A REGIONAL MACROECONOMIC ANALYSIS OF NORTH-EAST CHINA

by

Luigi Ermini(*)

Working Paper No. 93-2 (Revised)
July 1993

(*) Address for correspondence:

2424 Maile Way
Department of Economics
University of Hawaii
Honolulu, HI 96822

tel (808) 956-8590
fax (808) 956-4347
A Regional Macroeconomic Analysis of North-East China.

1. Introduction

This paper presents some preliminary quantitative analysis for the design of development strategies for the North-East Region of China, which comprises the provinces of Heilongjiang, Jilin and Liaoning. Although patterns of economic development need not be the same for every economic system, it is well accepted among academics and practitioners that development strategies can be properly designed and effectively implemented only when two important aspects of development are accurately quantified: the state of the economic system along the development path; and - especially for regional economies - the strength of the most promising comparative advantages for both interregional and international trade. As an analysis of comparative advantages for North-East China is presented elsewhere (Kim [1993]), this paper will focus on the first aspect.

The paper comprises two parts, one of quantitative analysis, the other of commentary on development patterns emerging from it. The purpose of the first part is to describe the economic status of the three provincial economies, to identify some patterns of development for these three economies by comparing them with the status of the Chinese economy as a whole and - where relevant - with examples taken from other developing economies, and to establish some causality relations between the Chinese economy and the economy of each of the three provinces. To this regard, the paper indirectly provides a useful preliminary work toward building a full-fledged regional macroeconomic model of North-East China (for a survey on regional macroeconomic models, see Ermini [1991]).

The paper is organized as follows. Part I - the quantitative analysis - includes a description of the data used in this study (section 2.1), a section of comparative statistics (2.2), and a section of causality relations (2.3). Part II - the commentary on development patterns - is reported in section 3.

2. PART I - A Regional Macroeconomic Analysis

---

1. This paper is the final version of the work presented at the Workshops on Development Strategy and Implementation for North-East China held in Honolulu, Hawaii on February 22-26, 1993, and in Seul, Korea, on August 25-27, 1993. The author wishes to thank Ms. Chen, a graduate student at the Department of Political Sciences of the University of Hawaii, for her help in preparing the data set for this study, and for her patient simultaneous translation of the paper in Chinese at the Honolulu workshop. Also, many thanks to various members of the Chinese and Korean delegations for helpful comments during my visit to Shenyang, Dagu, Harbin and Changchun in July 1992. Finally, I thank Burnie Campbell and Won Bae Kim for numerous competent comments on a previous draft.
2.1 Data Description

Part I presents a preliminary quantitative analysis of the historical pattern of growth of the economies of the three provinces of Heilongjiang, Jilin and Liaoning, and their connections with the national economy. The analysis is based on data taken from the Statistical Yearbook of China 1990 (SYC), and related versions for the three provinces. However, as the data for Liaoning is available only for selected years rather than for the full sample period 1952-1990, the paper will focus mainly on Heilongjiang and Jilin. Following conventional measures of development status (see, for example, Gillis, Perkins, Roemer and Snodgrass [1992]), the paper concentrates on total real output and total labor force, and their components originating in agriculture and industry.

As the quantitative analysis is based on statistical properties of economic variables, it is important to emphasize the limits of the proposed methodology vis-a-vis the characteristics of growth of the Chinese economy in the last decades. Analysing policy alternatives or producing forecasts based on the existence of regularities and fixed relations between economic components is more effective when the economy under study exhibits a degree of structural stability. An example of the latter may be the U.S. economy, which has been growing for the past four decades at a fairly steady pace, 3-4% per year on average. Indeed, despite minor structural breaks and deviations from historical trends, statistical methods applied to the U.S. economy have performed reasonably well (see, among others, Fair [1984], Klein [1991]).

This condition of structural stability, however, does not apply to the Chinese economy nor, in general, to developing economies. These, in fact, tend to grow along an "elongated-S" type of pattern, whereby an initial phase of accelerating development is followed by a mature stage of lower growth rate. This pattern is at the basis of the "catch-up" theory of development convergence. As the timing of the phase shift is rather unpredictable, this peculiar pattern greatly limits the horizon of forecasts and simulations made with econometric models built during the period of accelerating growth. Nonetheless, once these limits are understood, the present analysis can still be seen as a useful device to understand aspects of the growth process and interactions between economic variables that otherwise would have escaped attention.

