

INDUSTRIALIZATION, INFANT INDUSTRY PROTECTION, AND ECONOMIC  
OPENNESS: THE ROLE OF INDUSTRIALIZATION IN POLITICAL-ECONOMY  
DECISION MAKING

by

DAVID TIMOTHY SCHAEFER

(Under the direction of Christopher S. Allen)

ABSTRACT

Modern liberal economic theory has asserted that economic benefits accrue to states that pursue policies of economic openness. This paper challenges the simplicity of this assertion by arguing that economic theory may have overlooked an important element in its assessment of the impact of openness on economic growth. Because of infant industry concerns, it is argued that developing states first industrialize and then subsequently pursue policies of economic openness. In the end, economic openness may be an epiphenomenon of industrialization, not a fundamental cause of economic growth.

INDEX WORDS: Openness, Economy, Growth, Industrialize, Infant Industry

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A.B., The University of Georgia, 1999

A Thesis Submitted to the Graduate Faculty of the University of Georgia in Partial  
Fulfillment of the Requirements for the Degree

MASTER OF ARTS

ATHENS, GEORGIA

2003

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## DEDICATION

To the sun on my face, who introduced unfamiliar ears to an African-American sung gospel and extended lovely hands of sustenance to winged picnic companions. The ballerina that taught untrained legs to move to a brighter rhythm, the star that fell from a lake-reflected heaven, the angel who shared visions of autumn's grace, winter's blanketed peace, springtime's growing pains, and summer's ocean-blown breezes. The still-growing amaryllis and welcome-home lily that defiantly blooms in stony ground and takes root in a guarded soul. My sea-blue sunrise, who split the eastern sky of my birthdayer spirit, lit many a candle 'round a porcelain fount and built more memory-occupied rooms in my vacant heart than a lifetime of rose-petaled dancing can grace. To the sail that lifts me into the peaceful heavens to look down on southerly waters and pushes me westward through foaming breakers to welcoming harbors of peaceful moorings. To her whose existence God has interwoven with my own. You have dazzled me with your brilliance, attracted me with your kindness, supported me with your determination and touched me with your pain. To one whom I love more than words can express, to one with whom I hope to share a lifetime of seasons and blessings to come.

For you.

## ACKNOWLEDGMENTS

To my Heavenly Father, whose unfailing light and love have sustained me through the darkest of times. To my parents who always supported me, even in pursuits that may not have seemed the most responsible. To my brother, who walked this path before I did and finished it with honor, determination and skill. To Rebekah, a mother who has lent of time and expertise in matters both professional and spiritual. To my professors, my intellectual forebears from whom I have inherited what I know about the world and its governments and who have, with patience and insight, repeatedly reviewed, revised and redacted this work. To Dr. Crepaz, who first showed me the elegance and beauty of comparative inquiry and drew me to this program with a conversation he had with me long ago; to Dr. Allen, who taught me how to view political science through an historical lens; to Dr. Berejikian, who passionately illuminated the nexus of political forces and economic interests. To Andrei OGREZEANU, one of the field's rising stars, who was often with me in BDAC, helping with Excel, offering moral support, or allowing me to bounce ideas off him. To Dr. Gurian, who extended aid to me in terms of methodology even though he was not part of the committee.

## TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS .....	v
LIST OF TABLES .....	ix
LIST OF FIGURES .....	xi
CHAPTER	
1 INTRODUCTION .....	1
Why Countries Pursue Protection and the Value of Infant Industry Research.....	1
Protectionism Prevalence, Decision Making Mechanics, and Hypotheses Underpinnings .....	3
2 POLITICAL ECONOMY THEORY, DEVELOPMENT THEORY, INFANT INDUSTRIES RESEARCH AND THE PREVELANCE OF INFANT INDUSTRIES POLICIES IN THE DEVELOPING WORLD.....	10
Political Economy and National Development: A Theoretical Topography .....	10
Where the Hypotheses Fit.....	17
Infant Industry Research and Infant Industry Policy Prevalence.....	23

3	INFANT INDUSTRY TARGETING AND FORWARD-LOOKING STRATEGY: THE CASE OF JAPAN .....	29
4	INFANT INDUSTRY TARGETING AND REACTIONARY DISMANTLEMENT: THE CASE OF MEXICO .....	33
5	JAPAN AND MEXICO: INSIGHTS AND EXPLANATIONS .....	39
	International Political-Economic Structures .....	39
	Factor Endowments .....	40
	National Political Institutions .....	42
	Leaders' Beliefs and Values .....	43
6	INDUSTRIALIZATION THRESHOLDS AND GOVERNMENT AND FIRMS AS RATIONAL ACTORS.....	45
7	HYPOTHESES AND MODEL .....	56
	Central and Alternate Hypotheses and Explanations.....	56
	Model Characteristics .....	59
	Variables and Their Underlying Logic .....	60
8	TESTING THE CENTRAL HYPOTHESES AND EXPLORING VARIABLE RELATIONSHIPS.....	73
	Industrialization-driven Openness Hypothesis .....	73
	Industrialization-Stronger-than-Openness Hypothesis .....	74
	Industrialization: Direct and Indirect Effects.....	75
9	TESTING THE ALTERNATE HYPOTHESES .....	86
	Openness-Driven Industrialization Hypothesis .....	86
	Post World War II Opportunities.....	88



International Trade Expansion .....	89
The Emergence of Mass Consumption .....	89
The Rise of Information .....	90
The Advent of Multinationals .....	90
Testing the Openness-driven Industrialization Hypothesis and Conclusions .....	91
Openness-Stronger-than-Industrialization Hypothesis .....	92
Time Delay/Openness-Enabling Hypothesis .....	93
Testing the Time Delay/Openness-Enabling Hypothesis .....	93
10 HYPOTHESIS II REANALYSIS .....	106
Conclusions for Time Delay/Openness-Enabling Hypothesis .....	113
11 CONCLUSIONS .....	115
REFERENCES .....	120

## LIST OF TABLES

Table 1: Hypotheses dependent and main independent variable.....	9
Table 2: Major paradigms of global politics.....	13
Table 3: National level and sectoral analyses of industrial governance structures and innovation strategies .....	18
Table 4: Industrialization and market saturation process .....	22
Table 5: Hypothesis school and approach categorizations .....	24
Table 6: Mexican import license and tariff levels in the 1980s.....	37
Table 7: Four main types of factor endowments .....	41
Table 8: Policy shifters .....	46
Table 9: Factors influencing firm demands for protection .....	54
Table 10: Factors influencing government grants of protection.....	55
Table 11: Summary of hypotheses dependent and independent variables .....	63
Table 12: Correlation matrix of industrialization index components .....	71
Table 13: Regression of openness on industrialization.....	76
Table 14: Regression of economic growth on industrialization and openness variables.....	77
Table 15: Bivariate correlations of yearly/capita GNP growth and economic openness, and yearly/capita GNP growth and industrialization .....	78
Table 16: Regression of industrialization on openness and trade variables .....	87

Table 17: Division of panel into late and early openers .....	96
Table 18: Regression of openness on industrialization including early opener yes/no dummy variable .....	97
Table 19: Regression of openness on industrialization among early openers .....	101
Table 20: Regression of openness on industrialization among late openers .....	102
Table 21: Regression of economic growth on industrialization including early opener yes/no dummy variable .....	103
Table 22: Regression of economic growth on industrialization among early openers .....	104
Table 23: Regression of economic growth on industrialization among late openers .....	105
Table 24: Regression of economic growth on industrialization and openness variables.....	108
Table 25: Regression of economic growth on industrialization and openness variables among early openers .....	109
Table 26: Regression of economic growth on industrialization and openness variables among late openers.....	110
Table 27: Regression of economic growth on industrialization/openness index among early openers .....	111
Table 28: Regression of economic growth on industrialization/openness index among late openers.....	112
Table 29: Hypothesis rejection and confirmation matrix .....	116
Table 30: Countries with export orientation and averaged yearly per capita GNP growth.....	119

## LIST OF FIGURES

Figure 1: Liberal vs. asserted explanation for economic growth.....	57
Figure 2: Alternate Hypothesis to Hypothesis I (A1H1) relationship between industrialization and openness.....	58
Figure 3: First Alternate Hypothesis to Hypothesis II (A1H2) conceptualization of economic growth, industrialization and openness .....	61
Figure 4: Second Alternate Hypothesis to Hypothesis II (A2H2) conceptualizations of openness timing .....	62
Figure 5: Growth, industrialization and openness .....	79
Figure 6: Reconfiguration of relationships among industrialization, openness and growth.....	80
Figure 7: Developmental model of relationships.....	81
Figure 8: Spurious model of relationships .....	82
Figure 9: Paths of influence among variables.....	85
Figure 10: Early versus late opener industrialization and openness patterns .....	95

## CHAPTER 1

### INTRODUCTION

#### Why Countries Pursue Protection and the Value of Infant Industry Research

The current wisdom of economic growth is that openness leads to better results. If this is true, then why is it that countries still pursue protectionism? Some scholars in trade liberalization research have found that one of the major reasons that protectionism remains such a prominent fixture of many countries' economic landscapes is that economic costs are not the only ones that policy makers consider when making decisions. Political costs are also a prominent factor in decision-making processes, and because of extensive lobbying by interest groups, economic benefits are often outweighed by them. Thus, the political benefits of providing protectionist policies to those who seek them is cited as one of the reasons for their continued existence (Lusztig 1996). Another part of the answer to this puzzle is that countries pursue protectionist measures in order to protect their infant industries from foreign competition. Are there benefits to such policies? Scholars have found that there are: (1) *Marshallian externalities* such as "labor market pooling, the availability of specialist suppliers, and the presence of technological knowledge spillovers" (Martin and Sunley 1996, 265), (2) *network effects* which occur when products in isolation may be of no or little value but which if combined with other products or services increase their value, and (3) *increased demand* for infant industry products because of decreased foreign competition (Yu 2000).

As to why the research questions and their corresponding hypotheses (outlined below) are important, international lending institutions consistently impose substantial policy strictures on third world countries to which loans are granted. It is often the case that countries accepting such funds must pursue policies of openness presumably because such policies will improve their economies. However, if there is a stage of development that countries must reach before they are able to participate effectively in the international market, imposing such policy strictures on these countries may be to their detriment. By taking into account the possible role of industrialization in economic growth, policy makers at international lending institutions may better be able to make sound decisions.

This line of research is also important because it may offer developing countries guidance as to when and how they should make policy decisions regarding international trade. If the infant industry argument is correct, and especially if the second central hypothesis is correct (industrialization is a more important factor than openness in terms of economic growth), if developing countries pursue openness before industries are ready to face international competition, those industries may falter. If the second alternate hypothesis to the second central hypothesis is correct (the greater the amount of time that elapses between the crossing of the industrialization threshold and openness, the greater the delay in economic benefits that accrue to countries after the crossing since openness enables countries to receive the full benefits of industrialization), countries may also face heavy penalties if they open their economies too late since openness may enable them to reap the benefits of industrialization.

### Protectionism Prevalence, Decision Making Mechanics, and Hypotheses Underpinnings

This work will seek to explain whether or not developing countries are actually pursuing infant industry policies and to what extent they are pursuing them. If they are engaging in them with great frequency, one would expect there to be some relationship between levels of economic openness and industrialization, since countries, according to the infant-industries argument, do not open their economies, or at least certain sectors of their economies, until they are sufficiently industrialized to do so. In this conceptualization, industrialization drives openness. The expectation of a relationship between industrialization and openness and the possibility that industrialization influences openness leads to the first central hypothesis of the work: Industrialization has a strong positive impact on levels of economic openness.

While a more thorough explanation of industrial policy decision making will be framed in the separate chapters analyzing the cases of Mexico and Japan and in the chapter dissecting the nature of industrialization thresholds and government and firm rationality, it is important to note that industrialization does not inevitably lead to economic openness. Government officials, domestic and international politics and international economic conditions are crucial determinants of governmental decisions regarding industrial policy. Before the work proceeds further it is also important to highlight an important dichotomy within the realm of infant industry protection: the difference between forward-looking protectionism and backward-looking protectionism. As the case of industrializing Japan will illustrate, infant industry policies are generally forward looking and are at times a part of far-reaching visions (Dore 1986)—countries pursue them with the expectation of changing those policies once infant industries are capable of facing international

competition. However, as the case of Mexico will demonstrate, while such policies may have been constructed or maintained with a forward looking strategy in mind, they may be maintained too long and dismantled in a reactionary fashion—after international economic pressures force a government to remove them.

Returning to the first central hypothesis, another possible explanation for the correlation between industrialization and economic openness is that openness is driving industrialization. This is quite possible since trade may be a way for countries to obtain the technology and skills that they need to industrialize. In order to confirm the first central hypothesis, the literature would need to reveal that infant industry policies are being pursued by developing countries and that in a regression of openness on industrialization there is a statistically significant relationship between the dependent variable, openness, and the independent variable, industrialization. Several other variables will be deployed as controls. Value added by services as percentage of GDP, a democracy index, and imports as a percentage of GDP are all used in testing the first hypothesis. Value added by services as a percentage of GDP is included since some have argued that many countries in the latter part of the 20<sup>th</sup> century may have achieved economic success through services instead of through industrialization (Crepaz 2003). This control is meant to capture the extent to which the countries under study may be service oriented as opposed to industrially oriented. The democracy index was included in the testing of the first hypothesis because some have concluded that democracies are especially susceptible to political resistance to free trade (Mendelbaum 2002). Imports as a percentage of GDP is included for the simple reason that a number of the countries under study are engaged in a particular subset of infant industry policies, import substitution. However, since the 4-point index is designed to



measure production toward the domestic or foreign market, not the extent to which countries may have successfully substituted their own domestic needs with their own production, this variable should help capture some of this phenomenon. Exports as a percentage of GDP was included as a control in the testing of hypothesis II, the first alternate hypothesis to hypothesis II and in the second regression testing the second alternate hypothesis to hypothesis II because of the fact that economic literature has found that import protection like that employed in infant industry policies such as ISI may act as export promotion (Import Protection Export Promotion Hypothesis or IPEP Hypothesis)(Dick 1994). A fuller explanation of this is provided in Chapter 4. Trade as a percentage of GDP was included as a control in the testing of the alternate hypothesis to hypothesis I because this hypothesis proposes that openness has a positive impact on industrialization. However, the underlying logic of the hypothesis is that openness policies may drive industrialization through trade, and openness and trade, while related, are not the same phenomenon. It is important to take into account trade to verify how openness might influence industrialization. In order to confirm the first central hypothesis, there must be a statistically significant relationship between, the dependent variable, openness, and the independent variable, industrialization as well as evidence in the literature that developing countries pursued infant industry policies during the time frame under analysis. In order to confirm the alternate hypothesis, there needs to be a statistically significant relationship between the dependent variable, industrialization, and the independent variable, openness, and there needs to be substantial evidence in the literature that there are other ways besides trade in which countries can obtain the technology and skills they need to industrialize. It should be noted that this alternate hypothesis (openness drives industrialization) is not a

true alternate hypothesis in the conventional sense. It is more a question of endogeneity since it does not argue that a different, external independent variable other than industrialization is driving openness (the dependent variable in the first central hypothesis). Instead, it simply argues for a possible reversal of the causal arrow (Crepaz 2003).

In addition to trying to explain whether or not developing countries are actually pursuing infant industry policies and to what extent they are pursuing them, this work will seek to test whether or not the current wisdom of the positive impact of openness on economic growth overstates its case (Grimwade 1996). It is possible that industrialization has a greater impact on economic growth than does openness. Logically, this is likely since industrialization presumably provides states with expanding opportunities to manufacture the technologies and the goods that they need to produce increasingly greater numbers of higher quality products for sale on the world market. The expectation of a greater positive impact for industrialization on economic growth leads to the second central hypothesis of the work: Industrialization has a greater positive impact on economic growth than does openness. In order to confirm this hypothesis, in a regression with economic growth as the dependent variable and industrialization and openness as independent variables, there should be a greater significance and a higher beta weight for industrialization.

If this evidence is not found, if scholars are correct in identifying openness as a major factor in economic growth and are only wrong in not fully taking into account the possible impact of industrialization on economic growth, then it is quite possible that openness does have a greater positive impact on economic growth than does industrialization, which leads us to the first alternate hypothesis to the second central

hypothesis: Openness has a greater positive impact on economic growth than does industrialization. In order to confirm this alternate hypothesis, in a regression with economic growth as the dependent variable and industrialization and openness as independent variables, there should be a greater significance and higher beta weight for openness.

If it is found that the impact of industrialization on economic growth is less than the impact of openness, what may be occurring is that not only does openness have a greater impact overall on the economic growth in the countries under study, but that the impact of industrialization may vary between early openers and late openers because a greater time elapse between the crossing of the industrialization threshold and openness means a greater delay of economic benefits because openness may enable countries to reap the full benefits of industrialization.

This logic guides us to the second alternate hypothesis to the second central hypothesis: The greater the amount of time that elapses between the crossing of the industrialization threshold and openness, the greater the delay in economic benefits that accrue to countries after the crossing since openness enables countries to receive the full benefits of industrialization. In order to confirm this hypothesis, there must be a greater and more significant relationship between openness and industrialization and a greater and more significant relationship between economic growth and industrialization among countries that the literature has identified as being early openers than among those that it has identified as being late openers. The evidence listed above will permit a solid determination of whether or not the correct hypotheses were chosen as explanations of the phenomena in question.

