system to economic system to domestic system of political economy.

These three sets of expansionary feedback loops flow in the opposite direction as well. The growth of the system of political economy gives support to the economic system, and the growth of the economic system as a whole is necessary for the growth of the production system. The following diagram is a schematic of this interaction:

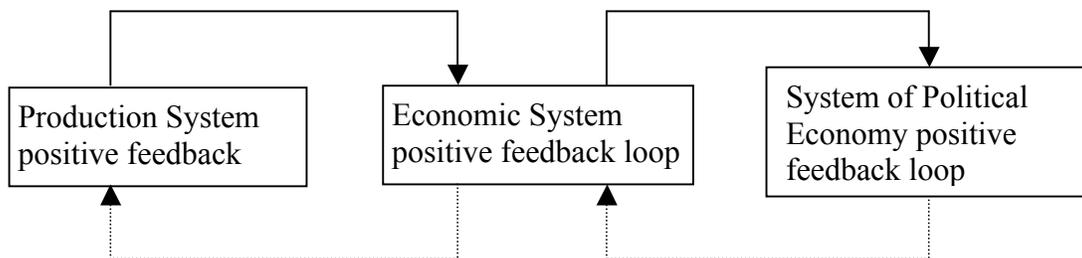


Fig. 52. Expansion cycle.

The solid lines show the primary flow of positive feedback processes, while the dotted lines show the secondary effects of positive feedback processes backward through the domestic system of political economy. There is therefore a cycle of feedback loops, which I call the expansion cycle.

Thus, in this model of an absolutely rising nation, there is an expansionary cycle of feedback loops at work. The production system, financial system, and state are all helping each other to expand. Insofar as a first step can be identified in a cycle, the production system provides the dynamic for the loops of growth. The resources of the production system are the basis of the feedback loop between the production system and the financial system, and the resulting resources of the economic system are the basis of the feedback loop between the state and the economic system. Therefore, *the most important single cause of the rise of a Great Power (or any nation) is the growth of the production system*; this is the sixth hypothesis of political economy. The financial system and state are critical causes of growth, but the production system remains fundamental.

The production system can be seen as a metagenerator within an expansionary system of political economy. In an expansionary system, the production system serves as the source of exponential growth. As shown in figure 56, it creates the generators which it then uses to create more generators. It also creates the resources used in the economic system, the second stage of this tripartite generative system, which generates the third stage, the domestic system of political economy as a whole. The entire expansionary system can be diagrammed as the following:

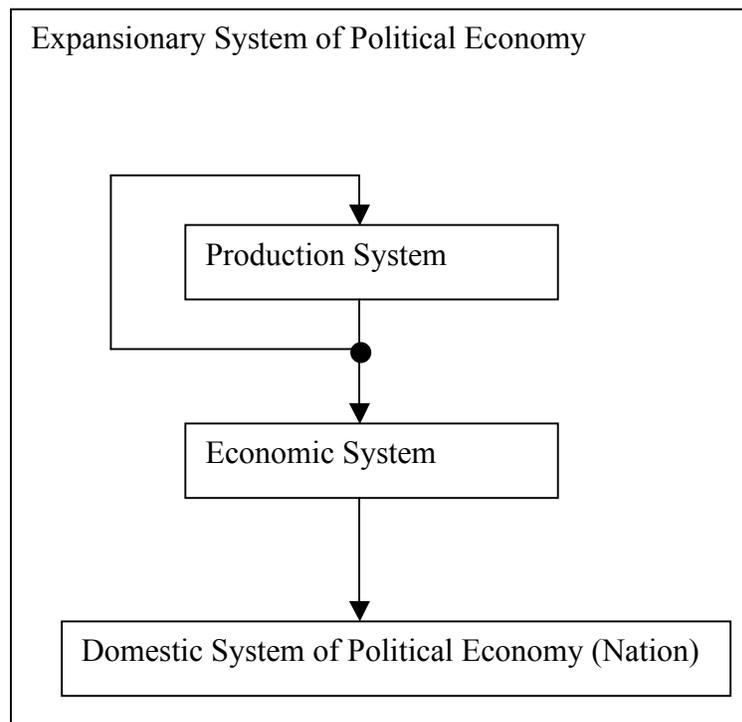


Fig. 53. Tripartite expansionary system.

In a depletion cycle, on the other hand, the cycle of mutually reinforcing positive feedback loops breaks down. The production system retains its internal cycle of growth, but the financial system fails to recycle resources back into the production system in the

appropriate manner. Instead, the financial system *depletes* the production system, and retains the resources for itself. The financial system becomes parasitic, instead of being beneficial. Similarly, in a depletion cycle, the state depletes the resources of the economic system; the state extracts a relatively large quantity of resources and denies the economic system the resources it needs to grow.

There is a cycle of feedback loops in a depletion cycle. First, the production system engages in a beneficial positive feedback loop. Then, between the financial system and the production system a positive feedback loop occurs, but the financial system is the only beneficiary. Finally, the state builds up its assets in a positive feedback loop with the economy, but the economy as a whole declines.

If the financial system or the state are controlled by people whose primary motivation is short-term accumulation of power, then the state or financial system will behave in the same manner as an aggressive, powerful nation surrounded by weaker states: there will be a snowballing accumulation of power. Instead of the conquest of weaker states by an imperialist power as in an international system, a financial system or state dominated by a short-term power drive will “conquer” the resources of the nation, at the expense of the production system. This process of resource “conquest” is the hallmark of the depletion process.

Both of these cycles are ideal types (Weber in Gerth and Mills 1946, 59-61); that is, they are simplified models of reality constructed so that we can understand a complex process. In reality, various aspects of both the expansion and depletion cycles are usually at work at the same time in a nation. The financial system and state may both be

encouraging the production system in some ways, and depleting the production system in other ways.

Both the financial system and state depend on a growing production system as the basis for their own growth. They will therefore have a structural motivation for encouraging the production system, not depleting it (hypothesis three of systems of political economy, in chapter 9, made the same claim concerning the state). This dependence on one part of a system in order to enable growth in another part of the system is a manifestation of a negative feedback process in a generative system. In a generative system, as explained in chapter 4, there is a range of relative component growth rates that must occur if the system as a whole is to grow.