The data used in this study is summarized in figures 1-16. Figure 1 reports real output of China, and its components originating in the agricultural sector and in the industry, in billions 1952-yuan (SYC [1990], p. 34 and 39). These figures are obtained by multiplying the relevant output indexes by the corresponding nominal output of 1952. Figure 2 reports the growth rates of these three variables. One can observe an early period in the recent history of the Chinese economy characterized by great variance and big outliers, probably resulting from the policies of the "Great Leap Forward", or more likely from improper data collection and recording. As the quantitative analysis of this paper rests on statistical regularities, it was decided to eliminate this early period from the sample, and to choose for its ending date the year 1962. Thus, our data sample covers the period 1963-1989. Although somewhat arbitrary, this choice is consistent with the opinions of several students of the economy of modern
China, and it is also well supported by the patterns of growth rates of total output, labor force (figure 3), and inflation (figure 4). The labor force figure, in particular, gives support to the contention that the data prior to the early 60's should be considered of low quality. Figure 5 and 6 complete the description of China's data set, reporting productivity levels and their growth rates respectively.

Figures 7-11 report the same type of data for the province of Heilongjiang, and figures 12-16 for the province of Jilin. Similar graphs could not be constructed for the province of Liaoning for unavailability of annual data. For these provinces, the first period of great variance and big outliers lasts longer than the corresponding period for China, well into the mid 60's. We also notice the much greater volatility of the various provincial growth rates - particularly in the case of Jilin - compared with those of China.

2.2 Comparative Statistics

One of the main features of developing economies with a large agricultural base is the diminishing share of agricultural output in total output as the economy expands. Directly, this feature measures the increasing shift of economic activity toward industry and services; indirectly, it measures the movement of population from rural to urban areas. According to some theories of development - for example, the "two-sector theory" of labor surplus - this feature would also reflect an increasing productivity in the agricultural sector. Indeed, China's North-East provides a very clear example of this feature, as shown in figures 17-24.

Figure 17 reports the increase over the sample period of per-capita output (in thousands of 1952-yuan) for China and the two provinces of Heilongjiang and Jilin. Although a complete graph was not available for the province of Liaoning, the data available for this province exhibits a pattern similar to Jilin province. Using per-capita output as a crude measure of development, we observe from figure 17 that the province of Heilongjiang has lost some ground in recent years compared to Jilin and China as a whole. As noted below, an important reason for this lower development in recent years may possibly rest on the dominating presence of inefficient state-owned heavy industry.

Figure 18 reports the decrease over time of the share of agricultural output in total output. Whereas Jilin trails China quite closely, Heilongjiang exhibits a higher share of agricultural output. This confirms Heilongjiang as a province with a stronger agricultural base, compared to the rest of the nation. Figures 19-21, in turn, show that the relation between the share of agriculture and per-capita output for China, Heilongjiang and Jilin follows qualitatively a trend common to all developing economies (see, for example, Gillis, Perkins, Roemer and Snodgrass [1993, p.52]). A similar trend is also exhibited by the province of Liaoning.

Figure 22 reports the share of rural labor force over total labor force. This data offers a good measure of rural migration, and its pattern is consistent with the average pattern of development. As the industrial sector expands, its productivity and hence the wage differential increase, thus attracting to urban areas large numbers of excess rural laborers. Two
interesting features emerge from this graph. First, rural population migration for China as a whole has been much slower than that of developing countries with comparable per-capita output. Scholars have attributed this Chinese feature to a lower overall industrialization, and also to a government policy of open restraint of rural migration. Second, the share of rural population for China is currently much higher than the share for North-East Region: 75% for China vs. 48% for Jilin and 41% for Heilongjiang. These two features together confirm that while China as a whole remains largely a "rural" country, with still a large rural labor surplus available, the North-East Region - and particularly Heilongjiang - has developed a relatively efficient high-productivity agricultural system, in conjunction with a large industrial base that accounts for over 80% of total provincial output. For the sake of comparison, the average rural population share for OECD members is 23%, for the U.S 26%, for Japan 23%, for Korea 31%, for Malaysia 59%, for Indonesia 71%, for India 73% (World Bank [1990, p. 178-187]).