While more information regarding the hypotheses dependent and independent variables will be provided in Chapter 7, a brief summary of the hypotheses and their dependent and main independent variables are provided in Table 1.

Table 1. Hypotheses dependent and main independent variables

	Hypothesis I (H1)	Alternate Hypothesis I to Hypothesis I (A1H1)	Hypothesis II (H2)	Alternate Hypothesis I to Hypothesis II (A1H2)	Alternate Hypothesis II to Hypothesis II (A2H2)
Dependent variable	Economic openness	Industrialization	Economic growth	Economic Growth	Delay in economic benefits to countries
Main Independent variables	Industrialization	Economic openness	Industrialization (more impactful), Openness	Industrialization, Openness (more impactful)	Time elapse between threshold crossing and openness

CHAPTER 2  
POLITICAL ECONOMY THEORY, DEVELOPMENTAL THEORY, INFANT  
INDUSTRIES RESEARCH AND THE PREVALENCE OF INFANT INDUSTRY  
POLICIES IN THE DEVELOPING WORLD

Political Economy and National Development: A Theoretical Topography

To give the reader a theoretical context in which to place the infant industry research conducted here, it will be useful to lay out a grid of where this subject fits into the larger picture of international relations theory in general and development theory in particular. Such a theoretical framework is provided in Table 2 and was constructed by Takashi Inoguchi in his review of global political theories and their underlying economic and cultural foundations (Inoguchi 1999, 178). For the purposes of this work, the most important elements of Table 2 are to be found in the geo-economic foundations section. Much of the theoretical background for the infant industry question is drawn the Gerschenkronian School which places great emphasis on state-led industrialization and large inputs of capital and labor. The infant industry question itself formed a central pillar of Alexander Gerschenkron's theory of late development in that later industrializers in Europe "only through protectionist measures, greater economic concentration, and a more important role for the state were they able to develop industries and compete in international markets" (Almond 1990, 276; Gerschenkron 1965). Although Gerschenkron's work focused primarily on those European countries that industrialized prior to the turn of the 20<sup>th</sup> century, its central concepts of protectionism and state-led

industrialization to encourage international market competitiveness are identical to the kind of state-led industrialization pursued by many developing countries in the middle of the 20<sup>th</sup> century.

The Gerschenkronian School is housed within the Westphalian geo-political framework. The primary author of this framework is Henry Kissinger, and its key concept is state sovereignty. The nation state (states are expected to be “normal” or have strong state sovereignty and be characterized by a clear dichotomy between order within their borders and anarchy beyond their borders), the institutional unit of this framework, is expected to balance and bandwagon in the international arena. The purpose of balancing is to contain the possibly volatile assertiveness of other normal states. Nevertheless, attempts to control volatile assertiveness must not lead to weakness or apathy on the part of individual states—states must maintain the capacity to engage in war in case it is necessary to do so. States pursue bandwagoning if confronted with the possibility of an overwhelmingly superior normal state or coalition of normal states. “If you cannot beat them, join them” (Inoguchi 1997, 179). The behavioral perspective within the Westphalian paradigm is a clearly realist/neo-realist one—peace for states is achieved through conflict. In this view, the general attitude toward democracy is apathy. States apparently do not possess passionate feelings about democratic ideals, but simply accept the concept of popular sovereignty as universal (Inoguchi 1997; Kissinger 1994).

In terms of the geocultural framework linked to the Gerschenkronian School, Benedict Anderson is the principle author and state controlled television and radio are the key media outlets. The key purpose behind state control of these media outlets is the strengthening of national unity, and the key effect is video legitimization (government

becomes legitimized through visual images beamed to the nation's citizenry). Networks in general are pivotal for sharing, cementing, nurturing, and solidarity, and are, as a result, self-strengthening.

The Reichian School's central component is the world market and the central actor is an amorphous and anonymous grouping of all the world's spectators, which are always on the prowl for economic opportunities that may be exploited to the fullest. This school holds that the "transformative mechanism is the straightforward input of technological innovation" (Inoguchi 1999, 182; Reich 1991). As Paul Romer has argued, technology itself is endogenous to the market in the Reichian School whereas in the Gerschenkronian School, it is exogenous (Romer 1990). In this view, the global market flourished "after telecommunication devices became available to all spectators and after opportunities for currency trading were dramatically amplified by the Plaza accord of 1985 [among the U.K., U.S., France, Germany and Japan]. It will further flourish at some future time when telemanufacturing and teledistribution devices are invented and utilized globally" (Inoguchi 1999, 182-183). Under the Reichian School of geo-economic foundations may be found the core-periphery developmental model with its emphasis on the technological superiority of a core of manufacturing countries and an underdeveloped periphery which are trapped in an exploitative relationship in which they supply the core with the raw materials that its members require. This view has been recently adapted by Henrique Cardoso and others to account for the industrialization of countries in the periphery by explaining that newly industrialized countries in the periphery have industrialized but have not substantially altered their relationship to the core because they remain dependent on foreign banks in the core for financing.



Table 2. Major paradigms of global politics

<b>Geopolitical framework</b>	<b>Westphalian (state-centric)</b>	<b>Philadelphian (global republican)</b>	<b>Anti-utopian (post postcolonial multicultural)</b>
Principle Author Key concept	Kissinger State sovereignty	Fukuyama Popular sovereignty	Huntington Post-sovereignty loss of sovereignty
Institutional unit	Nation-state	Liberal democracy	Civilizational superstate and failed/failing state
Behavioral principle	Balancing/bandwagon-ing	Binding/hiding	Fortifying hollowing out/collapsing
Peace	Peace by war	Liberal democratic peace	Neither war nor peace
Democracy	Indifference	Aggressive export or opportunistic silence	Military intervention or cynical neglect
<b>Geo-economic foundations</b>			
Principle author Key concept	Gerschenkron National economy	Reich Global market	Landes Economic Development
Driving force	State-led industrialization	Market-driven competition	World cultures that guide the inner values and attitudes of a population
Critical variable	Large input of capital and labor	Critical input of technology	Invention and know-how
<b>Geocultural networks</b>			
Principle author Key media	Anderson State-run radio/TV	Barber Cable TV network	Kaplan Underground network
Key purpose	Nation building	Global penetration	Antistate reaction and dissident communication, reconstituting order in cultural sphere
Key effect	Video legitimization	Video globalization Homogenization	Subversive operations Legitimization of civilizational superstates

Using the example of Brazil, Cardoso claimed that less developed industrializing countries could also remain dependent on the core through investment from multi-national corporations who make important economic decisions outside of a developing state's borders (Schmitter, 121; Handelman, 16).

The Reichian School is nested within the Philadelphian geopolitical framework. The principle author of this framework is Francis Fukuyama, and the work upon which the framework rests is his book *The End of History and the Last Man*. The focus of this work is the effects of the end of the Cold War, specifically the disappearance of democracy's opposing ideology—communism. The key concept of this paradigm is popular sovereignty. Its institutional unit is liberal democracy, while the behavioral expectation for states is binding/hiding. This means that states may bind themselves to other similarly minded states to achieve a stronger and larger union, but these same states may opt for concealment if confronted with forces that endanger liberal democratic principles at their foundations. In this view, the peace is a liberal democratic one along the lines of the peace envisioned by Emmanuel Kant in which democratic states are presumed to be less likely to fight one another (Doyle 1997). Democracy is characterized by aggressive export or opportunistic silence (deep-seated belief in popular sovereignty, general acceptance of universal principles like democratic politics and free markets in spite of striking incompatibilities of these norms) (Inoguchi 1997; Fukuyama 1992). In terms of the geocultural network linked to the Reichian School, Benjamin Barber is the principle author, and in his work he focuses on the diametrically opposed networking technologies and strategies of the Philadelphian and Anti-Utopian worlds. Jihad and McWorld are the respective symbols of these two worlds; cable television is the key media, and it penetrates

the entire globe. The key effect of this media and its world-wide penetration appears to be the globalization of video images and the homogenization of divergent ideologies and philosophies (Inoguchi 1997; Barber 1993).

In the Landesian School, economic development is the central concept, and the key actors in this drama are entrepreneurial groups with the desire to maximize the utility of technological breakthroughs (Landes 1998). For this school, the driving force is the supportive norms and attitudes of these entrepreneurs towards enterprise and innovation in the cultural environment. Because of this, the critical variable is “the cultural predisposition to advance invention and know-how in the context of economic development” (Inoguchi 1999, 182). The work of Gregory Ornatowski on the Confucian work ethic and Japanese economic development falls firmly within this school (Ornatowski 1996).

The Landesian School is to be found within the Anti-Utopian geopolitical framework. The principle author of this framework is Samuel Huntington, and the work that forms its foundation is his seminal book, *Clash of Civilizations and the Remaking of World Order*. Its central focus is regions that Huntington identifies as having the most potential to drain resources, specifically, China and the Islamic world. He contends that a number of civilizations are not compatible with one another and that the world is replete with situations where they might clash. While Huntington does argue that international primacy is important, he does not argue for the universality of Western values. However, he does argue that the West is unique. For Huntington, the most important variables in predicting the behavior of civilizational superstates and failed or failing states (his units of analysis) are those relating to the basic incompatibility of civilizations and certain sets of

history, geography, race, religion and language (Inoguchi 1999; Huntington 1996). The geocultural network linked to the Landesian School is authored by Robert Kaplan. Kaplan's focus is the techniques and strategies that the Anti-Utopian worlds use for networking. In Kaplan's perception, the means of establishing networks are much less formalized and technological—underground networking, not state-run radio and television and not cable television, is the key media. The key purpose of using this media is to facilitate antistate reactionary and dissident communication and a reconstitution of the cultural order. The key effects are the proliferation of subversive operations and civilizational superstate legitimation (Inoguchi 1999; Kaplan 1998).

It is worth mentioning that a number of scholars and their work may straddle two or more of the geo-economic schools. For example, falling within both the Landesian School and the Gerschenkronian School is the work of Peter R. Moody who has focused on the importance of norms in Confucian philosophy, with its emphasis on personalistic ethics and collectivism (Landesian characteristics), in influencing the trajectory of state-led economic development (Gerschenkronian component) in East Asia (Moody 1999). It is also important to understand that the three geo-economic foundations and their corresponding schools of thought currently coexist, and no single conceptualization seems to have gained empirical ascendancy over the others. The state-led industrialization vision that the Gerschenkronian School embraces still holds firm in East Asia in spite of being slightly weakened by the 1997 Asian financial crisis. The Reichian School's conceptualization of geo-economy seems to be reflected in reality in that spreading telecommunications technology and the associated emergence of instantaneous world-wide financial services are increasing at unprecedented rates, while the Landesian

School's perception endures and is at times accentuated when the deep-seated differences and attitudes inherited from and infused with different cultures are more resilient than what is permitted by the technology-driven cultural convergence thesis (Inoguchi 1999). While this work will be focusing primarily upon infant industry, a state leading industrialization policy most firmly anchored within the Gerschenkronian School, it will draw from components of the other schools as well to supplement the theoretical foundations for its hypotheses.

#### Where the Hypotheses Fit

Now that the reader has some idea of how this area of research fits into the larger picture of global political and economic theory, in order to further clarify the approach that this work will employ and the manner in which it relates to other approaches used to analyze the question of governmental industrial policy, a brief summary of the four major analytical styles of industrial governance structures and innovation strategies is provided in Table 3 (Kitschelt 1991, 456).

The first hypothesis (Industrialization-Driven Openness Hypothesis or H1), industrialization has a strong positive impact on levels of economic openness, pursues a modified sectoral approach in which the development or industrialization of economic sectors is believed to heavily impact the type of national regime structure pursued by a country. While the hypothesis itself falls within the Gerschenkronian School in that it primarily deals with the national economies of states and state led industrialization, it also deals with the fact that the development of sectors has an impact on the decisions that individuals in government guiding industrialization make.

Table 3. National level and sectoral analyses of industrial governance structures and innovation strategies

		Independent variables	
		<i>Sectoral endowments and properties</i>	<i>National institutions and international system positions</i>
Dependent variables	<i>National governance structures</i>	“Classic” approach: national attributes explain industrial governance structures	Modified “classic” approach: national institutions explain variations among sectoral governance structures
	<i>Sectoral governance structures</i>	Modified sectoral approach: growth of sectors explains national regime structure, international position, or both	Sectoral approach: industrial innovation strategies and outcomes explain variations among sectoral governance structures

The Openness-Driven Industrialization Hypothesis (first alternate hypothesis or A1H1) does not neatly fit into any of the analytical categories supplied above but is nevertheless worthy of analysis since it is quite possible that the technology obtained through openness and the resultant increased trade may result in greater industrialization. The alternate hypothesis draws more heavily from the Reichian School, in that it focuses heavily on the world market and the technological input that the market may provide.

As to the Industrialization-Stronger-than-Openness Hypothesis (second central hypothesis or H2), this is a hypothesis that does not focus on governmental decision making and so does not fit into the national/sectoral level dichotomy of governance structures and innovation strategies outlined above. It does have relevance for governmental decision making in the area of economic policy in that it has important implications for the kind of decisions that governments should make in terms of economic policy. This hypothesis also draws heavily from the Reichian School in that industrialization is presumed to provide some of the critical inputs of technology necessary and the goods that they need to produce increasingly greater numbers of higher quality products for sale on the world market.

As to the Openness-Stronger-than-Industrialization Hypothesis (first alternate hypothesis to hypothesis II or A1H2), this hypothesis is similar to hypothesis II in that it does not focus directly on governmental decision making and so does not fit into the national/sectoral level decision making dichotomy. The Reichian School also underpins its logic in that it focuses on the world market and the opportunities it provides to account for the economic growth that appears in countries that pursue policies of openness. As to the Time Delay/Openness-Enabling Hypothesis (second alternate hypothesis to

hypothesis II or A2H2), this hypothesis does not fit at all into the national level/sectoral level dichotomy but may provide a useful counter explanation in the event that openness proves to have a greater impact on economic growth than does industrialization. The logic here is that openness (an open or outward-oriented policy is one “with little or no policy bias toward production for the domestic market” [Grimwade 1996, 156]) actually provides opportunities for countries that allow them to reap the full benefits of industrialization. This is because countries that only produce for their domestic market may quickly saturate them. Because they may have high industrial capacity but limited market opportunities under such conditions, shifting policy orientation to foreign markets should allow them to more fully benefit from the industrialization process. This is a process that has been identified by James R. Kurth and others (Kurth 1979); Table 4 offers a summary of his perspective on the process (Kurth 1979, 13). This hypothesis draws heavily from the Gerschenkronian School in that the national economies are the central focus and that state led industrialization is the driving force. While it may appear to draw some of its substance from the Reichian School in the sense that participation in the global market is what allows states to reap fuller benefits of industrialization, it does not place any more emphasis on this concept than that supplied by Gerschenkron himself (Almond 1990).

Table 5 offers a summary of the various geo-economic foundation schools and the manner in which the hypotheses relate to each of them and to the national level and sectoral analyses of industrial governance structures and innovation strategies. It should be noted that all the hypotheses with the exception of the Industrialization-driven Openness Hypothesis do not directly relate to the national/sectoral level analytical dichotomy because each of the four approaches has either sectoral governance structures or national



governance structures as the dependent variable and the other hypotheses do not. However, one important aspect of the various approaches that directly relates to all of the hypotheses is the national/sectoral dichotomy implied in them. This dichotomy is important because the data under analysis in this work regarding industrialization are national averages. It is believed that even though sectoral industrialization level data is not available, the national averages should be comprised primarily of those sectors that the government targets for special treatment since at the developing stages of countries these sectors are the ones most likely to succeed and presumably are the ones already the most industrialized.

Before moving to the specific topic of infant industry protection, it is important to note that there is a fundamental dichotomy within this realm of policy. The dichotomy consists of the difference between backward-looking, perhaps reactionary protectionism such as that in which countries engaged after the United States implemented the Smoot-Hawley Tariff at the beginning of the world-wide depression of the 1930s (Hines 2001) and forward-looking strategic protectionism such as the infant industry policies in which Japan engaged at the end of the Second World War (Johnson 1982; Ozaki 1984, 56; Cumings 1984). What one finds within the countries under analysis is that while some of them may have begun with forward-looking infant industry policies, they may have maintained them after crossing the industrialization threshold—maintained them to the point at which they later became reactionary in the sense that they were forced to dismantle them because of internal and external political and economic pressures. The cases of Japan and Mexico provided below will provide examples of both forward-looking and reactionary protectionism.