In order for the production system to grow, the elites who control the state and financial sectors must be willing to forgo smaller short-term gains for larger long-term returns. Any investment involves a similar calculation. However, throughout history, elites have not always been prudent. They have often been unable to resist the temptation to eat their own seed corn, as the saying goes, or to kill the goose that lays the golden eggs, to cite a fairy tale. These very old cultural references have had great staying power because they sum up problems that have recurred throughout history. Humans will often sacrifice long-term riches and security for short-term indulgence. When elites are unconstrained and behave in this way for a long period of time, absolute decline occurs.

In chapter 9 I stated that “I will define a *complete system of political economy* as one in which the state manages the economic system in such a way that a complete economic system exists. A complete system of political economy is composed of a complete economic system and a state which is a competent manager.” That is, in a

complete system of political economy, the state is not seriously depleting the economic system. I also suggested in chapter 9 that early modern European states developed in such a way that the economic systems were allowed to thrive, instead of being strangled by taxes and over-regulation. In the next section I will put forth a hypothesis as to why this occurred, but the important point to made here is the following: *The establishment of the modern state prevented the depletion cycle from leading to absolute decline; nations with a modern state do not decline absolutely, they only decline relatively. Modern nations usually rise absolutely because of the expansion cycle.* This is the seventh hypothesis of systems of political economy. Thus, for most, although not all, Great Powers in the industrial era, relative decline occurs not because of absolute decline. Relative decline of a Great Power occurs because growth is less rapid than for other Great Powers.

Before the invention of the modern state, a domestic system of political economy had an inherent tendency to move from absolute rise to absolute decline. As discussed in chapter 2 of this study, Robert Gilpin and many other scholars have noted this rise-leads-to-decline phenomenon. This process is also still possible in the modern era, as will be explained in the next section.

This rise-leading-to-decline sequence occurred, and can still occur if safeguards are not taken, because the distribution of political economic capability within the nation changes during its absolute rise. In particular, the capital assets controlled by the financial system and state increase relative to the capital assets controlled by the production system. There is a shift in the distribution of capabilities, that is, capital

assets, among the political economic niches of the nation. The structure of the domestic system of political economy changes.

This change occurs because much of the output of the production system flows into the state and financial system; it is the choice of the controllers of assets within these two systems to allocate the quantity of these assets that will be recycled back into the production system. When resources are not recycled, but remain within one of the subsystems of a nation, those resources leave the beneficial, expansionary cycle of positive feedback loops. Resources are only useful for long-term growth if they move into, and the output eventually moves out of, the production system. Isolated non-production system resources become static, that is, they can no longer add to the dynamism of the positive feedback loops of growth. As postulated previously, state and financial elites have tended to hold onto resources that should have gone back into the production system because they seek short-term fulfillment of desires for wealth and power over longer-term rewards.

Sometimes state or financial elites miscalculate in their estimates of what quantity of resources can be safely diverted from the production system. They may feel that the needs of military defense demand more diversion of resources than are beneficial for the long-term growth of the nation; it may even be the case that a nation finds itself in an environment in which it has no choice but to arm itself into a state of decline.

When the financial system and/or state become parasitic and deplete the production system, the production system loses power relative to the other subsystems. Thus, as shown in the diagram below, the production system loses political economic power to the state and financial system, thus leading to a positive feedback process (or

vicious cycle) wherein the state and financial systems accumulate more and more power relative to the production system.