Indeed, the development of a relatively more efficient agricultural system in Heilongjiang and Jilin compared to the rest of China clearly emerges from figure 23, which reports productivity levels in agriculture. To correctly interpret this productivity gap, however, one should notice that while North-East’s agriculture is wheat-based, the agriculture of the rest of China is mostly rice-based, thus characterized by different technologies (more labor intensive) and by a lower monetary value of the output. Here productivity is the ratio of the sectoral output to the sectoral labor force, in thousands of 1952-yuan.

The greater productivity of Heilongjiang’s agricultural system strikes even more significantly if one compares it with the average total productivity (total output over total labor force). As reported in figure 24, Heilongjiang’s total productivity is lower than Jilin, lower even than that of China as a whole. These two facts combined characterize the economy of Heilongjiang as a mix of a relatively efficient agricultural sector and a very inefficient and over-regulated industrial sector: the low productivity of state-owned, centrally-planned heavy industries - which dominate Heilongjiang’s industrial base - and the regulated low prices of the energy sector - especially coal and oil, of which Heilongjiang is so richly endowed - are sufficient to push the averaging with the higher agricultural productivity far down the scale.

Based on these facts, it is possible to draw some preliminary conclusions regarding potential comparative advantages for the North-East Region (see also section 3.3 below for further discussion). From a productivity prospective, Heilongjiang’s comparative advantages seem to be concentrated on the development of natural resources and agriculture, and on the progressive dismantling of the state-ownership of heavy industry, as the latter sector clearly provides an example of comparative disadvantage. To some extent, the same conclusion applies to the province of Jilin, although here an almost equally efficient agricultural sector is associated to an industrial sector apparently more efficient than Heilongjiang’s (compare figures 23 and 24). This greater productivity in industry is possibly the result of the higher share of modern manufacturing enterprises and foreign direct investment (for example,
automobile manufacturing) in Jilin.

To summarize the comparison of economic performance between China and the three provinces, table 1 reports a series of growth rates statistics, quite useful both for forecasting purposes and for inferring different patterns of development. These growth rates are also reported as averages over the two sub-periods 63-80 and 80-89, to compare economic performances across different political climates. These growth rates statistics, with standard errors in parentheses, refer to: total output, agricultural output, industrial output, rural labor force, urban labor force, total population, total productivity, agricultural productivity. Selected growth rates are also reported in graphs for the full sample (figures 25-28).

Some comments on these statistics are in order. First, the economies of the North-East Region have grown less in the last decade than the economy of China as a whole. This pattern is exhibited by both the agricultural and the industrial sector, and it is quite evident for the province of Heilongjiang. Once again, the fact that Heilongjiang is comparatively losing ground to neighboring provinces and to China as a whole can be explained as the result of low energy prices and inefficient state-owned heavy industry. Secondly, Jilin exhibits an inexplicable surge in rural population during the second sub-period. Third, although the historical patterns of almost all the economic indicators for the provinces of Heilongjiang and Jilin are essentially similar to the patterns for China, the provincial economies, Jilin especially, exhibit a much greater volatility (see figures 26 and 28).

2.3 Causality Relations

Growth rates, especially of output, population and employment, are amongst the most closely monitored economic variables. Growth rates of output, in particular, are viewed as one of the most important measures of the state of the development process. It is then not surprising that great efforts are continuously made by scholars and practitioners of both developed and developing countries to forecast growth rates for the short and long term.

The purpose of this section is to describe and interpret a simple forecasting model of the growth rates of total output, and its components generated in agriculture and industry, for the provinces of Heilongjiang and Jilin. This model is obtained by making use of the so-called Vector-Autoregressive (VAR) estimation method of modern time-series analysis. Details for this method can be found in Granger and Newbold [1986]. An important by-product of the forecasting model is the ability to identify significant interactions between the two provincial economies and the economy of China. These interactions are technically called causality relations, and are simply identified by establishing whether a certain economic variable - for example, the growth rate of China's total output - has predictive power for the growth rate of, say, Heilongjiang in addition to other variables already selected.

Although the results presented in table 2 are obtained from a simple, preliminary version of a larger forecasting model of North-East China (Ermini [1993]), some interesting interpretations of the economic interactions across provinces can be drawn from them. Regarding the growth rate of total output for both provinces, the growth rate of China's total
output has an unsurprising positive impact at lag one (i.e., one year earlier). This can be interpreted as the delayed effect that growth in the rest of the country has on the growth of the two provinces, possibly transmitted through a growth in demand for agricultural produce, energy and heavy-industry products that characterize the economies of Heilongjiang and Jilin. A more difficult interpretation can be given about the negative impact that past growth rates in each province have on the other province. Interestingly, the higher impact that the economic growth of China has on Jilin compared to Heilongjiang (a coefficient of 1.161 against 0.736), combined with a higher short-term average growth rate (9.47% vs. 6.82%), supports the conjecture that Jilin will grow at persistently higher rates than Heilongjiang in the near future.