Table 4. Industrialization and market saturation process

	<b>Textile Production Phase</b>	<b>Steel Production Phase</b>
Stage of industrialization	First stage	Second stage
	<u>Domestic Growth Sub-phase (first sub-phase)</u>	<u>Domestic Growth Sub-phase (first sub-phase)</u>
Investment/financial traits	Low capital investment/ Independence of financial institutions	High capital investment/ Investment bank, possible state intervention
Industries	-----	Shipbuilding, railroad, automobiles
	<u>Foreign Export Sub-phase (second sub-phase)</u>	<u>Foreign Export Sub-phase (second sub-phase)</u>
Economic Traits	Economic stagnation Saturation of domestic markets	Economic stagnation Saturation of domestic markets
Strategies for recovery	Efforts to sell textiles abroad	Efforts to sell steel abroad
		<u>Naval Procurement Sub-phase (may occur at any point in steel phase)</u>
Economic Traits		Lagging demand for steel
Strategy for recovery		Steamship construction

### Infant Industry Research and Infant Industry Policy Prevalence

Focusing more specifically on the question of infant industry research, thus far, investigations conducted on the world political economy in general and on the infant industries argument in particular have consisted largely of historical qualitative case studies analyzing the trajectories of industries within specific countries who have implemented protectionist policies for young industries (Odell 2001). This work will seek to deviate from this trend by applying a mixture of both quantitative and qualitative methods to research the infant industry question across a range of countries.

In terms of current research findings, scholarly work reveals that a number of developing countries in East Asia (namely the newly industrialized economies or NIEs), North Africa, sub-Saharan Africa, the Middle East and Latin America have pursued infant industries policies with varying degrees of success. In fact, many have identified import substitution industrialization in the post-World War II era as a common policy among developing countries (Edwards 1993; Fishlow 1990) having “widespread global application as a full-fledged-strategy of development” and even have found that it had begun in a number of countries in Latin America and Asia long before World War II (including Brazil, Mexico, India, Iran and South Korea) (Bina and Yaghmaian 1990, 84; Ernst and Wheeler 1987), with some finding the origins of the policy in the world economic crisis of the late 1920s and early 1930s (Thorp 1992). Reflective of the decision of many Latin American countries to pursue import substitution policies following World War II was the famous 1949 “manifesto” of Raúl Prebisch (Hirschman 1968, 2):

Formerly, before the Great Depression, development in the Latin American countries was stimulated abroad from the constant increase of exports. There is no reason to suppose, at least at present, that this will again occur to the same extent, except under very exceptional circumstances. These countries no longer

Table 5. Hypothesis school and approach categorizations

	H1	A1H1	H2	A1H2	A2H2
School	Gerschenkronian	Reichian	Reichian	Reichian	Gerschenkronian
Approach	Modified sectoral approach	None	None	None	None

have an alternative between vigorous growth along those lines and internal expansion through industrialization. Industrialization has become the most important means of expansion.

Other scholars such as G. Myrdal and Ragnar Nurkse have expressed similar positions and asserted that the most expedient way to achieve industrialization is important substitution (Riedel 1984). Nurkse argued that demand for periphery countries' exports dropped sharply in the 20<sup>th</sup> century from its 19<sup>th</sup> century levels and that trade was no longer an effective engine for economic growth, a function Nurkse claimed it had fulfilled in the 19<sup>th</sup> century. As a result, "The solution prescribed in the 1950s was to look inward, in effect, to scrap the trade engine altogether" (Riedel 1984, 38).

The East Asian NIEs appear to have had the most success with infant industry policies with the successes of other regions in this policy area less stellar and the degree of their success more hotly contested by scholars (Yu 2000; Rodrik 1999; Wade 1990; Lee 1997). In a case that demonstrates the planning involved in infant industry policy, South Korea used protective barriers to protect its heavy industries from foreign competition in the early 1970s but dropped those barriers in the 1980s so that those industries could be exposed to international competition (Yu 2000).

Since the focus of this work is infant industry policy and part of the purpose of the literature review is to determine how prevalent scholars have found infant industry policies to be in the developing world, it is important to note that import substitution policies (which scholars have found to be prevalent in the third world in the post-World War II era) have been considered to be identical to or within the immediate family of infant industry policies (Edwards 1993, 1358):

Protectionist theories, in fact, became dominant and for decades, the majority of the developing countries implemented industrialization policies based on a very

limited degree of international openness. These policies, which came to be known as “import substitution industrialization (ISI)” strategies, had their origins in the thinking of Raúl Prebisch (1950) and Hans Singer (1950) and were based on two fundamental premises: (1) a secular deterioration in the international price of raw materials and commodities would result, in the absence of industrialization in the LDCs, in an ever-growing gap between rich and poor countries; and (2) in order to industrialize, the smaller countries required temporary assistance in the form of protection to the newly emerging manufacturing sector. This reasoning was closely related to the infant industry argument for industrialization...

A simplistic summary of the infant industries argument is as follows: (1) Time is required for some newly established activities to become competitive since they operate at an initially high cost in comparison to more established foreign enterprises; (2) at free trade prices, it is not profitable for an individual entrepreneur to attempt entry into an infant industry; (3) if the industry were developed, it would be profitable enough to recuperate within a reasonable amount of time the initial losses that were incurred; (4) the industry needs a limited period of protection or aid during which its expenses will fall sufficiently to allow it to survive foreign competition without assistance (Krueger and Tuncer 1982).

The similarities between ISI and the infant industry argument are clear. For the purposes of this work, ISI will be categorized as a falling within the infant industry category.

That scholars have found that a number of developing countries from a variety of regions have implemented infant industry policies in the post-World War II era is pertinent to the first research question of the extent to which data reveal that developing countries are implementing infant industries policies. This evidence from the literature indicates that a number of the developing countries under analysis in this work have likely pursued infant industries policies and provides some preliminary foundation for the use of empirical data to demonstrate the extent to which developing countries as a group may be pursuing such

policies. If the literature indicated that no developing countries had used infant industry policies then further inquiry into the matter would be unjustified. As to the second research question regarding the impact of industrialization on a state's propensity to open its markets, it would appear from the Korean case that states are most likely to open their markets because of industrialization levels *if* they had already planned to do so ahead of time. That is, an infant industry policy is a forward-looking policy that is used by governments who plan ahead of time to open up only after an industry or industries have reached a certain level of development. In light of this, under those circumstances in which countries have already made the decision to pursue infant industry protecting policies, industrialization levels may have a greater impact on the timing of decisions to pursue openness than they do on the actual propensity of a country to do so.

As to whether or not the developing countries under analysis really industrialized prior to opening their economies, it would appear from the fact that the East Asian NIEs have successfully used infant industry policies that at least some of their sectors were industrialized prior to these governments' implementation of policies of openness. While Latin American and Sub-Saharan countries used infant industry policies as well, the fact that some scholars claim that they used them for too long (Wade 1990) may indicate that industrialization preceded openness in these countries but that the timing of openness may have been more delayed since infant industry policies may have been in place long after countries, or at least specific economic sectors, were sufficiently industrialized to compete effectively in international markets. One important distinction between the Latin American and Sub-Saharan countries to bear in mind is that the Sub-Saharan countries did not deploy import substitution policies until much later than the Latin American states and,

according to some scholars, import substitution was only in its early or middle stages in the early 1980s whereas this same time period marked the twilight years of Latin American import substitution (Shaw 1982).



### CHAPTER 3

#### INFANT INDUSTRY TARGETING AND FORWARD-LOOKING STRATEGY: THE CASE OF JAPAN

Although in a study analyzing a panel of countries rather than only focusing on one or two one would desire to construct a grand theory of governmental political-economy decision making without becoming mired in the institutional particulars of each country under study, it is worth discussing some of the calculations that are involved in deciding whether or not an industry is an “infant” and is in need of protection, and one way to do this is by reviewing the manner in which a country that has served as a model for a number of developing countries in the latter part of the 20th century went about protecting their industries in the wake of World War II (Chin 2000; Thompson 1996). Some scholars have explained that countries in the East Asian region tend to follow the leader in a “geese pattern” (Bernard and Ravenhill 1995) in terms of the manner in which they mimic the development patterns of those who develop first. In this way, Japan served as a developmental example for several of the countries under analysis (Cumings 1984).

While Japan was already quite industrialized by the close of the Second World War (between 1930 and 1940 mining and manufacturing in Japan had doubled and by 1940, 63 percent of manufacturing was in heavy industry), the war-ravaged nation certainly did possess economic characteristics that were similar to those of many developing nations. Post-World War II Japan was a country of scarce goods and services, frequent rationing and price controls and struggling domestic industry. During the 1940s and the 1950s, the

Japanese economy was highly regulated and protected since “most domestic industries were still too fragile to compete effectively in the international market” (Johnson 1982; Ozaki 1984, 56; Cumings 1984).

In terms of how Japan made the decision of which industries to protect, during the early years it quickly rejected the Ricardian concept of comparative advantage because its application would have meant that Japan would have to focus on the production and exportation of goods that were labor intensive since labor was the only abundant input available domestically. Instead of selecting labor intensive goods such as toys, sandals and matchsticks, the government chose critical industries to be incubated under state guidance, and the criteria for selection were “anticipated worldwide income inelasticity of demand for certain products, the high value-added nature of the products, and the long-term income-and employment-creating effects of these same products on the domestic economy. Accordingly, heavy and chemical industries (steel, automobiles, shipbuilding, and petrochemicals) were targeted for guided growth (Johnson 1982).

From 1960 onward, Japan embarked on a cautious trajectory of trade and capital liberalization intended to expose the Japanese economy to world market forces. In 1963, Japan obtained Article 11 status under the General Agreement on Tariffs and Trade (GATT), and in 1964, the country agreed to the provisions of Article 8 of the International Monetary Fund (IMF) and became a member of the OECD. As a result, Japan was now under obligation to dismantle both direct foreign exchange control and quantitative export restrictions. Steel saw its quantitative import restrictions removed in 1961 and such restrictions were removed from automobiles and color TVs in 1965. By the middle of the 1960s, the majority of the direct export subsidy policies had been dismantled as well.

During this same period tariff rates were also gradually lowered. “The criterion for determining the speed and direction of the liberalization was to wait until an industry in question became efficient and internationally competitive enough to stand on its own feet” (Ozaki 1984, 58).

A key player in this liberalization process was the Ministry of International Trade and Industry (MITI), and, although it was relatively weak when first conceived, it was soon given sweeping powers under the 1949 Foreign Exchange and Foreign Trade Control Law which gave back “operational control [from the occupying forces] to the Japanese” and created “the institutionalization of the most restrictive foreign trade and foreign exchange control system ever devised by a major free nation” (Johnson 1982, 195). Although the law was originally intended to be ‘gradually relaxed’, it persisted for over thirty years and was on the books as of 1980 and was the single “most important instrument of industrial guidance and control that MITI ever possessed” (Johnson 1982, 194-195).

If the case of Japan can be applied to other countries (scholars indicate that a number of countries such as Taiwan, South Korea and Malaysia have deliberately imitated it), it offers some valuable insights into how governments decide which industries to target for protection, when that protection is to be withdrawn and how much authority may be given to specific agencies who exercise that power. From Japan’s perspective, the prime candidates for infant industry policies in the post-World War II period were those which would yield the best domestic benefits in the long run. In terms of determining when protection was to be withdrawn from infant industries, the strategy was to wait until a particular sector was competitive enough to survive international competition. Finally,

MITI demonstrated just how far a government may be willing to go to infuse a single government agency with economic power.

CHAPTER 4  
INFANT INDUSTRY TARGETING AND REACTIONARY DISMANTLEMENT:  
THE CASE OF MEXICO

While the case of Japan may be the most instructive for establishing the manner in which countries in general might go about deciding which industries to target for government protection and support, the case of Mexico is illustrative of this as well, but is more illustrative of the manner in which countries who erect such policies may ultimately be forced to dismantle them. At this juncture, it is important to point out that Japan is a better example of those countries in the sample that the literature has found to have opened their economies earlier (East Asian NIEs and those not in sub-Saharan Africa and Latin America) while Mexico is a better example of those that opened their economies later (sub-Saharan Africa and Latin America). Those countries that opened their economies earlier did so, according to some scholars, to their benefit, while those who did not did so to their detriment. Even though Japan is not a country found in the sample, its industrialization model has been mimicked by a number of those in the panel such as Malaysia and South Korea (Chin 2000).

Mexico is only one of a number of developing countries before and after World War II that pursued import substitution policies. However, its experience with import substitution and subsequent trade liberalization is strongly parallel to that of other Latin American (namely, Argentina, Chile, Colombia and Peru) countries in particular and developing countries in general (Pastor and Wise 1994). Mexico, like other countries

which have pursued infant industry policies such as import substitution, seems to have made a cost-benefit calculus similar to that of Japan in its industrial targeting decision making at least to the extent that it and other Latin American countries invested in key industrial sectors (Fishlow 1990) and paid increasing attention in the 1960s and 1970s to international competitiveness in making decisions regarding policy (i.e, more competitive industries received less protection than less competitive ones) (Fishlow 1990). What differentiates this case from Japan is that its infant industry policies seem to have been built upon more humanitarian, ideological foundations. Enshrined in Mexican and Latin American import substitution policies were three central humanitarian-based concerns that import substitution policies were designed to address and which the market was seen as being incapable of solving (Fishlow 1990, 62): (1) “providing public goods and infrastructure, where market response leads to inadequate supply or natural monopoly”, (2) “other market failures owing to externalities, imperfect information” (3) state policy is needed “to determine appropriate levels of capital accumulation, since future generations are not well represented in private preferences”.

While it is difficult to say whether or not Mexico’s industrial policies were forward-looking from the very beginning, it is clear that by the 1960s they had taken on something of a forward-looking aspect in that government resources were targeted toward those industries that needed more protection. It is also clear that the dismantlement of Mexican infant industry policies appears to have been more reactionary than the dismantlement of infant industry policies had been in Japan. If the reader will recall, in the early 1960s, Japan began a slow and careful path of trade liberalization, at least partially because of its new status under international agreements (GATT, IMF, OECD). However,

even with this international pressure, the trajectory and velocity of Japanese trade liberalization was predicated upon governmental determinations of the efficiency and international competitiveness of particular industries (Ozaki 1984).

In contrast, Mexico seems to have advanced very little in terms of trade liberalization until the 1980s and to have then rapidly pursued liberal trade policies. For Mexico, the critical incentive for the kind of fundamental trade liberalization that Japan undertook in the late 1960s was not infant industry competitiveness but a debt crisis and continuing balance of payments shortfalls. However, as has already been mentioned, some forward-looking infant industry policies had been utilized in the 1960s in the sense that the Mexican government was targeting government resources to those industries that needed the most protection, apparently for the purpose of treating them like more competitive industries once they had achieved greater international competitiveness. The rapid trade liberalization of the 1980s is also not to say that Mexico had not undertaken some very important steps toward trade liberalization by the 1980s. In the late 1970s, President José López Portillo (1976-82) attempted to use export diversification and moderate trade liberalization to handle the balance-of-payments disequilibrium spawned by import substitution industrialization. During this period, official prices for both exports and imports were slowly removed; tariffs replaced licenses, which policy makers then reduced, and, finally, the government promoted exports through trade credits to foreign countries and through new fiscal incentives (Pastor and Wise 1994).

Nevertheless, in spite of the steps that the Mexican government took toward trade liberalization in the 1960s and 1970s, fundamental liberalization was not undertaken until President Miguel de la Madrid (1982-88) took power in the early 1980s. The first phase of

the new liberalization effort stretched from 1983 until mid-1985 and began when the de la Madrid Administration relaxed the strict import regime that was originally adopted in an attempt to ameliorate Mexico's persisting debt crisis and balance-of-payments shortfall. In 1984, the Mexican government slashed the percentage of imports for which license coverage was required to 83 percent of what it had been in the previous year and soon after lowered the percentage to 27 percent. During this period the government also lowered tariffs on capital and intermediate goods. This initial phase of liberalization also witnessed the signing of a bi-lateral trade agreement with the United States designed to catalyze the phasing out of export subsidies and bring about further liberalization and was characterized by a loosening of export controls on 44 percent of non-petroleum exports (Pastor and Wise 1994). Table 6 reflects some of these changes (Pastor and Wise 1994, 461):

During the second phase (mid 1985-late 1988), the government undertook more fundamental liberalization changes. In 1986 it promulgated a four-step schedule to reduce tariffs. This schedule was to end by 1988 and at the end of the schedule, tariffs would range between 0 and 30 percent. However, this original schedule was quickly accelerated because of Mexico's accession to GATT in 1986 (which came with a commitment to dismantle official prices for imports and exports by 1987). It was also accelerated because the government implemented an Economic Solidarity Pact designed to combat inflation. Included in this program were new price and wage guidelines and a lower 0-20 percent target range for tariffs that was designed to increase external competition as a means of controlling domestic prices. In 1987, Mexico signed a larger Framework Agreement with the United States, and this period also saw a shift in export promotion instruments away



Table 6. Mexican import license and tariff levels in the 1980s

Measure	Year				
	1982	1984	1986	1988	1990
Import license coverage	100	83	27	22	18
Number of tariff Items	16	10	11	5	5
Maximum tariffs	100	NA	NA	20	20
Tariff mean*	27.0	23.3	22.6	10.4	13.1
Weighted average tariff**	16.4	8.6	13.1	6.1	10.4

\*As percentage of import value

\*\*Weighted by import value

from subsidies to temporary exemptions from licenses and tariffs on essential imported industrial products (Pastor and Wise 1994).