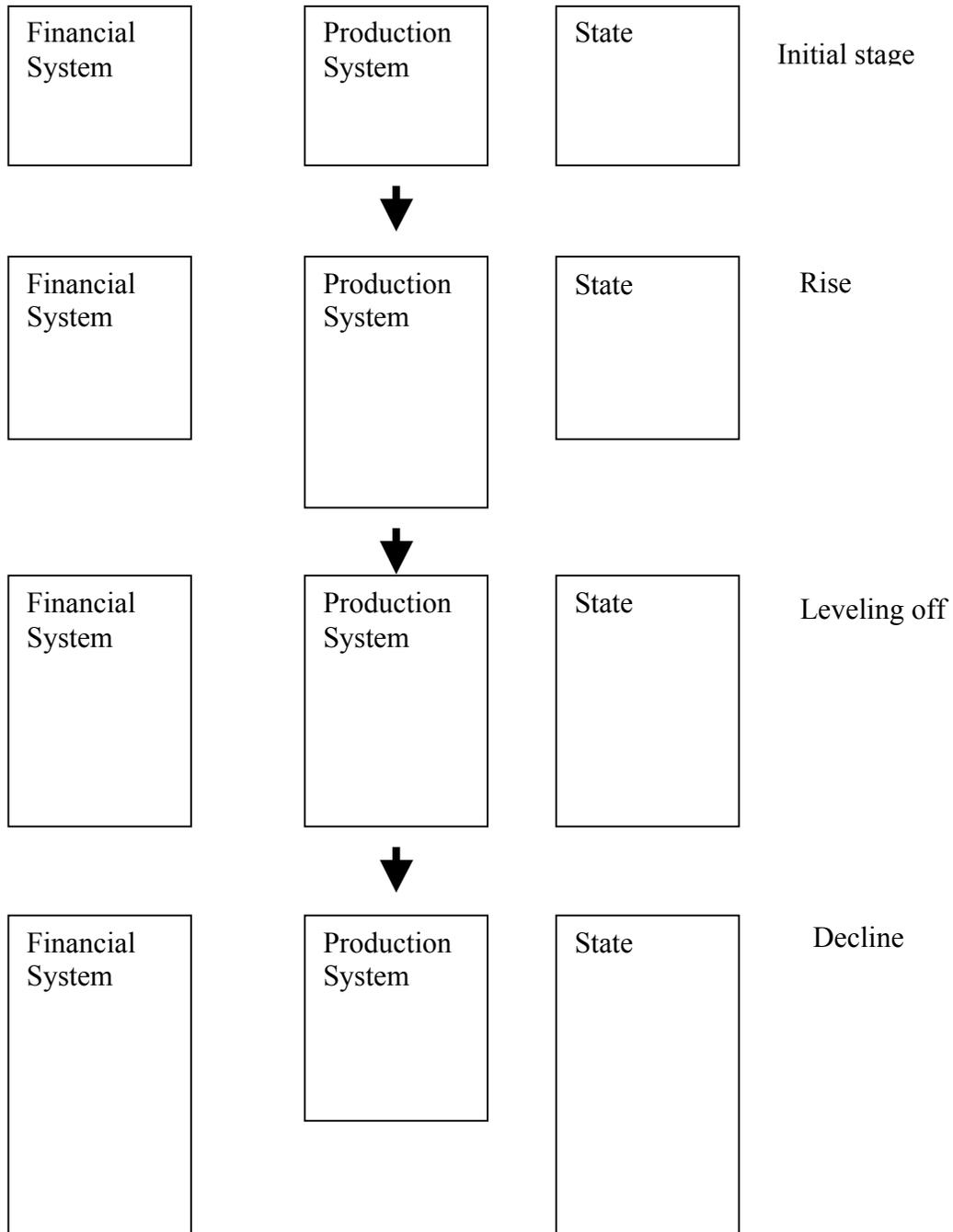


Fig. 54. Sequence of absolute decline

The sizes of the boxes indicate the relative sizes of the various systems relative to the initial stage. In the rising stage, the growth of the production system will slightly exceed the growth of the financial and state systems. In the leveling-off stage, the financial and state systems will become more powerful as a result of the growth of the production system, and will drain enough resources from the production system that the production system will stop growing. Finally, in the declining stage, the production system will shrink even as the state and financial systems temporarily expand.

The population is also the recipient of the resources which ultimately come from the production system. The population supplies the labor force for the various elements of the nation. Thus there is a beneficial positive feedback loop between the population and the other subsystems of the nation. On the other hand, the population can also deplete the resources from the economic system, when over consumption erodes savings and investment, leading to decline. However, I am focusing on production and thus will not further explore the role of consumption by the population in the processes of rise and decline. In my model, the state, financial, and production elites have a greater influence over the health of the economic system than the population as consumers.

This sequence from a supportive state and financial system to a depleting state and financial system is similar to the change from mutualism, as defined in biology, through commensalism, and finally to parasitism/predation (Campbell et al 1999, 1117-8). These terms are meant to explain the effects of the interaction of two species within an ecosystem. In mutualism, a positive feedback loop exists because both species benefit from the association with the another. This situation is similar to the process of absolute rise as postulated above. In commensalism, one species benefits, while the other is not

affected. This might be the situation in my leveling-off stage of rise-leading-to-decline, in that the state and financial systems are expanding, while the production system is static. Finally, parasitism and predation involve gain on the part of the parasite or predator and loss on the part of the host or victim. In the declining stage of rise-leading-to-decline, the state and/or financial system may be said to be parasitic or predatory.

Many authors have used the image of the parasitic or predatory state in order to model state-society interactions. For example, in *War Making and State Making as Organized Crime*, Tilly states that “to the extent that the threats against which a given government protects its citizens are imaginary or are consequences of its own activities, the government has organized a protection racket” (Tilly 1985, 171). In *Plagues and Peoples*, William McNeill compares the microparasitism of microorganisms with the “macroparasitism” of humans: “A conqueror could seize food from those who produced it, and by consuming it himself become a parasite of a new sort on those who did the work” (McNeill 1976, 6). In *Embedded Autonomy*, Peter Evans inquires into the reasons for and implications of the existence of what he calls “predatory states,” which “extract such large amounts of otherwise investable surplus while providing so little in the way of ‘collective goods’ in return that they do indeed impede economic transformation” (Evans 1995, 44). Rise-leading-to-decline can be seen as a movement from mutualism, or encouragement on the part of the state and/or financial system, to parasitism or predation by the state and/or financial system.

By constraining the state and financial systems, the modern state for the most part has broken the sequence of absolute rise leading to absolute decline as proposed above. However, some production systems may be more hampered or encouraged by their

respective state and financial sectors than others. There will still be growth in the more heavily depleted nations, but they will fall behind other nations which have more vibrant economies. Thus, the *relative* rise of a Great Power will always be accompanied by an *absolute* rise in political economic power (that is, capital assets), and a *relative* decline will usually also be accompanied by an *absolute* rise in power.

The later history of the Soviet Union was a case of *absolute* decline accompanying *relative* decline. But as will be explained in the next section, this phenomenon has been rare among Great Powers in modern times. In order to understand the causes of relative rise and decline, therefore, it is necessary to compare the characteristics of absolutely rising Great Powers, and thereby determine why particular Great Powers are rising more rapidly than other Great Powers. In order to accomplish this task, the focus of study should be on the mechanisms of the production, economic, and political economic systems as enumerated in chapters 5 through 9, and how those mechanisms lead to growth. Occasionally, it will be necessary to understand how depletion can go so far as to lead to absolute decline.

Relative rise and decline is a multicausal process. The performances of the state, financial system, and production subsystems are all critical to the performance of the nation as a system. The production subsystem causes the most change in the relative performance of a nation.

The rise and decline of Great Powers must be understood within the context of the performance of the entire set of Great Powers of a particular time period. If rise and decline is usually relative, then the internal causes of rise and decline of a Great Power

must be discussed within the wider international system of which each Great Power is a part.

External causes of rise and decline

In different historical eras and regions of the world, various kinds of political economic structures have become dominant. Depending on the nature of the others with which a particular nation interacts, a specific national structure might be more or less successful within a particular international system. In the extreme case, a lagging polity might be conquered by another polity. Rise and decline is a relative phenomenon because all units exist within a system of other nations. These other nations set the context within which the rise and decline of a particular nation occurs; thus, there are *external* causes of relative rise or decline.

A nation with a political economic structure which is better adapted for a particular international system will tend to have greater political economic capabilities available to its state elites than a nation with an inferior structure, assuming similar size. When an imbalance among nations occurs, the stronger polity has an opportunity to exert influence over or even conquer the weaker neighbor or neighbors. It was pointed out in chapter 5 that a positive feedback process of snowballing conquest may then occur, in which an expansionary nation, because of its larger and larger quantity of capabilities, will be able to obtain yet more capabilities through conquest.