Regarding the growth rate in agriculture, for the case of Heilongjiang the impact from China's agricultural output is positive, whereas it is negative the impact from Jilin's agricultural output. This fact may indicate an increased competitiveness of Jilin's agricultural sector relative to Heilongjiang's, to the extent that a positive growth in the former is obtained as the expenses of the latter. For the case of Jilin, Heilongjiang's growth rate seems to have no effect.

Finally, regarding the growth rate in industrial output, China economy surprisingly seems to have no effect, while Heilongjiang has a negative effect on Jilin's growth rate, but not vice versa. These results are apparently counterintuitive, in that one would expect at least the industrial output of Heilongjiang to be driven by the rest of the country. However, we should recall that one of the main links of this province to the rest of the country is represented by the supply of energy and raw materials (particularly, oil and coal), which are sold at artificially much lower prices than the international market prices, thus distorting the link between the economic growth of China and the growth of the monetary value of Heilongjiang's output. Another partial explanation could be found in the increasingly more efficient usage of energy resources by the rest of the country, efficiency that could further enhanced by letting the prices of energy and raw materials increase to the international market levels.

3. PART II: Understanding Patterns of Development

In discussing strategies of economic development of North-East China, we encounter issues that are common to the rest of the developing world, and issues that are peculiar to China's experience, in its drive toward a decentralized market economy. More specifically, we encounter two types of issues: institutional and economic. We discuss these two types of issues in turn.

3.1 Institutional Issues in Development

Institutional issues, currently addressed through the broad agenda of moving the Chinese economy from a centrally-planned system to a socialist market system, refer to the creation and preservation of legal and organizational aspects of the economy. Both these aspects affect development through two main channels: (i) by increasing efficiency in resource allocation
(for example, by shifting production decisions - quantity and/or prices - from central planning to market-oriented decisions; by allowing market-set prices to signal opportunities and scarcities); (ii) by creating the proper legal/institutional environment to attract foreign credit and direct foreign investment (DFI).

Legal issues mainly refer to the establishment of an adequate juridical framework within which property rights are defined and enforced, managers are accountable, shareholders's rights are protected, business and employment opportunities are accessible to everyone, and so forth. Organizational issues, on the other hand, mainly concern the creation of markets that currently do not exist, and the increased efficiency of existing markets. While the legal issues are dealt with largely at the political level of the central government, it is in the area of organizational issues that provincial governments have a wide scope of contribution. Interestingly, this separation of roles is not peculiar to China, but can be found in almost every socio-economic system - for example, the US - where strong regional components coexist within a central government.

It should be noted that while the juridical issues associated, for example, with establishing property rights are quite peculiar to centrally-planned economic systems in their drive toward market-oriented mechanisms, the organizational aspects of creating new markets or deregulating existing markets are quite common to most developing countries. In fact, in recent years deregulation has been an important political agenda in many developed countries as well. Typically, non-existing markets are financial, insurance and credit markets: households have very few options on where to allocate their savings (usually limited to bank accounts); private enterprises - as well as public ones - have very few options on where to borrow capital from (usually limited to bank loans); local governments have almost no alternative to monetizing their budget deficit for lack of appropriate bonds markets in which to perform open market operations. To this regard, it is clear that, as the agenda of facilitating the formation of new markets is a crucial step toward sustained economic development, reforming the financial, insurance and credit systems should constitute one of the highest priorities for the provincial governments of Heilongjiang, Jilin and Liaoning.

Equally important is the increased efficiency of existing markets. Market inefficiencies, rather common also in Western economies, take two main forms: (i) the presence of state-owned enterprises (for example, almost 30% of the total industrial output of Italy is produced by state-owned firms); and (ii) the existence of regulatory constraints on the smooth functioning of markets. These constraints can take the form of preferential patronage to certain enterprises rather than others; the form of priceceilings or price-floors, as in the agricultural price-support system existing both in USA and in EC countries; the form of quantity rationing, and so forth.