The third phase of Mexican trade liberalization began in 1988 with the Salinas Administration (1988-94). By this time, the process of Mexican commercial liberalization was virtually complete, and the third phase (1988-90) consisted primarily of fine tuning: the government reduced tariffs further on goods that were still reflecting unusually high price increases (and thus adding to inflationary pressures), and the government increased tariffs for those sectors of consumer goods going through an import surge. The government tariff increases for these sectors resulted in a slight increase in the weighted and mean tariff rates in 1990. President Salinas went far beyond any previous efforts at liberalization in the middle of 1990 when he initiated NAFTA negotiations with the United States and Canada (Pastor and Wise 1994).

## CHAPTER 5

### JAPAN AND MEXICO: INSIGHTS AND EXPLANATIONS

Japan and Mexico offer insight into the different manners in which some of the countries in the panel, specifically those in Asia and Latin America, may have made decisions regarding infant industry protection. There are several ways that theory might explain how these countries reached their decisions. A review of those theoretical perspectives follows with an explanation of how these explanations contribute to understanding the decision making processes of those countries in our panel. The lenses of analysis outlined below are ones that have been peered through by others in their dissection of government political economy decision making (Pastor and Wise 1994). Due to the highly summarized nature of the case studies supplied above, not all of these perspectives will be equally useful for explaining how both Japan and Mexico determined their degree of openness (information not included in the case studies might be explained by these perspectives).

#### International Political-Economic Structures

While free trade may be preferable for economic growth, trade theorists generally hold that countries finding themselves in situations of overwhelming debt, deteriorating terms of trade, domestic macroeconomic distress and industrial protectionism are not likely to lower protectionist barriers (Rodrik 1992). Mexico did the complete opposite of what theorists would expect; it slashed its tariff and non-tariff barriers and pursued a firm course of economic orthodoxy from the 1980s onward. At least a partial explanation for

its doing this lay in the fact that so much of its debt rested in the hands of financial institutions and international creditors who had increased leverage over Mexican trade policy because of their control over scarce foreign exchange (Pastor and Wise 1994).

In terms of international political economic structures and Japan, external debt does not seem to have been a salient factor in its decision to open its economy in the 1960s. However, its entry into GATT and its membership in the OECD in that decade no doubt played some role in its decision to open its economy. The same apparently holds true for Mexico as well, although to a lesser extent—its accession to GATT in 1986 as well as its trade agreements with the United States and Canada all appear to have had some impact on its decision to further its trade liberalization in the late 1980s.

#### Factor Endowments

Another way of unraveling the industrial policy decision-making mysteries of Japan and Mexico is by analyzing them through Ronald Rogowski's typology of factor endowments (Rogowski 1987, 1124). This is provided in Table 7. Using this typology, post-World War II Japan, because of its war-torn condition, would most likely fall within one of the backward economy quadrants. Because of its relatively low labor to land ratio and the severely hobbled economy it had during this period, it would have abundant labor (Heller 1976) but scarce capital and land. Under these conditions (those in the lower-right hand cell) it is predicted that labor will desire free trade while capitalists, landowners and capital-intensive manufacturers will cooperate to support protectionism (Rogowski 1987).

On the other hand, Mexico does not fit neatly into any quadrant but can be classified as a backward economy in that it is relatively rich in land and labor but scarce in capital. Under such conditions, free trade policies and expanding trade would benefit

Table 7. Four main types of factor endowments

## Land-Labor Ratio

	High	Low
Advanced Economy	Abundant: Capital Land  Scarce: Labor	Abundant: Capital Labor  Scarce: Land
Backward Economy	Abundant: Land  Scarce: Capital Labor	Abundant: Labor  Scarce: Capital Land

farmers and labor but would injure capitalists. Conversely, protectionist policies and contracting trade would benefit owners of capital alone. Because of this, the expectation is that farmers and laborers would support free trade and capitalists would oppose it (Pastor and Wise 1994).

In the end, a factor endowments analysis does not fully explain the patterns of liberalization that one observes in Japan in the 1960s and in Mexico in the 1980s. For example, the OECD has long asserted that such an analysis is less apropos when trade is increasingly determined by scale economies (as in the case with industrialized Japan by the 1960s) and international firms (as was the case with Mexico in the 1980s) (Pastor and Wise 1994). In light of this, it becomes easier to see why post-World War II Japan became more open to trade as its industrial capacity expanded and its *keiretsu* (exclusionary Japanese corporate groups that typically possess enduring and extensive managerial, financial, and product market links) solidified and why Mexico, with the increasing presence of international firms and intra-firm trade (international firms will favor low prices for imported inputs and will therefore favor free trade) may have chosen a free-trade path in spite of the typology's predictions to the contrary (Noland 1997; Lawrence 1991; Pastor and Wise 1994).

#### National Political Institutions

Another explanation for trade policy outcomes is national political institutions. Historical examples of the manner in which political institutions influence these decision making policies is that in the wake of the volatile Smoot-Hawley era in the United States, the propensity of the United States to increase tariffs was substantially mitigated by the increasing transference of the authority to make commercial policy to the office of the U.S.

executive. As a result, Congress has had a less influential role in trade policy matters. In the case of Japan, the creation of the Ministry of International Trade and Industry (MITI) and the passage of the 1949 Foreign Exchange and Foreign Trade Control Law were important turning points in terms of establishing an institution that would guide trade policy for several decades. As already mentioned, the law returned economic control to the Japanese and created “the institutionalization of the most restrictive foreign trade and foreign exchange control system ever devised by a major free nation” (Johnson 1982, 195). More importantly for trade policy outcomes, it was the “most important instrument of industrial guidance and control that MITI ever possessed” and remained an available policy instrument until 1980 (Johnson 1982, 194-195).

In the case of Mexico, it appears that fundamental organizational changes, many of which occurred at the central government level, were key to the transformation of Mexican trade policy that took place in the 1980s. By way of example, demands for protectionist policies were neutralized by the transfer of policy making functions from the trade ministry to state agencies that were more insulated from public pressure, agencies like the Secretariat of Finance and Public Credit and the Secretariat of Programming and Budget (Pastor and Wise 1994).

#### Leaders’ Beliefs and Values

While a number of analysts believe that cognitive factors have the potential to impact policy, there is little consensus on the extent of this impact. In the case of Mexico, a profound shift in the ideological orientation of important political and economic leaders occurred before the trade liberalization of the 1980s. In terms of the postwar era, it was not until the 1980s that a consensus formed among leaders regarding the past vagaries of

protection and statism and that leaders as a whole were unvacillating in their dedication to free trade. By the early 1990s, the public and private sectors also appeared to have adopted these same values. Even though cognitive factors seem to have played a key role in Mexican trade policy, these factors would have had little impact if groups or individuals with political influence had not put their ideas into action (Pastor and Wise 1994).

As for Japan, the beliefs and values of leaders also appear to have played a role in the formation of trade policy and in that by the early 1950s, “Japanese government and business leaders had already achieved a high level of consensus about how to develop their industries” (Lodge and Vogel 1987, 164). This consensus was essentially an agreement to prevent foreign control of the Japanese economy. One way of preventing that control was for leaders to engage in industrial targeting to determine which industries should be shielded from foreign competition (Ozaki 1984) and which ones might help the country attain some new competitive advantage and therefore might benefit the most from government support (Lodge and Vogel 1987). The Economic Planning Agency, established in 1955, was a key actor in this decision making process, compiling performance forecasts from various industrial sectors. This information assisted leaders in the formulation of comprehensive economic strategies (Lodge and Vogel 1987), and Japanese leaders have been known to increase protectionist barriers (albeit less formal ones since the 1960s because of international pressures to reduce tariff barriers and import duties) in the event that an industrial sector becomes uncompetitive internationally (Lodge and Vogel 1987).



CHAPTER 6  
INDUSTRIALIZATION THRESHOLDS AND GOVERNMENT AND FIRMS AS  
RATIONAL ACTORS

Now that some of the theoretical ways of analyzing decision making have been summarized and representative case studies dissected, other critical aspects of the role of industrialization in governmental policy need to be addressed: Where exactly is the industrialization threshold; at what level of industrialization do countries decide to pursue policies of openness, and what is the nature of government and firm interaction and thinking? As discussed in the preceding chapter, there are a number of factors that can potentially impact when and how countries choose to open their economies. For the purposes of this study, the most important factor is that of industrialization. To establish where this threshold might exist numerically, those countries within the sample that shifted their policies of openness between the time frames under analysis will be identified to verify at what level of industrialization they shifted their policies to ones of openness. Those countries, identified as “policy shifters” in Table 8, will be analyzed.

There are a number of puzzles presented by the data in the table. First, why does it appear that countries de-industrialize, and if they do, is there a corresponding decrease in levels of openness? The countries at the lower part of the table indicate that there may be instances in which countries experience lower levels of industrial output and that there may be corresponding decreases in levels of economic openness. Logically speaking, there are a number of reasons why countries might de-industrialize: war, regime change, and natural

Table 8. Policy shifters

Openness and Industrialization Levels by Time Period, Less Open→More Open					
1963-73			1973-85		
Country	Openness	Industrialization	Country	Openness	Industrialization
Chile	1	1.46	Chile	3	1.13
Guatemala	1	-0.73	Guatemala	2	-0.54
Pakistan	1	-0.58	Pakistan	2	-0.40
Senegal	1	-0.85	Senegal	2	-0.82
Sri Lanka	1	-0.71	Sri Lanka	2	-0.55
Tunisia	2	-0.16	Tunisia	3	0.28
Turkey	1	-0.13	Turkey	3	-0.02
Uruguay	1	1.54	Uruguay	3	1.17
Openness and Industrialization Levels by Time Period, More Open→Less Open					
1963-73			1973-85		
Country	Openness	Industrialization	Country	Openness	Industrialization
Cameroun	3	-0.72	Cameroun	2	-0.69
Colombia	3	0.42	Colombia	2	0.65
Costa Rica	3	-0.42	Costa Rica	2	0.05
Indonesia	3	-1.04	Indonesia	2	-0.05
Ivory Coast	3	-0.97	Ivory Coast	2	-0.82

disasters are only a few possibilities. A difficult question but one worth asking is whether or not these apparent instances of de-industrialization are reductions in industrial output without reductions in actual capacity.

Since a key determinant of levels of economic openness is believed to be the industrialization capacity of industries, do countries that de-industrialize reduce levels of openness because their industries revert to infant industry status and once again need protection? If the Japanese experience can be generalized to other nations, this would certainly appear to be the case (Lodge and Vogel 1987), however, none of the countries in the panel appear to have done this—all those who reduced their openness experienced increases in industrialization levels.

Admittedly, those cases in the lower half of the table present a challenge to the flow of events delineated by the model constructed for this work (in the model, countries progress from less industrialized to more industrialized and from less open to more open). However, there are a variety of reasons why a country might regress in terms of industrialization and shift their policies from greater to lesser openness. As has been demonstrated, factor endowments, national political institutions and leaders' values and beliefs may all influence a country's trade policies, and as some scholars have found, protectionism may be a sporadic phenomenon—countries and the industrial sectors within them may vacillate from protectionism to openness (Aggarwal, Keohane, Yoffie 1987) because of undulating economic conditions and for political reasons (Thompson and Vescera 1992). In any case, as will be demonstrated in subsequent chapters, the overall pattern is a statistically significant positive relationship between industrialization and openness.

As to those countries that shifted from less open to more open, the picture is also less clear than that predicted by underlying theory—some of those countries that increased their levels of openness experienced decreases in industrialization levels. Also, those countries that experienced increased industrialization levels and increased their levels of openness do not seem to have done so at a particular industrialization level. The answer to this may lie in the possibility that industrialization does have a positive impact on levels of economic openness but that the industrialization threshold is unique for each country under analysis. There may be no universal industrialization level that triggers openness (yet the general model constructed here is flexible enough to be applied to each particular case). It is also quite likely that there is not a single industrialization threshold that countries cross before opening. This is because countries do not proceed from completely closed to completely open (1 to 4 on the openness scale) but rather pursue openness incrementally as the cases of Japan and Mexico illustrate. There may be a *petit pas* progression whereby governments determine they have reached a level at which they can open their economies further.

In the end, while there are constellations of factors that influence how countries structure their trade policies, this work assumes that leaders are rational actors who take into account the international competitiveness levels of industries and adjust their policies accordingly (if industries are internationally competitive, protectionist barriers for those industries will be reduced). Leaders are presumed to be capable of achieving “a consistent and transitive preference order and’ executing a “selection from available alternatives so as to maximize satisfaction” (Levy 1997, 89). The cases of Japan and Mexico indicate that the assumption of rationality is somewhat reasonable since both countries, did to some

extent (Japan to a greater extent), make calculations concerning the international competitiveness of industry in the formulation of their trade policies. A review of the possible interactions between governments and firms should illuminate the possible factors that might influence preference order and government decisions to maximize satisfaction.

A few of the shortcomings of the rational choice approach bear iterating. One of the obvious oversights of a rational choice approach is that it ignores the presence of bounded rationality (limitations on the cognitive abilities of decision makers). It would be foolish to assume that government decision makers are omniscient or even that they have access to all the information needed to choose the alternative that would maximize satisfaction from a rank-order of policy preferences. While not completely engaging the reality of bounded rationality may be a critique leveled against this work, assumptions of the absence of bounded rationality are rampant in economic research (Conlisk 1996). The rational choice approach also ignores the concept of “framing” in which decision makers are categorized into a gains frame or a losses frame. Researchers have found this approach to be a useful means of merging seemingly divergent international relations theories (Berejikian 1997) and explaining under what circumstances actors are likely to be risk acceptant and pursue relative gains (losses frame) or risk averse and pursue absolute gains (gains frame) (Kahneman and Tversky 1979). Other theoretical perspectives of decision making which the rational choice approach does not address are evolutionary psychology and the manner in which natural selection may have shaped the cognitive structures found in all humans (Cosmides and Tooby 1994) and shadow-of-the-future interactions, or interactions among actors in which future cooperation is influenced by factors such as length of time horizons, regularity of stakes, the reliability of information concerning others’ actions in an area of

potential cooperation and the immediacy of feedback about alterations in others' actions (Axelrod and Keohane 1985). Nevertheless, in a study that seeks to offer an overview of the impact of a single variable (industrialization) on government economic policy, a rational choice perspective functions well because it offers a simple explanation for decision making without requiring an in-depth analysis of the myriad institutional and societal particularities of each country in the panel. In terms of the decision-making theory constructed here, the researcher also admits that there is a spectrum of other actors besides firms that might potentially impact governmental economic policy. However, it is believed that focusing specifically on the interactions between firms and governments is especially helpful because the infant industry policies upon which the work is founded are policies that deal primarily with these two groups.

In terms of government-firm interaction, in the event that governments do not themselves pay attention to how competitive industries actually are and only focus upon what domestic firms request that they do, the relationship between international competitiveness and protection would probably remain the same—greater international competitiveness for a given industry would result in lower rates of protection (greater competitiveness = greater openness). This is because most political economy theories of industry posit that “for a given set of industries, protectionist policies at home are preferable to other trade solutions”, and “firms will seek to maximize their profits via domestic trade barriers if they face comparative disadvantage...” (Milner and Yoffee 1989, 241). In light of this, even if government pays little or no attention to the actual comparative advantage of firms and simply responds to firm pressures to protect them because firms feel they are at a comparative disadvantage, there should be a negative

relationship between competitiveness and protectionism for that particular industry, because a government either reduces protectionism because it finds that an industry is internationally competitive (as in Japan and Mexico) or an industry pressures a government to maintain protection because it is not internationally competitive. Either way, the government is a rational actor because if it concludes that an industry is internationally competitive and lowers protection, it reaps economic benefits by not erecting protectionist barriers except where it has to shield its own industries from excessive competition (thus avoiding protectionist retaliation from foreign countries, a problem especially acute in countries with heavy concentrations of multinational or exporting firms as was the case in Mexico by the 1980s and in Japan by the 1960s), and if it responds to pressure from industry based on an industry's assessment of its comparative advantage, governmental leaders have gained political mileage by catering to those who help fund government, and in democracies, help fund reelection campaigns (Goodman, Spar and Yoffie 1996).

Scholars draw the following conclusions regarding the retaliatory price that firms (and, hence, the governments they support and finance) may pay for protectionist measures (Goodman, Spar and Yoffie 1996, 567):

The standard theory is that import-competing firms gain from trade barriers, but the profitability of export-dependent and multinational firms depends upon free trade. For these internationally oriented firms, protectionism imposes high costs. Trade barriers raise the costs of imported inputs, disrupt intrafirm trade flows, and increase the probability of foreign retaliation. As a result, even when faced with foreign competition, internationally oriented firms will often favor free trade.

Returning to the question of industrialization thresholds, international competitiveness and industrialization levels should be at least somewhat correlated since countries whose firms

and sectors are more competitive as a whole are likely to be more industrialized because higher industrialization levels would mean higher value added by industry (one of the measures of the industrialization index see Chapter 8) and greater industrial efficiency, i.e. the capacity of industry to add value to a raw material as measured by the difference between inputs and outputs.