In chapter 5, I assumed that these capabilities consisted of a military force, without specifying how that military force was constructed. Now that I have included

destruction machinery into the system of political economy, the description of snowballing conquest can be completed. If a conquering nation controls the capital assets of its colonies, than it can use those capital assets to further increase the production and destruction capabilities at its disposal. These new resources can be fed into the military apparatus, and more conquests can occur. The total capabilities available to the state snowballs or accumulates in a nonlinear way.

Balances of power are often used to prevent the rise of a Great Power by denying the expansionary Great Power or nation seeking to be a Great Power the resources of potential victims of aggression (see, for example, [Lustick 1997] concerning the Middle East).

Much of the process of state formation is the consequence of a snowballing process of conquest. In order to maximize the benefits of conquest, the state of the conquering nation must integrate the various niches of the conquered polity with the niches of the conquering nation, or else it will be more difficult to obtain the full benefits of the new niches. To take advantage of *external* causes of rise such as conquest, there may also be an *internal* process of management by the state.

Thus the internal and external causes of rise and decline may both be factors in the *relative* rise and decline of Great Powers. An inquiry into only the internal processes of rise and decline would lead to a focus on the *absolute* rise and decline of a country. In chapter 2, I claimed that Gilpin had basically taken an approach based on the performance of one country, and that Douglass North was interested in a permanent ranking of groups of nations in relation to each other. But because this study is concerned with the ways in which a nation compares to other nations, *through time*, the

measure of interest is the change in capabilities of one nation compared to other nations. Thus, a nation which is increasing its absolute capabilities may be declining relative to other nations which are increasing their capabilities at a faster rate. It was postulated in the previous section that most cases of relative rise and decline are the manifestation of the absolute rise of both the nations that are relatively rising and the nations that are relatively declining.

Gilpin argued that the internal, social ordering of a polity is a critical factor in the relative performance of that polity, through time (as I discussed in chapter two). Different structures of domestic systems of political economy will be more or less successful, depending on the structures of the other nations which constitute the international environment. When the internal ordering, or structure, of a nation changes, the nation may become more or less successful than the other nations in its environment. Thus, a change in the national structure may be a cause of relative rise or decline (a change in structure may also have no effect). When a change in national structure leads a nation to become more successful, other nations may adopt the change as well. If enough nations, and particularly Great Powers, adopt the innovation or innovations, the environment that all nations exist within will have thereby changed; nations which were successful in the environment before the change took place may become less successful, and other nations may embark on a spectacular rise.

Therefore, a change in the structure of a nation may lead to a change in the international environment in which other nations act; eventually, the structure of the international system will change because the distribution of capabilities among nations will be affected by the internal changes going on within the nations that make up the

international system. Thus, the structures of the domestic systems of political economy, or nations, *evolve through time*.

I am proposing a theory of the evolution of national structure which involves two processes: first, the *variation* of national structure, an internal, or elemental, cause of change; and second, *adaptations* which the international system encourages nations to adopt, which is an external, or systemic, cause of change. In the biological domain, of course, Darwin proposed a theory of evolution which is the model for any theory of evolution, including my model. It may be instructive to explore the broad principles he enunciated.

Darwin's theory of evolution is very powerful because he postulated both an internal and external cause of change in order to explain evolution. For Darwin, the internal cause of evolution, emanating from the individual organism, was what he called "variation" in forms, or what are now referred to as "mutations". It was well-known in the nineteenth century that variations within a species could occur through breeding of plants and animals. Darwin took advantage of this knowledge in the first chapter of "Origin of Species" (Darwin 1964 [1859]). People select the variations they prefer in the course of breeding; Darwin referred to this process as "artificial selection".

Darwin's external cause of change in evolution is "natural" selection. The environment, or ecosystem, will encourage, or "select", the organismic variations which are better adapted to that ecosystem than those organisms that are less well-adapted to that ecosystem. The natural selection process, unlike the process of artificial selection, is not consciously made. The ecosystem is self-organizing: "Owing to this struggle for life, any variation, however slight and from whatever cause proceeding, if it be in any degree

profitable to an individual of any species, in its infinitely complex relations to other organic beings and to external nature, will tend to the preservation of that individual, and will generally be inherited by its offspring” (Darwin 1964 [1859], 61). The ecosystem will encourage some variations and discourage others. The words “encourage” and “discourage” are not meant to imply that the system has a conscious desire; the particular configuration of the system increases or decreases the probability that a particular type of element, or in this case a particular species, will thrive or fail.

Writing about the domain of international political systems, Kenneth Waltz postulates the existence of two sets of behaviors which are indirect effects of the structure of an international system (Waltz 1979, 74-77). The first, which Waltz calls “socialization”, highlights conformity in behavior among nations when they attempt to operate effectively within the international system. I would like to propose that in the long-run, one way that states behave in order to conform to the international system is to manage the adoption of successful variations. For example, the Japanese state implemented a drastic change in structure in the Meiji restoration of the late nineteenth century, in order to imitate many aspects of the successful European polities. However, this idea of following an existing model misses an important phenomenon: the states that are socializing to a particular national structure are often following the lead of some state or set of states that originally created a new “variation” in national structure. The state that originates the variation is not undergoing a process of socialization; quite the contrary, the state or nation is actually *innovating*. Thus, the effects of existing within a system are not only felt through socialization, but also through innovation.

The second indirect effect of structure on the system of states, according to Waltz, involves competition among states, which is similar to Darwin's conception of natural selection (the concept of socialization is similar to Darwin's concept of artificial selection). That is, a conscious choice is not made to socialize; those nations that are better-adapted to a particular international system succeed and others fail. Throughout history, the better-adapted nations have conquered or otherwise controlled the less well-adapted nations; most forms of political economic systems have become extinct. States must respond to the existence of various forms of domestic systems of political economy and to changes in national structure, or they risk relative decline or even elimination. Similarly, Darwin explained, "the structure of every organic being is related, in the most essential yet often hidden manner, to that of all other organic beings, with which it comes into competition for food or residence, or from which it has to escape, or on which it preys" (Darwin 1964, 77).