The first form of market inefficiency - presence of state-owned suppliers - usually arises as a consequence of political unaccountability of managers, which in turn leads to a lack of risk-taking and to non-profit-seeking behavior. This inefficiency takes the form of price distortions (including the price of risk), misallocation of resources (especially labor) and of
credit through preferential subsidies. The second source of market inefficiency - market regulations - arises as a distortion to the optimum market clearing equilibrium, and thus as a direct loss of benefit from trade. Once again, improving the efficiency of existing markets should be considered one of the main strategic policies of the three provincial governments to maintain for future years the rapid economic growth of last decade. To this regard, the case of major Western economies - primarily USA and Great Britain - engaging in the last decade in path-breaking policies of privatization of state-owned enterprises and of market deregulations could offer an inspiring example.

3.2 Economic Issues in Development

Institutional issues, provided they are properly addressed and satisfactorily resolved, help create a favorable economic climate that encourages private initiatives - both domestic and foreign - and their coordination with government policies. Economic issues, on the other hand, are associated with the identification, exploitation and development of growth factors (particularly, comparative advantages), and thus with policies of market incentives and infrastructure development. It should be emphasized once again that sustained development rides on both tracks - institutional environment and economic incentives. Implementing only the latter, without properly addressing the former, will ultimately undermine any development effort. To this regard, a helpful reminder is provided by the negative economic development experience of Latin America in the 80's, where ambitious plans of infrastructure development and incentives to foreign investment were implemented without the necessary institutional reforms - particularly, land reforms and the creation of modern financial markets.

Equally important is to strike a balance between growth factors associated with the demand side of the economy and those associated with the supply side. Typically, in centrally planned economies - as well as many other developing countries - growth has been mostly identified with the development of production facilities (energy, steel, cement, chemicals, machinery, etc.), with very little attention paid to the mechanisms generating the demands for such goods, especially consumer demand. At best, this approach has been successful to promote growth in some selected industries, but not to promote development of the economy as a whole, an economy, that is, capable of offering individuals enough products and services to choose from as they wish, and enough capital and financial assets to satisfy their savings allocation preferences.

Although the strategy of unbalanced growth that concentrates on developing a few key industries producing goods for exports or for import substitution has been successful in some countries at the early stages of their economic development (Taiwan and Korea are two good examples), a sustained persistent development requires a balancing act between supply and demand (particularly, consumer demand). It is illusory to believe that development can be achieved by simply developing a selected list of high-tech industries, without consideration for people's rising demands for education, health care, clean and safe environment, quality housing, etc., as well as it is illusory to believe that development can be achieved without
promoting the proper institutional framework.

Finally, the need to balance between demand and supply raises the crucial issue of growth management: who is going to decide what to produce, how to produce it and at what price? Who is going to set growth targets? Who is going to determine the allocation of resources to infrastructure development, industrial promotion abroad, environmental clean-up, urban development? The central planners of old, a new breed of private entrepreneurs yet to be seen, or a mix of both? But then, how to incentivize the latter to respond to market demand signals, and how to reduce the influence of the former in determining - outside the market - the success or failure of enterprises? Once again, addressing these questions adequately is possibly more important for the success of development policies than deciding to build a new highway or to invest on a new industrial sector. In fact, addressing these questions adequately is possibly one of the areas where the provincial governments of North-East China can play an central role in securing sustained development.

3.3 Patterns of Development in North-East China

The purpose of this section is to extract from the quantitative analysis of part I a number of features that characterize each of the three provinces of North-East China, and to provide some likely scenarios of development for the whole region based on similar features displayed by other development experiences.

From the analysis of comparative statistics reported in section 2.3, as well as from direct on-site observations, the following conclusion can be drawn: although the three provinces of Liaoning, Jilin and Heilongjiang form a well defined "region" with common historical, cultural and geophysical characteristics, from an economic development standpoint they seem to display quite different comparative advantages and gravity pulls, to the extent that perhaps the three provinces should adopt different development strategies. This is particularly true for the province of Liaoning, as the differences between Jilin and Heilongjiang are not as pronounced as they are between the pair Jilin-Heilongjiang and Liaoning. This conclusion of course does not necessarily imply that each province should go its own way; on the contrary, different development strategies can coexist within the framework of a broader regional coordination. The development patterns for each region are discussed in turn.