If industrialization and competitiveness are congruent concepts, an industrialization threshold can be described as that point at which governments and firms determine that protectionist barriers should be reduced. Although this work recognizes that governments do make case-by-case determinations of competitiveness and that the decisions governments reach regarding particular industries may not all be reflected in a summary of national trade policy, it is logical that the aggregation of firms in a country will seek protection if they are not well developed enough to compete internationally and that industrialization plays a strong role in their development. It is clear that governments for economic and political reasons are willing to shield firms from foreign competition either because they calculate that those firms need such shielding or because they are pressured by firms to provide such protection.

Table 9 and Table 10 represent summaries of the criteria firms and governments might use to rank-order economic policy preferences in both the political and economic realms. Because of Mexico's experience with foreign debt, this criterion is included in Table 10 as a potential influencer of government's decision to protect or not to protect.

In the end, while a number of factors can combine in a variety of ways to impact government decisions regarding government industrial policy, the approach taken here is that governments and the firms with which they interact are rational actors. The rational



actions of firms become part of the incentive structure for governments, and governments are capable of weighing this information to rank order preferences in a way that will maximize their own satisfaction. The result of this process is likely to be a scaling down of protectionism in the face of increasing firm competitiveness.

Table 9. Factors influencing firm demands for protection

Decision Making in Firms			
Factors in cost/ benefit analysis	Variables	Calculus and action	
		If	Then
Comparative advantage or disadvantage in area?  Possibility of foreign retaliation if protection increased?  What would be corresponding increase in price of imported inputs (especially of concern to multinational or exporting firms)?	A = Advantage		
	D = Disadvantage	A	No PD
	RP = Retaliation probability	D	Possible PD
	IPI = Input price increase	D + high RP resulting in high IPI	PD
	PD = Protectionist Demands	D + high RP resulting in low IPI	Possible PD
		D + low RP resulting in high IPI	Possible PD

Table 10. Factors influencing government grants of protection

Decision Making in Government			
Factors in cost/benefit analysis	Variables	Calculus and action	
		If	Then
Comparative firm advantage or disadvantage in area?	A = Advantage		
	D = Disadvantage	A	No PM
Are firms demanding protection?	RP = Retaliation probability	D	Possible PM
		D + PD	Possible PM
What is the possibility of foreign retaliation if protection is increased?	IPI = Input price increase	D + PD + high RP resulting in high IPI and high GRD and/or high PCR + high PRCPD	Possible PM
	GRD = Government revenue decrease because of firm input price increase	D + PD + high RP resulting in high IPI and low GRD and/or low PCR + low PRCPD	Unlikely PM
How much will firms be hurt by retaliation and will that harm government coffers or political leader position?	PCR = Political cost to government officials because of firm input price increase	D + PD + low RP resulting in high IPI and high GRD and/or low PCR + low PRCPD	Possible PM
What costs can these firms impose or benefits bestow if protection is granted or denied?	PRCPD = Political or revenue cost if protection denied	D + PD + low RP resulting in low IPI and low GRD and low PCR + high PRCPD	Likely PM
What pressures are international lenders applying for debt repayment?	PHND = Pressure from holders of national debt	D + PD + high RP resulting in high IPI	Possible PM
	PD = protectionist demands	D + high RP resulting in low IPI + high PHND	Unlikely PM
	PM = protectionist pressures		

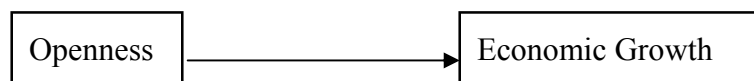
## CHAPTER 7

### HYPOTHESES AND MODEL

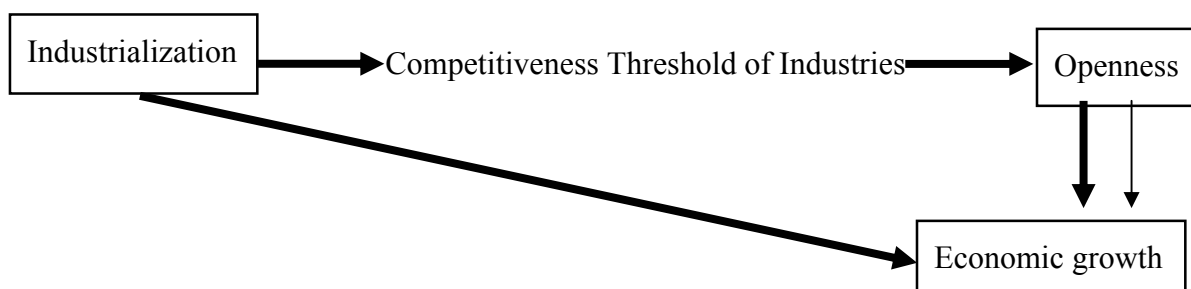
Now that a theoretical and historical foundation for the research question has been laid, I am ready to empirically investigate the hypotheses. The following sections outline the hypotheses of the work and explain how the model will test them. It includes explications of concept operationalizations and the underlying logic of the variables that are included.

#### Central and Alternate Hypotheses Explanations

The first hypothesis (H1) is that industrialization has a strong positive impact on levels of economic openness. My second hypothesis (H2) is that industrialization has more of an overall positive impact on economic growth than does economic openness. The first hypothesis represents an argument that contends that the liberal explanation for economic growth is too narrow; openness among developing nations is heavily impacted by industrialization levels. The second hypothesis is an argument that, in addition to the impact of industrialization on openness, industrialization also has a positive impact on economic growth. The way in which the hypothesized relationships between openness, economic growth and industrialization compare with the relationship between openness and economic growth proposed by liberal economic theory is demonstrated in Figure 1. The asserted explanation for economic growth is the pattern of relationships that is proposed by the two central hypotheses, however, the alternative hypotheses represent alternate conceptualizations of these relationships. Figure 2 represents the relationship



Liberal explanation for economic growth



Asserted explanation for economic growth

In the liberal view, openness leads to economic growth. In the asserted explanation, development of infant industries (industrialization) brings them to a point at which they can compete internationally (see Gerschenkron above). Once the competitiveness threshold is crossed, countries pursue policies of openness. Industrialization also causes economic growth, which may occur at the same time that openness occurs, but both openness and economic growth are products of industrialization. Openness may have some impact on economic growth, but not as substantial an impact as that of industrialization.

Figure 1. Liberal vs. asserted explanation for economic growth

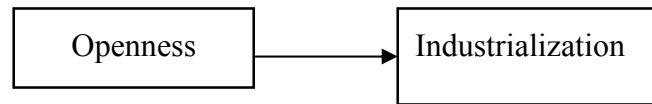


Figure 2. Alternate Hypothesis to Hypothesis I (A1H1) relationship between industrialization and openness

between industrialization and openness proposed by the alternate hypothesis to Hypothesis I (A1H1), openness has a positive impact on industrialization levels.

The relationship envisioned by the first alternate hypothesis to Hypothesis II (A1H2), openness has a greater positive impact on economic growth than does industrialization, is captured in Figure 3 (this figure retains the relationship between industrialization and openness asserted by Hypothesis I).

Returning to the second alternate hypothesis to hypothesis II (A2H2: The greater the amount of time that elapses between the crossing of the industrialization threshold and openness, the greater the delay in economic benefits that accrue to countries after the crossing since openness enables countries to receive the full benefits of industrialization), the relationships between industrialization, openness and economic growth conceptualized by this hypothesis are captured in Figure 4.

Table 11 presents a summary of the hypotheses and their respective dependent and independent variables.

#### Model Characteristics

To test these hypotheses, the study utilizes a cross-sectional time series analysis of thirty countries that the World Bank has identified as developing, however, the justification for choosing these countries extends beyond the fact that they have been identified as developing. These countries were the only ones for which the World Bank compiled openness data, and the time periods were the only time periods for which data was compiled. The literature has suggested that developing countries in the post-World War II era pursued infant industry policies, and this (the time period for which data is compiled) is the time period (1963-85) under analysis here. These countries are measured

at two time periods (1963-1973 and 1973-1985,  $t=2$ ), providing a total of sixty cases ( $N=60$ ). The countries included in the study are (listed in order from most outwardly oriented to most inwardly oriented in the first time period): Singapore, South Korea, Brazil, Thailand, Indonesia, Costa Rica, Malaysia, Ivory Coast, Colombia, Guatemala, Cameroun, Mexico, Nigeria, Tunisia, Kenya, Philippines, Honduras, El Salvador, Madagascar, Nicaragua, Senegal, Turkey, Dominican Republic, Burundi, Pakistan, Sri Lanka, Chile, Peru, Uruguay and Sudan. Again, only two time periods were selected for analysis since these were the only two for which the World Bank compiled data on the dependent variable, economic openness. The advantage of using two time periods is that it lends a temporal element to the analysis as well as broadens the number of cases available for study. Variable coefficients for the model are computed with standard OLS regression, while standard errors are computed using the Huber/White/sandwich variance estimates (Greene 1993) with country as the unit of clustering (each country in the first time period, 1963-73, is clustered with the same country in the second time period, 1973-85) (Rogers 1993).

#### Variables and Their Underlying Logic

For the dependent variable in the first hypothesis, H1 (it is one of the independent variables in Hypothesis II), the study uses a measure of economic openness based on a four-point scale, with 1 being the most inwardly oriented and 4 being the most outwardly oriented. Under this measure, an outwardly oriented economic policy is one “with little or no policy bias toward production for the domestic market” (Grimwade 1996, 156). Under this measure, “a strongly inward-oriented policy was one in which there existed a very pronounced discrimination in favour of production for the domestic market” (Grimwade 1996, 156). “This would entail very high rates of effective protection, quantitative trade



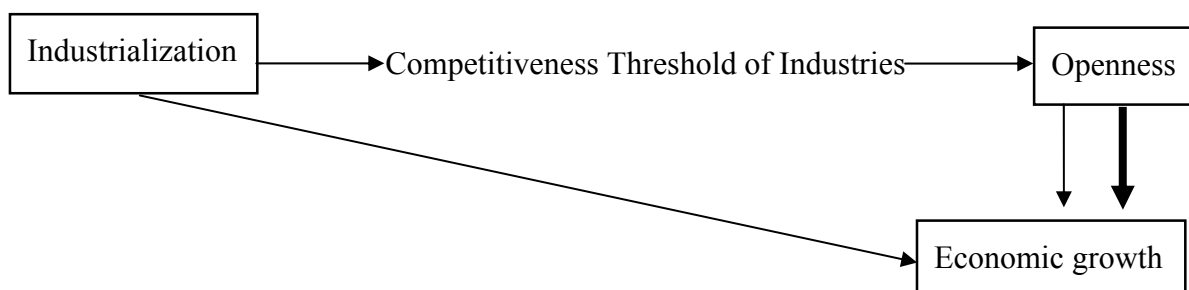
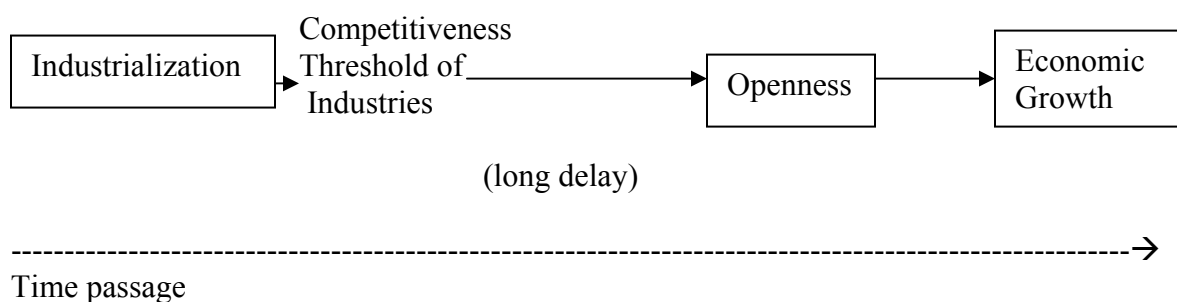
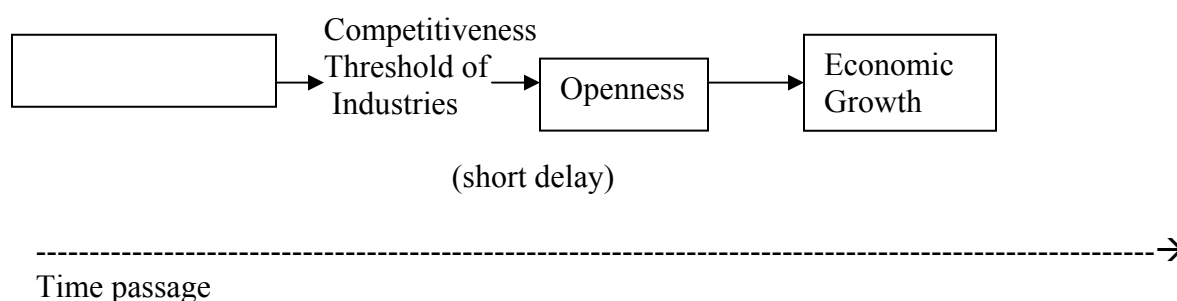


Figure 3. First Alternate Hypothesis to Hypothesis II (A1H2) conceptualization of economic growth, industrialization and openness



Industrialization brings countries to the point at which their industries are competitive. However, if the countries delay the adoption of policies of economic openness for a considerable amount of time, they may lose some of the benefits that openness could have provided had they opened as soon as the competitiveness threshold was crossed. Economic growth may take longer because of the delay in openness because openness enables industrialization. Since all the variables, industrialization, openness and economic growth, were all analyzed during the same time period, a long delay after the crossing of the competitiveness threshold would mean a lower and less significant relationship between industrialization and openness and even lower ones between industrialization and economic growth.



On the other hand, if the countries open their economies quickly after crossing the threshold, this would lead to higher and more significant relationship between industrialization and openness, between industrialization and economic growth and between openness and economic growth.

Figure 4. Second Alternate Hypothesis to Hypothesis II conceptualizations of openness timing

Table 11. Summary of hypotheses dependent and independent variables

	H1	A1H1	H2	A1H2	A2H2
Dependent variable	Economic openness	Industrialization	Economic growth	Economic Growth	Delay in economic benefits to countries
Independent variable	Industrialization	Economic openness	Industrialization (more impactful), Openness	Industrialization, Openness (more impactful)	Time elapse between threshold crossing and openness
Control variables	Value added by services as percentage of GDP, POLITY IV democracy index, Aid as % of GNI	Trade as a % of GDP	Population growth, value added by services as % of GDP, Imports as % of GDP, Exports as % of GDP, Aid as % of GNI	Population growth, value added by services as % of GDP, Imports as % of GDP, Exports as % of GDP, Aid as % of GNI	1) In regression of economic openness on industrialization: Value added by services as percentage of GDP, POLITY IV democracy index, Aid as % of GNI  2) In regression of economic growth on industrialization: Population growth, value added by services as % of GDP, Imports as % of GDP, Exports as % of GDP, Aid as % of GNI

barriers as the norm rather than the exception, and a grossly overvalued exchange rate” (Grimwade 1996, 156). In essence, this measure integrates the two categories of foreign trade regimes: (1) price measures, which have a direct impact on “the domestic prices that exporters receive or importers have to pay once they engage in foreign trade transactions” and (2) quantitative restrictions, which includes “all measures affecting entitlement to engage in foreign-trade transactions” (Ten Kate 1987, 9).

The dependent variable in the second hypothesis, H2, is percentage yearly per capita GNP economic growth.

The independent variable in the first hypothesis, H1, is a standardized industrialization index (it is the dependent variable in the alternate hypothesis to the first hypothesis, A1H1, and an independent variable in H2 and an independent variable in the first alternate hypothesis to hypothesis 2, A1H2). The industrialization index is designed to measure industrialization from a number of different angles. The index includes average urban population as a percent of total population (this figure was derived from World Bank data of rural population as a percentage of total population), value added by industry as a percentage of GDP, agricultural raw materials as a percentage of total imports, and industrial metric tons of CO<sub>2</sub> emissions per capita. These figures are averages of the years from the 1963-73 time period and from the 1973-85 time period. The agricultural raw materials import portion of the index has been altered from its original form. It is 1/10 of the averages for the periods under scrutiny. The industrial metric tons of CO<sub>2</sub> emissions per capita portion of the index has also been altered. It is multiplied by a factor of 10. These changes in the data were made to better reflect what the author believes to be the reality of the phenomena under study.

The dependency perspective of systemic theory holds that the world is divided between a core (located in the West and later Japan) that produces and exports manufactured goods and a dependent periphery comprised of developing nations that produce and export raw materials to the core. According to this theory, the periphery is forced to trade its raw materials on unfavorable terms for manufactured goods from the core (Handelman 2000).

The dependency perspective indicates that an analysis of national development should include some measure of the extent to which a state is a member of the core or a member of the periphery. The expectation is that the higher the figures of agricultural raw materials as a percentage of total imports, the more likely a country is to be a member of the manufacturing core, and hence, more industrialized. However, while theory indicates the necessity of including this component in the industrialization index, reality advises against including it in its original form in the index (which is why it was divided by 10). Countries that are heavily industrialized also have machinery and other technologies that can improve their agricultural output. As a result, more heavily industrialized nations may actually export *more* agricultural products than do less developed countries and less developed countries may import *more* agricultural products than do more developed countries because they do not have the technologies they need to feed their native populations. This reality contradicts the core-periphery theory that less developed “periphery” countries export more raw materials than do more developed “core” countries.