I am absolutely not advocating, however, the notion that success in the international system indicates superiority other than that of the generation of political economic power. Late nineteenth century "Social Darwinists" made the mistake of equating success in a particular international environment with cultural and racial superiority. Darwin was always careful to link adaptations to *specific* environments, which were constantly changing because their constituent parts were constantly changing. Darwin wrote an encyclopedia on the subject of barnacles; he was not interested in finding the eternally superior organism.

Successful variants of a domestic system of political economy have risen relative to less successful variants, depending on a particular international system in a particular

period of time. This study will not give a full accounting of the variations of structure that have occurred throughout history, and their changes of fortune through time. But it is important to discuss the main features of the evolution of the domestic system of political economy during the modern period, because the characteristics adopted since early modern times are still critical today.

National evolution in the modern period

As was discussed in the previous chapter, the hallmark of the rise of the modern nation was that a complete system of political economy was constructed on the territory controlled by the state. That is, in early modern Europe, some polities included the following: 1) a state with a competent bureaucracy (and taxing authority) and a means of violence, including a destruction machinery (or technology) niche; 2) a reasonably efficient financial system; and 3) a production system with all the niches in place, using technology which was the best for the time period. The state in such a system was constrained in such a way that it did not deplete the economic system.

Such a political economic system contains a *balance* among its elements, which includes the state, the production system, the financial system, and the population. All elements must grow in power if the system as a whole is to grow in power. This is the consequence of a negative feedback process of a generative system. The shift from a potentially all-consuming state to a balance among elements of a nation was of historical importance because the depletionary cycle then became infrequent.

How was this shift achieved? The eighth hypothesis of systems of political economy is that *partial to full control by the economic system over the choice of some or*

all state elites, plus partial control of the state over the financial system, results in a situation that allows for the dominance of the expansionary cycle within a nation. There must be some constraint on state elites by economic elites, or else the state elites will be able to deplete the economic system. In addition, there must be some form of control over the financial system, or else the financial system can also become unconstrained and deplete the production system. Thus, the *structure* of the domestic system of political economy must be constructed in such a way as to enable the elements to survey and check one another. My next task is to describe what sort of national structure is required.

In the chapter on political systems, I proposed the hypothesis that “a dictatorship will impose greater violence on the population than a democracy.” This is because there is a *cycle* of control among the elements of a political system in a democracy, but only a *sequence* of hierarchy in a dictatorship, as I showed in the following diagrams:

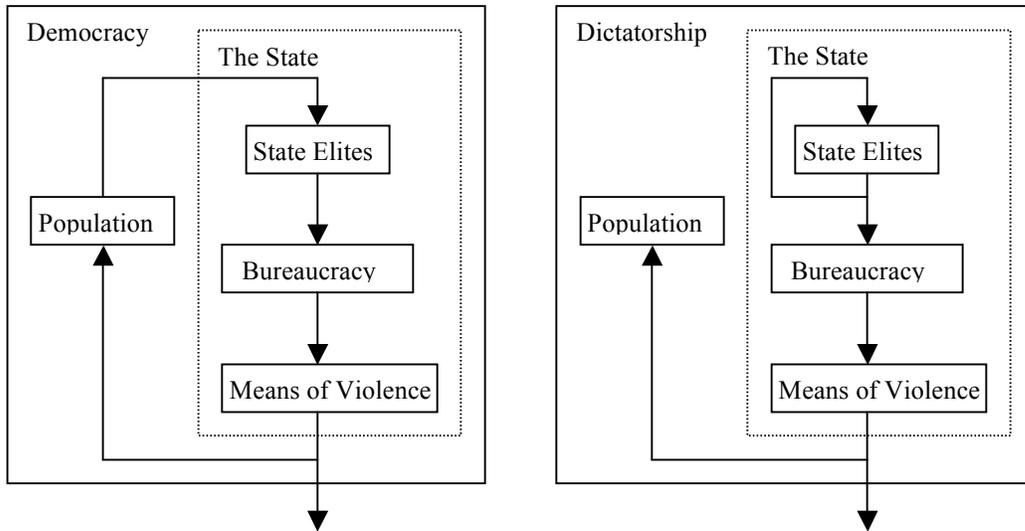


Fig. 55. Democratic and dictatorial political structures.

If I replace the box labeled “population” with a box labeled “economic system”, then the following diagrams describe the two different structures:

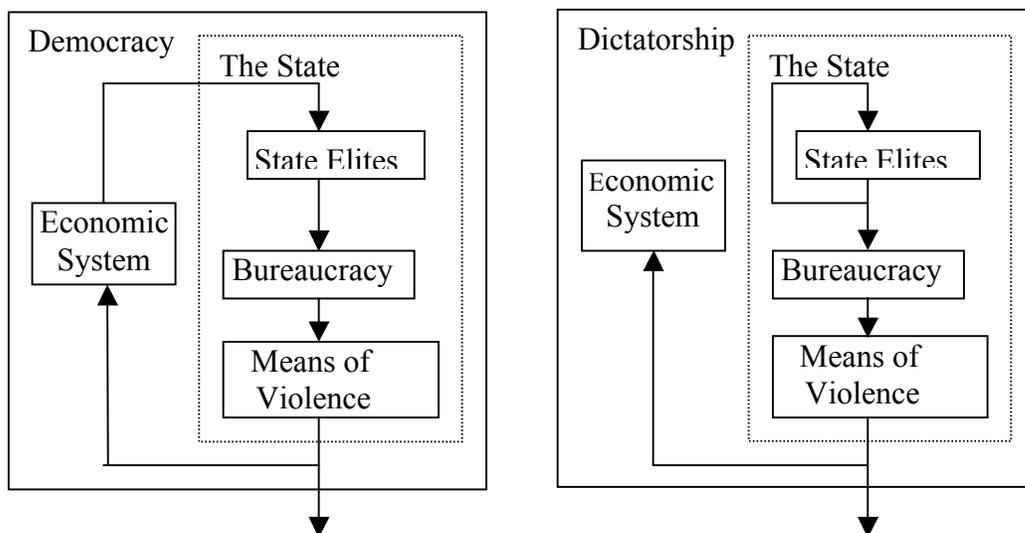


Fig. 56. Democratic and dictatorial domestic systems of political economy.