The industrial metric tons of CO<sub>2</sub> emissions per capita portion of the index was altered (multiplied by a factor of 10) since this portion provides the most direct indicator of industrial output. The other portions of the index, average urban population, value added

by industry as a percentage of GDP and agricultural raw materials as a percentage of total imports, all to a certain extent, measure the concept of industrialization by proxy. For example, while average urban population allows one to determine roughly the percentage of people in a country who could potentially be farmers, a high urban population percentage does not necessarily capture the extent to which a country is agriculturally-oriented as opposed to industrially oriented since commercial farming is increasingly less labor intensive and a relatively small number of farmers with the proper equipment can produce relatively high amounts of agricultural output. In other words, a country with a high urban population may be unindustrialized and have a high agricultural output. Also, a country's population may be highly urbanized and have low agricultural output, satisfying its raw material needs through imports. However, in spite of these concerns about the extent to which average urban population captures the extent to which a country is industrialized, urban population does correlate highly (.731, better than .001 significance level) with the industrial metric tons of CO<sub>2</sub> emissions per capita portion of the industrialization index, indicating that it is likely capturing the same phenomenon that CO<sub>2</sub> emissions per capita is capturing—industrialization.

While value added by industry may logically come closer to directly capturing the concept of industrialization than does agricultural raw materials as a percentage of total imports, it likely does not come as close to directly capturing it as does industrial metric tons of CO<sub>2</sub> emissions per capita since it is a measure of the difference between outputs and inputs. In this way it measures the efficiency of industry, i.e. the capacity of industry to add value to a raw material as measured by the difference between inputs and outputs, but does not measure the overall amount of raw materials to which value is added. For

instance, a country may be efficient in terms of adding a high degree of value to a few items, but have relatively low industrial output because it does not add value to a high number of items. The data for value added by industry is drawn from the World Bank, and they define this measure in the following manner (World Bank 2002):

[Value added by industry] comprises value added in mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3.

Although the industrial metric tons of CO<sub>2</sub> emissions per capita portion of the index is what best captures the concept of industrialization, it is also far from infallible. Some industries emit more CO<sub>2</sub> than others and some countries have better pollution control devices than others, and a country may be heavily industrialized and have lower CO<sub>2</sub> emissions per capita than a less industrialized country either because it has low CO<sub>2</sub> emitting industries, relatively advanced pollution control devices, or a combination of both. However, this drawback should be limited by the similar development stages of the countries that are being compared. For example, one would expect a large gap in pollution control technologies between developed countries and developing countries, but since all of the countries under analysis here are developing, it is less likely that such large gaps exist.

For all of the potential shortcomings of the index, it is still encouraging to note that there are substantial correlations between a number of the components of the index and between the components and the index itself. The fact that so many of the subcomponents

are highly correlated indicates that they are capturing the same phenomenon. The correlation matrix in Table 12 illustrates this.

Several control variables are also deployed in the model. For the first hypothesis, value added by services as a percentage of GDP has been included as a control variable since some have argued that countries industrializing in the last half of the 20<sup>th</sup> century may achieve economic growth through services rather than industrialization (Crepaz 2003). The inclusion of this variable helps control for the extent to which countries may be service oriented rather than industrialized. It functions as a control variable in all the other hypotheses as well with the exception of the alternate hypothesis to hypothesis I.

Information on democracy has been included as a control variable as well. This information is drawn from the POLITY IV database (Marshall and Jaggers 2000). The original POLITY IV index consisted of a 21-point scale with -10 being the most authoritarian and +10 being the most democratic. The logic behind including a democratic index is that some scholars have identified a negative relationship between free trade and democracy (Mendelbaum 2002, 72):

Political resistance to free trade is in fact inevitable, especially in a democracy. The total gains from trade are invariably greater than the total losses,' as economists since David Ricardo have demonstrated, and the winners ordinarily outnumber the losers. But for each of the many winners the benefits are only modest: a slightly lower price for an imported good a shirt, for example--than what one made domestically would cost. The gains are thus diffuse. The losses, by contrast, are concentrated. Only a few domestic shirt makers lose their jobs when imported shirts are cheaper, but each of them thereby loses a great deal more than any one of the benefiting consumers gains. The losers, furthermore, are acutely aware of what they have lost, whereas the winners are generally oblivious to what they have gained. As a political issue, therefore, *free* trade characteristically pits one side for which the stakes are very high against another that is scarcely aware that a contest is even under way.



The democracy index was employed in hypothesis I (H1), hypothesis 2 (H2), in the first alternate hypothesis to hypothesis II (A1H2) and in the first regression testing the second alternate hypothesis to hypothesis II (A2H2)(all those in which openness is a dependent variable).

Imports as a percentage of GDP has been included as a control variable for H2, A1H2 and in the second regression testing A2H2. This variable was added as a control because of the fact that these two hypotheses and the second regression for A2H2 have economic growth as the dependent variable and importation rates may, like industrialization and openness, the main independent variables, have a systematic and substantial impact on economic growth. It is expected that imports will have a negative effect on economic growth because the infant industry logic that many of these countries have adopted is that they should satisfy domestic needs with their own manufactures until their industries are developed enough to not only compete abroad with other countries' industries but at home with them as well. A high volume of imports may indicate that domestic industries not yet ready for foreign competition are being squeezed out of their own home market. Exports as a percentage of GDP was included as a control variable for Hypothesis II (H2), the First Alternate Hypothesis to Hypothesis II (A1H2) and in the second regression testing the second alternate hypothesis to hypothesis II (A2H2) because of the fact that the economic literature has found that import protection like that employed in infant industry policies such as ISI may act as export promotion (Import Protection Export Promotion Hypothesis or IPEP Hypothesis) (Dick 1994). This means that even if countries are pursuing infant industry policies, the connection between economic growth and outward orientation of the economy may not be as clear as first believed since the

liberal economic theory holds that greater trade driven by outwardly oriented economic policies should bring about increased economic growth. If the IPEP Hypothesis is true, import protection may actually increase exports and bring about greater economic benefits. In this situation, what may be a strongly positive relationship between outward orientation and economic growth may become weaker if one controls for exports since countries with very low openness indicators may actually be promoting exports by protecting their domestic markets from imports.

Population growth rate has been included as a control variable for H2, A1H2 and in the second regression for A2H2 because of the fact that countries with high population growth will have lower yearly per capita GNP growth rates than countries with lower population growth rates because more people means that the economic pie is being divided into increasingly smaller portions. The population growth rate counteracts the yearly per capita GNP growth rate. Foreign aid as a percentage of gross national investment (GNI) has been included as a control variable in those hypotheses and regressions (H1, H2, A1H2, first and second regressions for A2H2) with economic growth and openness as dependent variables. It was included as a control in those hypotheses with economic growth as a dependent variable because it is possible that foreign aid has a positive impact on economic growth, especially in countries with smaller economies. It might also have a substantial positive impact on the degree to which countries are economically open since many donor agencies attach liberalization requirements to the aid they provide. The World Bank described its foreign aid statistic (the one used here) in the following manner (World Bank 2000):

Official development assistance and net official aid record the actual international transfer by the donor of financial resources or of goods or services at the cost

Table 12. Correlation matrix of industrialization index components

	Industrialization Index	Average urban Population as % of total	Value added by Industry as % of GDP	Agricultural raw materials as % of imports	Industrial metric tons of CO2 emissions per capita
Industrialization index	1.00	.902	.785	.661	.835
Average urban population as % of total	.902	1.00	.717	.424	.731
Value added by Industry as % of GDP	.785	.717	1.00	.267	.513
Agricultural raw materials as % of imports	.661	.424	.267	1.00	.412
Industrial metric tons of CO2 emissions per capita	.835	.731	.513	.412	1.00

to the donor, less any repayments of loan principal during the same period. Grants by official agencies of the members of the Development Assistance Committee [this committee is part of the OECD] are included, as are loans, with a grant element of at least 25 percent, and technical cooperation and assistance.

Finally, trade as a percentage of GDP was included as a control variable for A1H1 since the argument behind a possible reversal of the causal arrow from H1 (industrialization drives openness) to A1H1 (openness drives industrialization) is that trade may supply the knowledge and technology states need to industrialize. The economic openness index partially taps the trade phenomenon from the angle of government policy, but economic openness is not completely isomorphic with trade volume since these two concepts only correlate with a Pearson's R of .350 ( $p < .01$ ). Including trade as a control variable should better help capture the true relationship between industrialization and policies of economic openness.

In terms of the decision making theory of firms already constructed, it is admitted that the model does not perfectly fit this theory. For example, because of data limitations, the model does not include quantifications of foreign retaliation for protectionist measures, how such retaliation might increase the prices of imported inputs for multinational and exporting firms, how many multinational and exporting firms might exist in the countries under study, national foreign debt amounts or political pressures that firms might apply to government officials for protectionist policies. Also, the model violates an important assumption of OLS regression in that some of the variables are measured at less than the interval level. For example, the democracy index as well as the openness index do not operate at the interval level or higher. In spite of these shortcomings, the decision making theory combined with the available data included in the model should form a theoretical and methodological frame solid enough to permit a reasonable testing of the hypotheses.

CHAPTER 8  
TESTING THE CENTRAL HYPOTHESES AND EXPLORING VARIABLE  
RELATIONSHIPS

Industrialization-driven Openness Hypothesis

To determine the possible effect of industrialization on openness (H1), a regression with openness as the dependent variable, industrialization as the independent variable and POLITY IV data, value added by services as a percentage of GDP, and foreign aid as a percentage of GNI are employed as control variables. The results of this regression are outlined in Table 13.

Although the adjusted R squared for the equation is low, it does appear that industrialization has a substantial impact on economic growth. One thing worth noting is that the independent variable was not lagged in any fashion in the above equation, so true causality may be hard to establish. In terms of sheer correlation between the dependent variable, openness, and the independent variable, industrialization, a correlation of the two variables reveals a Pearson correlation of .440,  $p < .001$ . As mentioned above, if countries are really engaging in infant industry policies, one would expect a substantial correlation between openness and industrialization. The regression results and this correlation together with literature suggesting the existence of infant industry policies among the countries under analysis provide substantial support for the first hypothesis that industrialization has a strong impact on levels of economic openness.

### Industrialization-Stronger-than-Openness Hypothesis

To compare the effects of industrialization and openness on economic growth (H2), economic growth will be regressed on the industrialization and openness variables outlined above.

This regression, laid out in Table 14, reveals that economic openness does seem to have a substantial impact on economic growth (something already established by the literature and asserted by liberal economic theory), and, with a beta weight of .506, that it has a much more substantial impact on economic growth than does industrialization. Moreover, while the relationship between industrialization and economic growth is only statistically significant with a p-value of .05, the relationship between economic openness and economic growth is significant with a p-value of .001.

Bivariate correlations of industrialization with economic growth and openness with economic growth also support a rejection of the second hypothesis. A correlation of yearly per capita GNP growth with economic openness reveals that these two items correlate quite highly (.533) at a level of significance beyond the .001 threshold. A correlation of yearly per capita GNP and industrialization reveals little connection between these two elements—they correlate with a Pearson's R of .191 with a level of significance of .137. The starkly more significant relationship between openness and yearly/capita GNP growth indicates that openness is the more important factor in terms of economic growth. This is demonstrated in Table 15.

The data indicate that while industrialization may drive openness, industrialization has a lesser overall impact on economic growth than does openness. The evidence supports an expansion of the liberal explanation for economic growth but does

not indicate that industrialization should be included in liberal economic theory as a rival explanation for economic growth.

#### Industrialization: Direct and Indirect Effects

On a final note, a simple path analysis reveals that the direct impact of industrialization on economic growth is minimal. Most of industrialization's impact on economic growth flows through openness. Figure 5 depicts the direct and indirect impacts of industrialization on economic openness.

To present this in a more familiar mathematical form, we can re-structure Figure 5 into Figure 6.

While some have argued that the best way to analyze path analysis models is with correlation coefficients, others suggest that regression coefficients are the better way and are especially helpful when trying to distinguish between a developmental model and a spurious one like those depicted in Figure 7 and Figure 8 (Asher 1983).

For the purposes of this work, the possible spuriousness of the model has already been at least partially addressed by the literature review—liberal economic theory suggests that openness (X2) has a substantial impact on economic growth (X3). This information makes the configuration represented by the spurious model unlikely. The infant industry argument itself suggests that industrialization (X1) coupled with the decision making processes of government impacts openness (X2), and logic suggests that industrialization (X1) may impact economic growth through openness (X2); this further weakens the possibility of having a relationship among these three variables like that represented in the spurious model diagram. The open question now is whether or not the developmental model should be accepted over the original triangular model. In order for this to occur, it

Table 13. Regression of openness on industrialization

	Industrialization	Democracy	Value added by Services	Aid as % of GNI	Constant	Adjusted R Squared
Coefficients	.382*	-.027	.004	-.042	2.318*	.167
Beta	.404	-.136	.034	-.123	----	
Robust Standard Errors	.169	.028	.018	.045	.769	

Sample size = 60

\* $p < .05$



Table 14. Regression of economic growth on industrialization and openness variables

	Industrialization	Openness	Population Growth	Value added by services	Imports	Exports	Aid as % GNI	Constant
Coefficients	.973*	1.497***	-.021	-.009	-.020**	.019**	.375**	-1.015
Beta	.347	.506	-.005	-.027	-2.510	2.275	.365	----
Robust Standard Errors	.455	.307	.621	.040	.006	.007	.142	2.367

Sample size = 60  
Adjusted R = .343  
Squared

\*p<.05  
\*\*p<.01  
\*\*\*p<.001

Table 15. Bivariate correlations of yearly/capita GNP growth and economic openness, and yearly/capita GNP growth and industrialization

Openness/Yearly per Capita GNP Growth	.533**
Industrialization/Yearly per Capita GNP Growth	.191

\*\* $p < .001$

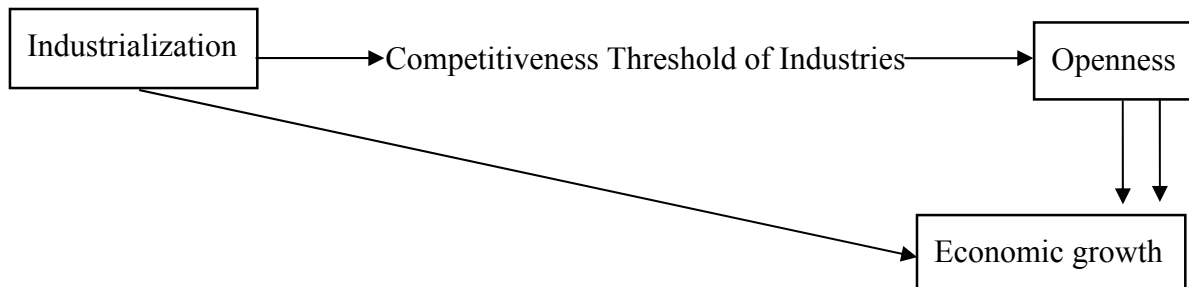


Figure 5. Growth, industrialization and openness

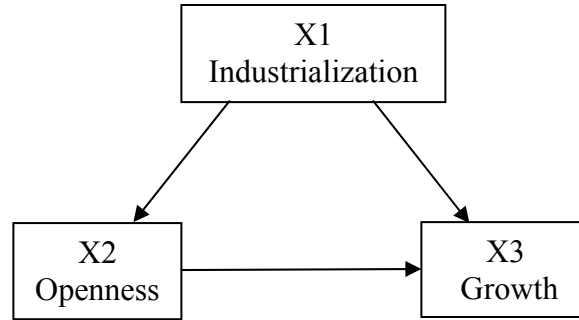


Figure 6. Re-configuration of relationships among industrialization, openness and growth

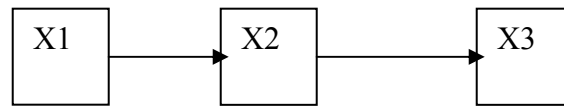


Figure 7. Developmental model  
of relationships

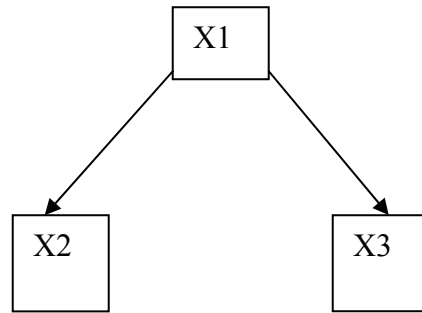


Figure 8. Spurious model of relationships

would have to be established that there was virtually no direct impact of industrialization on economic growth and that the majority of industrialization's impact on economic growth occurs indirectly through openness. These findings are discussed below.

The path from industrialization to growth through openness is represented by  $p_{21}$  and  $p_{32}$ . A multiplication of the beta weights of  $p_{32}$  (.506) and  $p_{21}$  (.404) yields .176 for the indirect impact of industrialization (X1) on economic growth (X3). On the other hand, the beta weight of  $p_{31}$  is .347.  $p_{32}$  is significant at .001 while  $p_{21}$  is significant at .05.  $p_{31}$  is also significant at .05. In light of this information, it appears that the indirect path from industrialization (X1) to economic growth (X3) through openness (X2) is somewhat weaker than the direct path ( $p_{31}$ ). These results reflect the outcome using the beta weights from the regressions used to test Hypothesis I and Hypothesis II and seem to reveal that the triangular model is a better depiction of the relationships between the three phenomena. On the other hand, if one eliminates all control variables, and simply regresses the main independent variables on the corresponding dependents for each hypothesis (H1: economic openness, industrialization; H2: economic growth, industrialization and openness), the picture changes considerably.