A corollary of my hypothesis that democracies wield less violence on their population than dictatorships, therefore, is that democracies (or, more formally, nations in which the economic system has partial or full control over the choice of at least some state elites) wield less violence on the economic system than dictatorships. Thus, the members of the population who are members of the economic system (which includes most adult members) would be able to resist harmful depletion of the economic system on the part of the state. In a *partial* democracy, such British parliaments before the 19th century, only the economic elites among non-state elites have some power over the choice of state elites. In a *full* democracy, all people in the nation have some power over the choice of state elites. For the purposes of the eighth hypothesis, a democracy can be of either type in order for a balance among elements to be enabled.

This line of reasoning explains more fully than property rights the phenomena accompanying economic growth as described by Douglass C. North. As I stated in Chapter 2, “States can use their power to make institutions as they wish, whether or not such institutions make economic sense, and the distribution of power over the state organizations will therefore have a critical effect on institutions. Like Gilpin, North confuses rules and property rights with distribution of power.” I also stated that “often in North’s writings, he stresses the importance of the security, or lack of security, of property rights.” Thus, control over violence on the part of the economic system would seem to be an important cause of the security of property rights. North’s examples, which included Athens, Rome, the decline of feudalism, and the early Parliaments of the Low Countries, England, France, and Spain, are all discussions of power-sharing

schemes, or the lack of such power-sharing, over the state elites on the part of economic elites.

This power-sharing, which started in early Modern Europe with various forms of Parliaments, was the crucial structural change which allowed for the dominance of the expansionary cycle over the depletionary cycle. North, as pointed out in chapter 2, provides evidence for this connection. For example, speaking of England, he states that “the economic policies of the Tudors were the same as those of the continental kings. Had they been able freely to trade monopolies and other restrictive rights for revenue, the outcome for economic efficiency would have been similar [to France and Spain]. But in England the crown ran into effective opposition”, in the form of a powerful parliament (North 1981, 156).

This was an evolutionary adaptation of the domestic system of political economy on the part of some European countries. During the pre-industrial period, there were various improvements and temporary regressions on the part of many of these countries; the French Revolution can be seen as a “correction” of the French political economic system, for instance, which had earlier included Parliaments. In addition, regulation over the financial systems, particularly over the currencies, was another hallmark of this period.

Therefore, the first structural, evolutionary national adaptation of the modern period was the distribution of power over state elites, and the regulation of the financial system by the state. This adaptation, along with the development of production technologies, led to a complete system of political economy, as defined at the beginning of this section.

By encompassing a complete set of production system niches, a Great Power also therefore contains reproduction machinery (or technology) and production machinery (or technology) niches. The existence of a complete system of political economy, therefore, implies that the reproduction and production niches exist, which implies that the complete nation is also a Great Power. While pre-industrial nations did not have industrial machinery, they still had technologies which were equivalent to, if less productive than, the industrial machinery technologies (see Diderot 1959, Williams 1987, Strandh 1979).

Operating simultaneously with this need for completeness in order to compete effectively in early modern times, and becoming more critical through time, was the need for a larger and larger minimal quantity of capabilities for a powerful nation, and in particular, for a Great Power. This was why Machiavelli called for Italian unity at the end of “The Prince” (Machiavelli 1979, Chapter 26). According to the historian Ludwig Dehio, continental powers such as France under Napoleon, or Hitler under Germany, were attempting to achieve the size of other “world powers”, such as Great Britain, Russia, and eventually, the United States (Dehio 1962).

There is always a historically-contingent maximal size for a Great Power . The human capital workers of a production system need to be in close enough proximity to one another to be able to interact on a constant basis. Since all of the production system niches complement each other, the people who make up these sectors must be able to make this complementarity possible by interacting. As technologies of communication and transportation improve, the distances between various human capital workers in a complete system may become larger. But at some point, the distances become too large

for effective production and innovation. Innovation-by-doing requires the physical presence of the innovators at the production site, and travel between sites requires time. Since all production takes place through time, the minimization of this transport time is critical to a thriving production system composed of mutually reinforcing elements.

Because production and innovation are intimately interrelated, technological progress will always depend on physical proximity among producers within different niches of production systems. Physical movement is, in turn, dependent on the ability of the state to provide protection to the people and things that are moving. This implies that *there is some territorial size for a system of political economy, which is both big enough to encompass all niches of a production system, but small enough to allow for intense interactions among the human capital workers who are responsible for the output and development of those niches.* This is the ninth hypothesis about systems of political economy. There is a range in the size of a domestic system of political economy which is both not too small and not too big, but the lower and upper limits on this range have both generally increased through time because of advances in information production technology (communications) and energy-converting production technology (transportation). The second national adaptation was to set the size of Great Powers to what has come to be known as the “nation-state”, that is, a territory controlled by a state which is larger than a city but more integrated and generally smaller than an empire.

By the middle of the nineteenth century, the international environment had changed yet again. An innovating nation, Britain, had developed the world’s first reproduction machinery sector, a process which is usually called the Industrial Revolution. Any polity that could not create a machinery-based production system was

doomed to conquest or domination by those who did develop such technologies. Much of the international system was divided up among the imperialist powers during this time period; some, such as Japan, were socialized, that is, the state embarked on a conscious design of catching up to the other industrial nations.

The state has generally had to manage the process of industrialization in some form. As Gerschenkron argued, the later a state decided to industrialize, the more the state had to become involved in the industrialization process (Gerschenkron 1962). Thus, the production system of England required relatively little help from the central government, although some aid was provided. The young United States helped manufacturers by developing much of the machinery used for manufacture in an attempt to stock the nineteenth century arsenals. The German government, in the late nineteenth century, helped set up a network of technical institutes and apprenticeship programs. (Smyser 1993). The Japanese state became involved with the establishment of various niches of their production system. The most extreme example of state intervention was the U.S.S.R., in which the state took over the entire economy.

Thus, nations had to adapt by industrializing, that is, developing machinery and machinery-based final production sectors, or risk losing power within the international system. A nation whose production system and military is based on industrial machinery I will term “fully industrialized”.

Increasingly as the nineteenth century progressed, and then to an even greater extent in the twentieth century, the state was called upon to *manage* the production system. This included industrial policies of direct intervention in the form of subsidies and protection, and also the establishment of networks of institutions that create human

capital, that is, educational facilities and laboratories. Structurally, this intervention manifested itself with the recycling of resources which the economic system provides to the state in the form of revenue, which were redirected back to the production system in the form of subsidies and educational facilities.

Therefore, the third evolutionary national adaptation was to change the structure of the production system from a partially reproductive generative system, based on pre-industrial technologies, to a fully reproductive generative system, based on industrial machinery (that is, machinery which is mainly constructed out of iron, steel, or other metals, powered by inanimate power, shaped by other industrial machinery, and uses industrial machinery to process information). In addition, the states learned to manage the production system, each state doing so in its own way.

By the late nineteenth century, then, three major attributes characterized a Great Power that had good long-term possibilities for rising relative to other Great Powers and other nations: 1) a complete system of political economy, with a balance among the production, financial, state, and population sectors, usually involving some form of democratization; 2) a size which was big enough to encompass a complete system of political economy yet small enough to allow for human capital interactions, depending on the transportation and communications technologies of the times, usually involving the creation of a nation-state; and 3) a fully reproductive production system and a state which competently managed the industrial nature of the production system.

In the twentieth century, many variations in structure took place, although space limits my discussion of these variations. Four variations stand out. First, by the end of World War I, monarchy as a state structure had almost disappeared as an option for a

Great Power. That is, the choice of the most important state elite was not limited by the literal reproduction of the current monarch. This is a structural change in the state. This change may have occurred because the accelerating pace of technological change, coupled with the need for competent management of the economy by the state, meant that the choice of competent state elites needed to be more reliable than the genetic mix of the heir to the throne. However, the causes of this structural change are beyond the scope of this study.

Second, as noted by Karl Polanyi in his book *The Great Transformation* (Polanyi 1944), in the first half of the twentieth century states learned that it was necessary to increase the control and regulation of their financial systems in order to avoid the panics and depressions that marked economic life until World War II. In various industrialized countries, central banks were given the power to regulate various aspects of financial life. This was a structural change in that the state was given greater control over the financial sphere.

Third, a major variation of the modern system of political economy was attempted, which may be treated under the term “totalitarianism”. A totalitarian state was one which included a fully reproductive, industrial production system, but crucially, the structure of the system of political economy was actually pre-modern, as I have defined the term. The totalitarian state did not promulgate a balance among the subsystems of the nation; instead, the state had total control over all other subsystems (finance, production, and population).

In the case of the Soviet Union, Stalin consciously created strong reproduction and production machinery niches, along with a powerful destruction machinery niche

(Davies et al. 1994). However, the destruction machinery niche soon came to receive the lion's share of the resources generated by the production system, and by the 1980's, the Soviet Union was doing something that no Great Power had done during the industrial era; it was declining absolutely (Shmelev and Popov 1989, Rowen and Wolf 1990, Nove 1992). Thus, by structuring the Soviet political economic system in such a way as to encourage a snowballing of power on the part of the state, the Soviet state brought about the operation of a depletionary cycle.

The totalitarian variation met with short and medium term success, but eventually became extinct. Another variation, which I earlier called "fully democratic," has become very widespread at the current time. Previously, I claimed that a system of political economy in which the economic system, in some form, had some control over state elites, would allow a beneficial balance of power to form. This control by the economic system occurred in the early modern period in the form of Parliaments. This extension of the right to vote for state elites and property owners was enough to engender a balance within the nation. Since then, of course, the right to vote has been extended to all adults in what I call "full" democracies.

There are three reasons why a full democracy may be more efficient than a partial democracy, although a full treatment of this issue is beyond the scope of this study. The reasons that I will cite, however, are based on hypotheses that I have proposed in previous chapters.

The first reason builds on the hypothesis that a dictatorship will visit more violence on the population than a democracy. A democracy that only caters to economic elites might therefore impose more violence on nonelites than a full democracy. In a full

democracy, then, nonelites would feel more secure in increasing human capital, that is, in investing the resources necessary to acquire the skills needed for a strong production system. In addition, because the citizens of a full democracy would put constraints on the state, the state might not deplete the citizens with overtaxation to the extent that the citizens would not have the resources to invest in the creation of human capital.

Second, the state in a full democracy might be more willing to invest resources in human capital because it would be to the advantage of the voters to increase their access to educational facilities. A partial democracy, such as Wilhemine Germany, also invested in large-scale education (Locke 1984), but the democratic nature of the U.S. was important in the establishment of universal education. It may be that full democracy increases the likelihood that appropriate state resources will be directed towards the creation of human capital.

Third, as my ninth hypothesis of economic systems states, in part, “the free flow of people and ideas is an important determinant of technological innovation.” There is an increased likelihood that these rights of travel and discussion will be universally applied in a full democracy than in a partial one. These three possible beneficial effects of a fully democratic political structure all indicate that full democracies may be particularly effective in increasing the creation of human capital.

Thus, the twentieth century witnessed the introduction of many variations in the nature of a domestic system of political economy. The totalitarian variation disappeared, as did the older, monarchical one, in the major countries, although they persist in smaller nations. A fully democratic political structure has become dominant, whether or not it is more efficient than a partial democracy. More research is needed to determine whether

full democracies are more efficient, as well as to determine whether monarchical systems disappeared as a result of inefficiencies.

Each stage in this evolutionary process – internal balance of power, optimal size, full industrialization, and twentieth century innovations – resulted in a different environment for the Great Powers (as well as other nations). When several Great Powers created or imitated these adaptations, the others were forced either to adapt or fall out of the set of the Great Powers. Except for time periods when the totalitarian nations were experiencing absolute decline, *relative* rise and decline during the modern period depended on the relative performance of growing, expanding nations.

As proposed in the sixth hypothesis of political economy, “the most important single cause of the relative rise of a Great Power (or any nation) is the growth of the production system.” What, then, determines the relative performance of national production systems?