When this is done, the indirect path of industrialization (X1) on economic growth (X3) is .189 ( $p_{32}$ , .467, multiplied by  $p_{21}$ , .404).  $p_{32}$  is significant at .001 while  $p_{21}$  is significant at .01. On the other hand, the direct path of industrialization,  $p_{31}$  is .153 and is not significant. This information reveals that without control variables, the indirect influence of industrialization on economic growth is stronger than the direct one. Even with control variables, the direct impact of industrialization on economic growth was not

overwhelmingly larger than the indirect impact. Without such variables, the indirect impact is stronger. These results are delineated in Figure 9.

These findings indicate that while the triangular model may be a better depiction of reality than the developmental one outlined above and the developmental model cannot be justifiably chosen over the triangular one, the developmental one cannot be discarded entirely. The subject of the developmental model form will be returned to in Chapter 5 when A2H2 is tested.



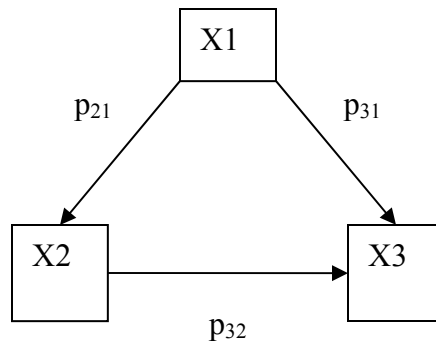


Figure 9. Paths of influence among variables

## CHAPTER 9

### TESTING THE ALTERNATE HYPOTHESES

#### Openness-driven Industrialization Hypothesis

While the data seem to demonstrate that industrialization drives openness, other explanations may exist for the statistically significant relationship between these two phenomena. It is important to keep in mind that the reason that industrialization drives openness is that the countries under analysis were likely pursuing infant industry policies and had already decided ahead of time to pursue openness once their industries were strong enough to compete in international markets. As to the statistically significant relationship that exists between industrialization and openness, a contending explanation for this is that openness in a country drives industrialization (A1H1). While the nature of available data does not permit an elegant testing of this possible reversal of causal arrow, some quantitative analysis is possible, and the literature offers some guidance as to which way influence may be flowing between these two variables.

A regression of industrialization (dependent) on outward orientation (main independent) and volume of trade as a percentage of GDP (control) yielded the results summarized in Table 16.

The results indicate that while trade policy itself may not have a statistically significant impact on industrialization (it comes close but does not achieve significance with a p-value of .052), trade appears to have some impact although its coefficient is quite low. However, it is more likely that industrialization drives trade rather than the other way

Table 16. Regression of Industrialization on Openness and Trade Variables

	Openness	Trade as % of GDP	Constant
Coefficients	.311	.008***	-1.142***
Beta	.294	.421	----
Robust Standard Errors	.153	.002	.262

Sample size = 60  
Adjusted R = .327  
Squared

\*\*\*p<.001

around since a number of scholars have found that the industrialization pattern for developing countries is to industrialize, fill the domestic market with manufactured goods and then focus attention on foreign markets in which goods can be sold (Kurth 1979). Although the hypothesis tested here is that openness may drive industrialization, it may be doing so through trade (openness may increase trade, which may help countries industrialize). Because of this, it makes sense to include trade as a control variable. As has been shown, there is a statistically significant relationship between openness and trade, but the two do not capture the same concept. Openness is a measure of governmental policy while trade is the reality of what that policy is designed to impact. And, in terms of how trade may influence industrialization, it is important to note that there are a number of other ways *besides* trade in which developing countries within the time frame under analysis (1963-85) might have obtained the skills and technologies that they needed to industrialize. A review of those other learning paths should offer some insight into how the countries under study might have gained the tools necessary to develop.

#### Post World War II Opportunities

In the wake of World War II, in spite of a large technology gap between industrialized and non-industrialized nations, later developers were able to acquire the experience and industrial know-how they needed from world markets because of a new set of circumstances that had not existed previously. One of the major new factors of that era was that the Cold War had encouraged the preeminent industrialized country, the United States, to permit, and, at times, encourage technology flow to its allies. This development represented a marked difference in policy between the United States and the previous preeminent industrial country, England, which had deliberately blocked technology

exports. After World War II, U.S. universities opened their doors to foreign students; the U.S. government did not impede the private transfer of technology to other free world countries, and the American military was ready to share its state-of-the-art equipment with US allies (Vogel 1991).

#### International Trade Expansion

American leaders learned from the Great Depression that tariff battles between countries could have disastrous economic consequences and took the lead in opening world trade and keeping it open through the Breton Woods Monetary Agreement in 1944, the General Agreement on Tariffs and Trade in 1947 and the Kennedy Round of Trade Negotiations that took place from 1962 to 1967. These agreements contributed to unprecedented world trade growth, and even small nations were able to enrich their economies by providing goods for international markets. During this period, the United States became a major importer with imports as a percentage of GNP increasing from less than 6 percent in 1960 to 22 percent in 1980 (Vogel 1991).

#### The Emergence of Mass Consumption

Rising standards of living in Europe and North America led to increases in purchasing power, and the concomitant emergence of mass media and society increased individual family desires for what David Riesman deemed the consumer item “standard package”. In the United States, increasing automobile ownership and the construction of highways enabled a marketing revolution in which large department stores and outlets supplanted smaller local retail stores. In this environment, bringing goods from great distances and selling them at lower prices became much easier. Opportunities for countries capable of producing massive quantities of goods for those outlets emerged. These

opportunities were of particular importance for smaller nations without large domestic markets (Vogel 1991).

### The Rise of Information

The flourishing of mass media, educational institutions and the birth of new international agencies expanded the channels through which nations could learn from each other. Increasing publication of books, newspapers, newsletters, magazines and technical publications enhanced knowledge transfer. The creation and rapid diffusion of television also contributed heavily to a general, global and “more nuanced understanding of the attitudes, practices and information that underlay the technical aspects of industrialization” (Vogel 1991, 10).

The impressive expansion of the American graduate school and its availability to foreign students pulled back the Wizard’s curtain and offered aspiring countries an insider’s view into the secrets of industrialization—something unavailable to them in previous years. A knowledge of broad social and political developments was also essential to break into the highly competitive and already industrialized world markets. Such topics became central pillars of academic discourse and were made available to students on a global scale. New institutions such as the International Monetary Fund and World Bank also created systematic programs that would facilitate the transfer of the skills needed to steer industrialization. In these ways, the knowledge required to embark on a course of industrialization was imparted to the developing world (Vogel 1991).

### The Advent of Multinationals

Western firms in the post war era quickly expanded and established offices and factories in new locations. When they did so, their affinity for and commitment to their

original nation and community eroded. These firms reduced their attachment to any particular locality's work force. American-based firms in particular began to define their purposes more in terms of profit, loosening or even severing the social linkages with the communities they had been part of. It was not long before corporations had little compunction about operating anywhere in the world as long as their activities were profitable (Vogel 1991).

Americans were, for the most part, convinced that the overall technological and industrial superiority of the United States precluded the need for a national economic policy that would promote their interests over those of foreign citizens. While some interest groups in the United States lobbied, with some success, for the protection of particular sectors, there was always a powerful consumer lobby that pushed for the availability of the lowest-cost products with little concern for whom made those products. This lobby was comprised of powerful economists who believed in preserving the openness of markets and in reducing government influence and of businessmen who derived profits from investment and trade. All of this meant that there was little to no political pressure for a national policy to "counterbalance firms that passed on technology, capital and production to other parts of the world" (Vogel 1991, 11-12). Even when such policies are in place, there is a danger of parties using the knowledge created by others for their own profit; this danger is significantly enhanced in the absence of them (Fransman 1985).

#### Testing the Openness-driven Industrialization Hypothesis and Conclusions

Returning to the hypothesis that openness drives industrialization, the information outlined above provides some insight into the manner in which openness may have

participated in the industrialization of developing countries. For the most part, it reveals that openness as operationalized in the model (an outwardly oriented economic policy is one “with little or no policy bias toward production for the domestic market”) does not seem to have that much of an impact on the industrialization of states. As has already been revealed, a number of states seem to have industrialized behind the protection of infant industry policies, not because of openness. What the above information reveals is that a variety of other factors *besides* openness appear to have contributed to industrialization in the developing world. These factors included a U.S. willingness to share technology and expertise, the emergence of commercial opportunities for developing countries because of rising mass consumption, the increasing availability of information, and the lack of pressure for a national policy to impede the proliferation of technology, production and capital to regions outside the United States. While one might make the argument that trade was an important factor in the proliferation of technology caused by a lack of pressure for a national policy to prevent it, as the other means of learning and technology transfer demonstrate, trade was only one of a variety of means whereby technology could have been proliferated.

In light of the above information, the alternate hypothesis to hypothesis I (A1H1) is rejected.

#### Openness-Stronger-than-Industrialization Hypothesis

For Hypothesis II, the obvious alternate hypothesis (A1H2) is one already indicated by the literature and that seems to be supported by the data—openness has a substantial effect on economic growth and a more substantial direct impact on economic growth than does industrialization. The data indicate that this is the case.



### Time Delay/Openness-Enabling Hypothesis

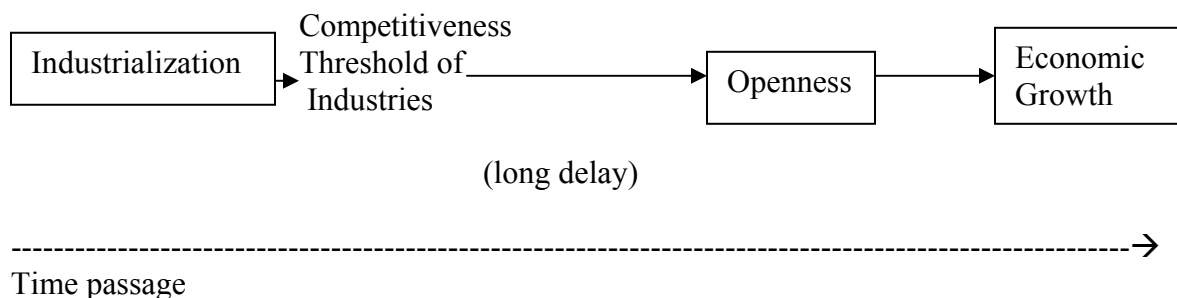
There is another alternative hypothesis that can be put forward. The more time that passes between a country's crossing the competitiveness threshold and its opening its economy increases the amount of time that it takes for the benefits of openness to accrue because openness essentially enables industrialization. To be clear on the manner in which this alternate hypothesis (A2H2) differs from hypothesis II (industrialization has more of an overall positive impact on economic growth than does economic openness), the new hypothesis does not assert that industrialization has a more positive impact on economic growth than openness, what it asserts is that openness "enables" industrialization or allows a country to reap larger benefits from industrialization. The logic here is that the benefits of industrialization do not occur until policies of openness are pursued because once a country has industrialized substantially but has not yet begun to orient its trade policies toward foreign markets, it may quickly fill up its domestic market with manufactured products and bring about economic stagnation. Scholars have found this phenomenon to have occurred in a number of countries during the various stages of their industrialization in which economic stagnation and domestic market saturation after periods of heavy industrial growth lead to efforts to sell manufactured goods abroad (Kurth 1979).

### Testing the Time Delay/Openness-Enabling Hypothesis

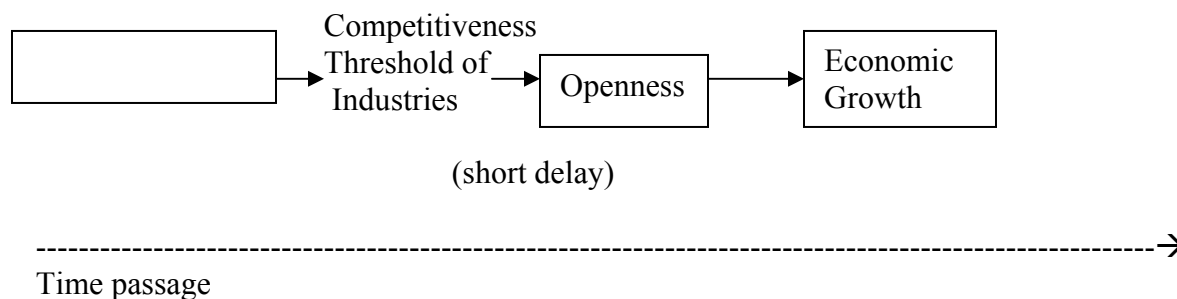
If the reader will recall, scholars have indicated that Latin American and sub-Saharan countries may have used infant industry policies for too long to the point at which they actually hurt them economically (Wade 1990), and that because of this, these policies may have been in place long after countries, or at least some of their sectors, were sufficiently industrialized to compete in international markets. If this is the case, and if

Hypothesis I is true (as it appears to be), if industrialization drives openness, then the data may be indicating that many countries from the panel have maintained their infant industry policies beyond the time they were needed. If there were not some delay between full competitive-level industrialization and openness and if openness really does drive economic growth, one might expect there to be a higher and more significant relationship between industrialization and economic growth since full competitive-level industrialization would be quickly followed by openness. Figure 10 demonstrates how a lack of a statistically significant relationship between industrialization and economic growth may mean there is a considerable lag time between the time that industrialization occurs and resulting openness.

Assuming that the East Asian NIEs and the other non-Latin American and non—sub-Saharan countries in the panel opened their economies closer to the time that they crossed the competitiveness threshold, one would expect to find a stronger and more significant relationship between industrialization and economic openness among the East Asian NIEs and the non-Latin American and non-sub-Saharan countries since the East Asian NIEs and countries outside Latin America and sub-Saharan Africa presumably opened their economies sooner after crossing the industrialization threshold than did the Latin American and sub-Saharan countries. One would also expect to find a stronger and more significant relationship between industrialization and economic growth among the East Asian NIEs and the other non-Latin American and non-Sub-Saharan countries than among the Latin American and Sub-Saharan countries. If these can be established, it would provide substantial evidence for the hypothesis and agree with some scholars' contention that the Latin American and sub-Saharan countries waited longer to open their



Industrialization brings countries to the point at which their industries are competitive. However, if the countries delay the adoption of policies of economic openness for a considerable amount of time, they may lose some of the benefits that openness could have provided had they opened as soon as the competitiveness threshold was crossed. Economic growth may take longer because of the delay in openness because openness enables industrialization. Since all the variables, industrialization, openness and economic growth, were all analyzed during the same time period, a long delay after the crossing of the competitiveness threshold would mean a lower and less significant correlation between industrialization and openness and even lower ones between industrialization and economic growth.



On the other hand, if the countries open their economies quickly after crossing the threshold, this would lead to stronger and more significant relationships between industrialization and openness and between industrialization and economic growth.

Figure 10. Early versus late opener industrialization and openness patterns

Table 17. Division of panel into late and early openers

Latin America and sub-Sahara (late openers)	NIEs and Remainder (early openers)
Brazil Chile Colombia Costa Rica Dominican Rep. El Salvador Guatemala Honduras Mexico Nicaragua Peru Uruguay	Burundi Cameroon Ivory Coast Kenya Nigeria Senegal Sudan Singapore South Korea Indonesia Madagascar Malaysia Pakistan Philippines Sri Lanka Thailand Tunisia Turkey
Openness = 1.92 Range = 1 to 3 Industrialization = -.18 Range = -1.21 to 1.54 Economic growth = 1.09 Range = -3.90 to 5.60	Openness = 2.50 Range = 1 to 4 Industrialization = .12 Range = -1.20 to 3.38 Economic growth = 3.54 Range = -3.40 to 9.00

Table 18. Regression of openness on industrialization including early opener yes/no dummy variable

	Industrialization	Services	Democracy	Aid % of GNI	Early Opener	Constant	Adjusted R squared
Coefficients	.351*	.007	-.040	-.033	.539*	2.038**	.239
Beta	.372	.066	-.202	-.097	.294	----	
Robust Standard Errors	.144	.016	.026	.043	.245	.744	

\*p<.05

\*\*p<.01

economies. To test this, the panel will be divided in the manner outlined in Table 17 using a dummy variable (late openers = 0; early openers = 1); industrialization (bear in mind this is an index standardized across both groups), openness, economic growth averages and ranges for both groups are included.

A regression of openness on industrialization including relevant control variables produced the results presented in Table 18.

The statistically significant and heavily beta-weighted dummy variable for late openers reveals that there is a stronger relationship between economic openness and industrialization among the early openers than the later openers. It is also worthy of note that running the regression without the dummy variable yielded a p-value for industrialization of .032 while running the equation with the dummy variable increased its significance, yielding a p-value for industrialization of .021.

The apparently significant relationship between openness and industrialization among the East Asian NIEs and the panel remainder (early openers) compared to the non-significant correlation between these variables among the Latin American and sub-Saharan countries (late openers) reveals that the literature may be correct in its assertion that the latter countries pursued infant industry policies too long or at least that they waited longer after industrialization occurred to pursue policies of openness.

Splitting the countries into two groups reveals similar findings regarding the relationship between industrialization and openness. These findings are adumbrated in Table 19 and Table 20.

Here again, the regressions reveal a much stronger and more statistically significant relationship between openness and industrialization among the early openers.

Moving to the question of the relationship between economic growth (dependent variable) and industrialization (independent variable), the results in Table 21-Table 23 were obtained.

The results are similar to those obtained in the equations testing the relationship between openness and industrialization—the early opener dummy variable is statistically significant, and running separate regressions on the two groups of countries reveals a stronger and more significant relationship between the dependent variable (economic growth) and main independent variable (industrialization). Although some may raise the criticism that an analysis of the relationship between economic growth and industrialization should include openness because much of industrialization's influence may be channeled through openness (see path analysis), the reader should bear in mind that the pertinent question in the previous line of inquiry was whether or not there was a statistically significant relationship between economic growth and industrialization since these two phenomena potentially occurred at approximately the same time. The argument here regarding economic growth and industrialization is one of concomitance, not one of causation. The direction of the causal arrow for openness and industrialization has already been addressed by H1 and A1H1, and the direction of the causal arrow for economic growth and openness has already addressed by economic literature. These facts should help undermine any arguments for including openness as a control variable in the above regressions. Control variables are utilized when arguments of cause are being made; the above argument is one of concomitance. However, it does make sense to include other independent variables besides openness in the regression since these factors may impact

economic growth independently of industrialization and would not confound the concomitant relationship between the dependent variable and main independent variable.

The regressions reveal what was already believed to be true. The openness-industrialization relationship and the economic growth-openness relationship are stronger among early openers, and it may be because industrialization and openness and industrialization and economic growth occurred within closer temporal proximity of one other than was the case with later openers. Because of these findings, the researcher believes that, on balance, there is sufficient evidence to confirm A2H2.



Table 19. Regression of openness on industrialization among early openers

	Industrialization	Services	Democracy	Aid % of GNI	Constant	Adjusted R squared
Coefficients	.715**	-.017	.016	.036	2.950*	.413
Beta	.813	-.143	.083	.079	----	
Robust Standard Errors	.215	.036	.025	.066	1.131	

Sample size = 22

\* $p < .05$

\*\* $p < .01$

Table 20. Regression of openness on industrialization among late openers

	Industrialization	Services	Democracy	Aid % of GNI	Constant	Adjusted R squared
Coefficients	-.009	-.002	-.066*	-.129*	2.855**	.171
Beta	-.009	-.021	-.354	-.097	----	
Robust Standard Errors	.191	.018	.029	.060	.898	

Sample size = 38

\* $p < .05$

\*\* $p < .01$

Table 21. Regression of economic growth on industrialization including early opener  
yes/no dummy variable

	Industrial. Growth	Pop. Growth	Services	Exports	Imports	Aid GNI	Early Opener	Constant
Coefficients	1.627**	.570	.005	.023**	-.023***	.427**	2.716***	-.944
Beta	.582	.143	.017	2.730	-3.011	.415	.499	----
Robust Standard Errors	.467	.404	.047	.007	.006	.155	.608	2.294

Sample size = 60  
Adjusted R = .375  
Squared

\*p<.05  
\*\*p<.01  
\*\*\*p<.001

Table 22. Regression of economic growth on industrialization among early openers

	Industrial. Growth	Pop. Growth	Services	Exports	Imports	Aid GNI	Constant	Adjusted R squared
Coefficients	1.703**	-1.271	.031	.019	-.021	.246	5.416	.502
Beta	.796	-.248	.108	3.724	-4.182	.220	----	
Robust Standard Errors	.500	1.087	.071	.013	.013	.225	3.221	

Sample size = 22

\* $p < .05$

\*\* $p < .01$

Table 23. Regression of economic growth on industrialization among late openers

	Industrial. Growth	Pop. Growth	Services	Exports	Imports	Aid GNI	Constant	Adjusted R squared
Coefficients	.910	.610	-.005	.019*	-.024**	.343	.140	.199
Beta	.311	.192	-.018	1.449	-1.969	.405	----	
Robust Standard Errors	.598	.441	.069	.008	.007	.239	3.076	

Sample size = 38

\* $p < .05$

\*\* $p < .01$

## CHAPTER 10

## HYPOTHESIS II REANALYSIS

A final concern worth addressing is whether or not dividing the panel between Latin America and sub-Sahara and the East Asian NIEs and the panel remainder would have made a difference in the results for Hypothesis II. Since the Latin American and sub-Saharan countries were believed to have opened their economies much later after the threshold than the others, one might expect to see a statistically significant impact for industrialization among the East Asian NIEs and panel remainder countries in a regression of economic growth on industrialization and openness variables since the logic is that the economic benefits of industrialization in the Latin American and sub-Saharan countries would not be felt for some time since they waited too long to adopt policies of openness. Conversely, one would expect a lower likelihood of a statistically significant impact for industrialization among the Latin American and sub-Saharan countries since they waited longer to open their economies and thus would not have reaped the economic benefits caused by industrialization (at least within the time frame under analysis). A regression of economic growth on openness and industrialization variables including the early opener dummy does reveal that there does seem to be a stronger statistical relationship between economic growth and industrialization among early openers even when the equation includes the openness variable. In fact, this information reveals that while H2 (industrialization has a greater positive impact on economic growth than does openness) may be untrue when all the countries are analyzed together, it does seem to stand when the

early opener dummy variable is included (the beta weight for industrialization is larger for industrialization than it is for openness). These results are summarized in Table 24.

On the other hand, H2 seems to fail, and the results even run counter to expectation when the countries are divided into early and late opener groups. In the early opener regression, neither openness nor industrialization has a statistically significant relationship with economic growth. However in the late opener regression, both openness and industrialization appear to have a statistically significant relationship with economic growth, and industrialization (with a beta weight of .330) has an even greater impact than openness. While this outcome was unexpected since the late openers appear to have waited much longer to open their economies after crossing the industrialization threshold, the answer for the lack of a statistically significant relationship between economic growth and industrialization and between economic growth and openness among the early openers may lie in the fact that the strong statistically significant relationship between industrialization and openness (the correlation between these two variables was .519 among early openers,  $p < .001$ , and .0093, not significant among late openers--these two phenomenon appear to have occurred within close temporal proximity among early openers) found among the early developers may be blurring the picture of the impact these variables have on economic growth. The creation of a standardized index combining industrialization and openness corrects for this problem and reveals that this variable is more significant among early developers than later ones. These results are laid out in Table 25 – Table 28. In the end, regressions run after splitting the countries into separate groups do not produce results that confirm H2. In spite of the results produced by the complete sample regression ( $N = 60$ ) including the early opener dummy in which industrialization.

Table 24. Regression of economic growth on industrialization and openness variables

	Industrial.	Open.	Pop. Growth	Value added by services	Imp.	Exp.	Aid as % GNI	Early Opener	Constant
Coeffic.	1.156**	1.125***	.303	.004	-.024***	.023**	.461**	2.157***	-2.505
Beta	.413	.380	.076	.013	-3.027	2.741	.448	.397	----
Robust Standard Errors	.344	.274	.441	.040	.005	.006	.137	.593	2.138

Sample size = 60

Adjusted R = .4819

Squared

\*p<.05

\*\*p<.01

\*\*\*p<.001



Table 25. Regression of economic growth on industrialization and openness variables among early openers

	Industrial.	Openness	Pop. Growth	Value added by Services	Imports	Exports	Aid as % GNI	Constant
Coefficients	.862	1.013	-1.358	.048	.026*	.025	.233	2.429
Beta	.403	.416	-.265	.169	-5.152	4.763	.208	----
Robust Standard Errors	.833	.631	1.080	.056	.011	.011	.187	3.309

Sample size = 22  
Adjusted R = .567  
Squared

\*p<.05

Table 26. Regression of economic growth on industrialization and openness variables among late openers

	Industrial.	Openness	Pop. Growth	Value added by Services	Imports	Exports	Aid as % GNI	Adjusted R Squared
Coefficients	.964*	.941*	.451	.000	-.025***	.020*	.475	.265
Beta	.330	.302	.142	.000	-2.039	1.513	.561	
Robust Standard Errors	.447	.378	.471	.000	.006	.007	.239	

Sample size = 38

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

Table 27. Regression of economic growth on industrialization/openness index among early openers

	Industrial/Openness Index	Pop. Growth	Value added by Services	Imports	Exports	Aid as % GNI	Adjusted R Squared
Coefficients	.891***	-1.548	.053	-.026	.024	.201	.582
Beta	.773	-.303	.186	-5.201	4.700	.180	
Robust Standard Errors	.178	.853	.037	.013	.014	.179	

Sample size = 22

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

Table 28. Regression of economic growth on industrialization/openness index among late openers

	Industrial/Openness Index	Pop. Growth	Value added by Services	Imports	Exports	Aid as % GNI	Adjusted R Squared
Coefficients	.805**	.259	.001*	-.026***	.021**	.496	.279
Beta	.447	1.608	.006	-2.146	1.608	.586	
Robust Standard Errors	.241	.381	.063	.007	.007	.243	

Sample size = 38

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

appears to have a greater impact on economic growth than that produced by openness, the majority of statistical results run counter to the holdings of H2.

#### Conclusions for Time Delay/Openness-Enabling Hypothesis

In the end the data appear to support Alternative Hypothesis II for Hypothesis II over Alternative Hypothesis I and Hypothesis II. While A1H1 is partially supported by the literature and is supported by regressions of economic growth on industrialization and openness (both with the countries grouped together and divided into early and late opener categories), it fails to address some of the subtler nuances of what really may be occurring in terms of the relationship between economic growth, industrialization and openness.

On the other hand, the Second Alternative Hypothesis helps explain how openness may actually allow the fuller benefits of industrialization to be realized. It takes into account the fact that industrialized countries with policies biased toward the domestic market may be saturating those markets with manufactured goods when they could be reaping greater economic benefits by placing more emphasis on international trade. The literature-informed division of the countries into late-opener and early-opener categories and its accompanying statistical results seem to indicate that not only did the East Asian NIEs and non-sub-Saharan countries in the panel open up sooner after industrialization, they also appear to have reaped economic benefits sooner as a result of this earlier opening. The fact that the regression of economic growth on industrialization and openness among the early openers does not reveal a statistically significant impact for industrialization on economic growth (one would have expected a more significant impact for it among these countries if there was one, because they appear to have opened their economies sooner and because openness appears to enable industrialization) indicates that industrialization does

not have more of an overall positive impact on economic growth than does economic openness (contrary to Hypothesis II).

## CHAPTER 11

### CONCLUSIONS

This work has sought to provide an overview of the ways in which coupling infant industry policies with the prevailing liberal view of economic development might help provide a fuller explanation of the manner in which industrialization levels in general might impact government economic policy and economic growth among developing nations. It has sought to bring both quantitative as well as qualitative techniques to bear on a subject that has been extensively debated but not extensively analyzed.

In the end, industrialization coupled with state decision making does appear to drive openness. However, based upon evidence regarding other means whereby states might gain the skills and technologies they need to industrialize, the reverse does not appear to be true—openness does not seem to drive industrialization. Moreover, there is little evidence that industrialization has a greater impact on economic growth than does openness, although there is some evidence both within political-economy theory and the empirical results that openness may “enable” industrialization and that countries that pursue openness sooner rather than later may reap greater economic benefits. A summary of these findings can be found in Table 29.

These findings hold important implications for policy makers in both national and international organizations. If policies of openness are applied too early, countries that are not sufficiently industrialized may be exposed to destructive foreign competition, and policy programs designed to produce economic benefits may result in commercial ruin.

Table 29. Hypotheses rejection and confirmation matrix

	Principles	Evidence needed	Evidence found	Accept	Reject
H1	Industrialization drives openness	Infant industry policies pursued by developing countries and significant relationship bt. openness and industrialization	Infant industry policies pursued by developing countries and significant relationship	X	
A1H1	Openness drives industrialization	Significant relationship bt. openness and industrialization and evidence that countries need trade for technology and skills to industrialize	Significant relationship and other ways besides trade in which countries can obtain technology and skills to industrialize		X
H2	Industrialization greater positive impact on economic growth than openness	Greater significance for industrialization variable and higher beta weight than for openness	Lower significance and lower beta weight than for openness		X
A1H2	Openness greater positive impact than industrialization	Greater significance for openness variable and higher beta weight than for industrialization	Greater significance and higher beta weight for openness	X Accept but little explanation	
A2H2	Greater time elapse between crossing industrialization threshold and openness = greater delay of economic benefits; openness enables industrialization	Early openers greater and more significant relationship bt. openness and industrialization, greater and more significant correlation bt. economic growth and industrialization	Greater and more significant relationship bt. openness and industrialization and greater and more significant relationship bt. economic growth and industrialization	X	



Some intriguing issues raised but not fully addressed by this work (either because of data or space limitations) involve questions concerning what actors (labor, interest groups) besides firms might have an impact on government economic policy and what incentive or pay-off (institutional, material, etc.) structures might influence the direction and style of their efforts to influence policy outcomes. Other questions which this work was unable to completely grapple with involve those relating to new and developing ways of analyzing decision making in different contexts such as framing, evolutionary psychology and shadow-of-the-future interactions.

One shortcoming of the model itself which represents a line of inquiry that might prove to be fruitful is the specific economic effects that openness may have on industrializing nations. Since part of the logic behind A2H2 is that industrialization and openness work together to bring about economic growth, a better specified model would have included an interactive variable combining openness and industrialization. While theory does suggest that openness and industrialization work together to produce economic benefits, more research needs to be conducted to determine just how much openness enables industrialization and how much time must pass after countries pursue openness for those benefits to manifest themselves. Another question which the model was not able to address because of lack of available data involves H1. How long does it take for industrialization to produce openness? Since the model did not allow for a possible delay between the advent of industrialization and the hypothesized resulting openness it may not be capturing the true relationship between these two variables. Further research into the amount of delay one should expect between industrialization and openness is called for. Finally, the model deals with national averages of industrialization and operates on the

assumption that the national averages should be comprised primarily of those sectors that the government targets for special treatment since at the developing stages of countries these sectors are the ones most likely to succeed and presumably are the ones already the most industrialized. Because of data limitations, it does not take into account the various categories of industries that might exist and how protectionism might vary across those categories. The research of Ellis Krauss and Simon Reich on the role of ideology and interests in the manner in which the American executive branch decides upon protection in certain industrial categories may provide insight not only into how industries should be categorized in protectionism research but also how decision makers reach the conclusions they do when making protectionist policy (Krauss and Reich 1992). Moreover, the work of Christopher S. Allen, Richard E. Walton, Philippe C. Schmitter, Gerhard Lehbruch, and others on union activities, left-wing parties, party alliances and industrial policy might also shed a great deal of light onto the different societal and political variables that might impact industrial policy decision making (Allen 1990; Walton 1987; Schmitter and Lehbruch 1979) .

Although it does not come close to comprehensively addressing the universe of questions that are begged by the topics of government decision making in industrial policy in particular and political economy decision making in general, it is hoped that this paper will provide this researcher and others with a useful springboard for further exploration of these fundamental questions. It is also hoped that it has helped shine a beacon onto a subject fogged by debate but rarely directly addressed by empirical research.

Table 30. Countries with export orientation and averaged yearly per capita GNP growth

Outwardly Oriented				Inwardly Oriented			
Strongly		Moderately		Moderately		Strongly	
<b>1963-1973</b>							
Singapore	9.0	Brazil	5.5	Mexico	4.3	Turkey	3.5
S. Korea	7.1	Thailand	4.9	Nigeria	4.2	Dominican	
		Indonesia	4.6	Tunisia	4.0	Republic	3.4
		Costa Rica	3.9	Kenya	3.9	Pakistan	3.1
		Malaysia	3.8	Philippines	2.2	Sri Lanka	2.3
		Ivory Coast	3.5	Honduras	1.9	Chile	1.7
		Colombia	3.3	El Salvador	1.4	Peru	1.5
		Guatemala	2.7	Madagascar	1.1	Uruguay	1.5
				Nicaragua	1.1		
				Senegal	-0.6	Sudan	-1.9
		Cameroun	-0.1				
<b>1973-1985</b>							
Singapore	6.5	Malaysia	4.1	Cameroun	5.6	Dominican	
S. Korea	5.4	Thailand	3.8	Indonesia	4.0	Republic	0.5
		Tunisia	2.9	Sri Lanka	3.3		
		Brazil	1.5	Pakistan	3.1		
		Turkey	1.4	Colombia	1.8		
		Uruguay	0.4	Mexico	1.3		
		Chile	0.1	Philippines	1.1		
				Kenya	0.3		
				Honduras	-0.1	Ethiopia	-0.4
				Senegal	-0.8	Sudan	-0.4
				Costa Rica	-1.0	Peru	-1.1
				Guatemala	-1.0	Nigeria	-2.5
				Ivory Coast	-1.2	Madagascar	-3.4
				El Salvador	-3.5		
				Nicaragua	-3.9		

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