THE RELATIVE RISE AND DECLINE OF PRODUCTION SYSTEMS

In chapters 5 through 9, I proposed several hypotheses which can be used to address various questions concerning the performance of a domestic system of political economy. By using these hypotheses, it will be possible to construct a framework for understanding the relative rise and decline of production systems and therefore for better understanding the rise and decline of Great Powers.

The first factor affecting the rise of production systems is the fact that some Great Powers have more complete production systems than others. As I proposed in hypothesis six concerning economic systems:

A complete production system is greater than the sum of its parts; both the stages and categories of production participate in a mutually self-reinforcing, positive feedback process of production and technological change. There is a negative feedback process within a complete production system because there must be a balanced pattern of growth among all niches.

Therefore, a Great Power with a relatively more complete set production system niches would have a greater potential for rise than a Great Power with fewer niches. Most nations do not possess all machinery niches, because they usually import at least some of their machinery. Therefore, a nation with a larger percentage of machinery niches would have a greater potential for rise than a nation with a smaller percentage.

The state can play a role in making a production system more complete. The state might attempt to create an entire industrial sector, by using a combination of subsidies, protection, incentives, and development of the appropriate human capital facilities. The state might also try to increase the percentage of a niche contained within the nation through a process of import substitution.

Another role the state can play is to create a larger physical space within which to embed a complete production system. Historically, states have done this either by conquering other polities, such as occurred in the takeover of North America by the United States, or by a voluntary conglomeration, as in the case of the European Union. At some point, as in the case of the United States, the vast majority of inhabitants must be not simply dominated but integrated into the production system in order to achieve optimal productivity.

The second factor in the relative rise of a production system involves the relative technological impact of various parts of the production system. I argued previously that reproduction machinery industries are the most important sectors for the long-term growth possibilities of a nation, with production machinery industries being almost as important. Yet, these machinery sectors are very small and therefore may have difficulty attracting enough investment from the financial system. The state can work with other sectors of the economy in order to encourage the machinery sectors, as the Japanese agency MITI has done (for example, Kodama 1995). The state can support human capital formation, as in the case of German technical institutes and apprenticeship programs, usually also in association with other economic sectors. Finally, the state occasionally directly invests in machinery development, as noted previously in the case of U.S. government support for machine tools.

Thus, there are several factors which affect the relative position, and potentiality of rise of a nation, based on the quality and quantity of production system niches. Because of the positive feedback of benefits among all production system niches, completeness is desirable. Because of the greater causal capability of reproduction and production machinery niches, and because of their vulnerability, particular care concerning these sectors would have a greater than average return for the resources devoted to their performance.

There is also a set of factors affecting production systems which concern the capital systems of a production system. In particular, a nation can increase the rate of growth by increasing innovational activity, particularly in the most important production system niches. As I claimed in the eighth hypothesis on economic systems, "Innovations

depend on the level of resources directed toward the innovators, in the form of income, educational facilities, and research/work facilities.”

Researchers, engineers, and skilled production workers (including operational managers) are the components of human capital within capital subsystems within the production system. They generally need a relatively high standard of living, because otherwise these highly educated workers would gravitate to other professions. They need a very long training period, and this time period requires support, often from the state. The laboratories, design facilities, and factories in which these people work need to be supplied with resources, and may require constant upgrading as technology progresses. All of these requirements can be measured, in terms of income received, years of schooling and training, and money spent on facilities.

Nations that provide more support for human capital development should have a larger output of technological innovation than nations that provide less support. But by following the model of the production system as elaborated in this study, it should be possible to look at the levels of support of *particular* sectors, not simply support for the economy as a whole. Following the hypotheses of the above discussion, innovational support in the reproduction and production machinery niches should result in the highest return to national investment.

Innovation requires more than support in terms of resources; part of the cause of innovation is production, or innovating-by-doing. Therefore, the relative success of a nation in constructing a full complement of niches, and in supporting the production system in general, will also be an indicator of future innovational activity. In turn, more innovations will provide an incentive to support the production system, because the

promise of greater productivity will tend to bring forth greater investment, in particular from the financial system. The performance of the production system and the level of innovational activity therefore operate as a positive feedback loop. A nation with a stronger link between the worlds of production and innovation will therefore rise more rapidly than a nation with a weaker link.

This linking of innovation and production is reinforced if the free flow of information and access is encouraged, as claimed in hypothesis nine concerning economic systems. The state can constrain itself from interfering with such access, a task which totalitarian states find difficult. The state can also provide the resources for travel and communication, as the United States government provided in the case of continental transportation and communication systems, such as the railroads, interstate highway system, airport facilities, and the initial development of the internet. The production system itself can encourage access and free flow when communications and information technologies advance. The existence of a healthy means of production, the resources made available to human capital workers and facilities, and the enabling of travel and communication, can all operate in a beneficial positive feedback loop to encourage innovation-by-doing.

Thus, a rising nation or Great Power will have more powerful production systems and more innovational activities occurring within its borders than most other nations.

Those borders are themselves important, because as I hypothesized earlier:

There is some territorial size for a system of political economy, which is both big enough to encompass all niches of a production system, but small enough to allow for intense interactions among the human capital workers who are responsible for the output and development of those niches.

For the United States, the territorial size of the nation was conducive to the interaction of human capital workers, to constructing a complete production system, and to protection on the part of the national government. The European Union has reaped many of the rewards of proper size throughout its history, starting as the European Coal and Steel Community in the 1950s. Are most other nations too small? Would they benefit from merging together? These questions arise as a result of the model presented in this study, and would be a fruitful avenue of future research.

Many variations of the basic model of the modern nation exist today, involving an internal balance of power, varying sizes, varying compositions of their systems of political economy and production, and varying distributions of power within the nation. Nations continue to evolve. By using the framework as presented in this study, it should be possible to explain the trajectory of the past, the comparative positions among nations in the international system in the present, and many of the possible paths for particular nations in the future.

I have now elaborated a set of theories of particular systems with the goal of understanding the processes underlying the rise and decline of Great Powers. During the course of this presentation, I have generated many hypotheses that can be used to test the usefulness of this framework. In the next chapter I will discuss my conclusions and present my framework and hypotheses in summary form.