3.3.1. Heilongjiang. As already noted, this province clearly emerges as a mix of a relatively efficient agricultural sector and a very inefficient state-owned heavy industry sector. From section 2.3, it is evident that productivity in industry is very low, and a burden to growth. Unless this sector is reformed - and strong doubts exist on whether this can be done in the near future - per-capita growth of Heilongjiang will suffer compared to the rest of the region. On the bright side, this province is clearly strong in agriculture and natural resources (oil, coal, timber). Furthermore, the presence of heavy industry (particularly, steel mills and electric works), despite their inefficiency, provides a reservoir of skilled labor and technicians, and a web of good infrastructures (railroads, highways, hotels, telecommunications and computers networks, etc.). All these positive elements, combined with the additional
comparative advantages of bordering with Siberia and of entertaining historical trade ties with Far-eastern Russia - and by extension with Europe - give Heilongjiang two strategic roles: (i) China's land gate to Europe; (ii) a reservoir of foodstuff and skilled labor for the broader development of North-East Asia, particularly Siberia. From this perspective, Heilongjiang's future economic growth could be best sustained by developing two crucial comparative advantages: agriculture and transportation-communications infrastructure.

However, as agriculture develops toward greater productivity, rural labor share will be further reduced, thus creating millions of displaced rural labor surplus (a reduction from the current level of 45% to the OECD level of 23%, for example, would imply the displacement of about 2 millions people from rural areas). This phenomenon, combined with the possible displacement of labor surplus from inefficient heavy industries, must be cause of great concern for provincial planners. Typically, in the experience of developing economies - including the provinces of Southern China - the labor surplus displaced by the modernization of agricultural activities has been absorbed, with various degrees of difficulties, in the few already existing urban-industrial centers, with the negative consequence of creating monstrous urban aggregates of millions and millions of inhabitants. Consider to this regard the examples of Mexico City, Seul, San Paolo of Brazil or Bangkok, to name a few, and their problems of air and water pollution, of traffic jams, crowdedness, poor housing, etc.

The alternative to this pattern is, for provincial planners, to encourage through appropriate incentives the creation of industrial activities in urban centers of smaller size scattered around the territory. To this regard, we may recall Italy's case. Despite being - at 58 millions - one of the most populated countries in Europe (in fact the third most populated, after Germany and Great Britain), no Italian city has more than 3 millions of inhabitants. As opposed to countries like France or Great Britain, where one very big city of 6-8 millions people is followed by a number of much smaller cities, Italy has a large number of medium-size cities between 1 and 3 millions (Rome, Milan, Naples, Turin). Furthermore, as opposed to other European countries where industrial activities are highly concentrated around big cities, Italy's industrial strength is made of a great number of medium-size enterprises spread all over the territory of its industrialized provinces.

In sum, the strategic goals of developing agriculture and transport-communication infrastructures should be accompanied in the case of Heilongjiang by policies encouraging the creation of small and medium-size industries away from the already big industrial centers of Harbin and Daqui. Considering that the current population of 38 millions is expected to reach the level of 50 millions within a decade, and will thus constitute a formidable reservoir of demand for consumer goods and services, this web of small and medium-size industries could evolve from a combination of local private entreprenuers incentivated to satisfy the increasing local demand, and of planned export-oriented enterprising facilitated by cross-country agreements.

3.3.2. Jilin. Whereas Heilongjiang's gravity pull is toward Siberia, and by extension toward Europe, Jilin's gravity pull is clearly toward Korea (the current political division between
North and South notwithstanding), and to a lesser extent toward Japan. Similarly to Heilongjiang, Jilin is strong in agriculture and natural resources. It also has areas of great touristic interest, especially for Koreans, and an apparently more efficient industrial sector (compare, for example, figures 23 and 24). As the share of rural labor in Jilin is a high 48%, compared with 41% in Heilongjiang, the problem of rural migration could be greater than Heilongjiang’s, although total population is lower. Considering the gravity pull toward (South) Korea, and the corresponding interest of South Korea to access Jilin’s natural resources and foodstuff, the path of economic growth of this province should focus on developing and strengthening agriculture, natural resources and south-ward transport infrastructures. To a large extent, apart from the different gravity pull, Jilin and Heilongjiang thus share a common pattern of development: agriculture, natural resources, and transportation infrastructures, accompanied by a number of market-oriented policies aimed at developing a web of small and medium-sized industries catering for the growing local demand for consumer goods and services. Jilin exhibits the additional bonus that its industrial sector is not dominated by inefficient state-owned enterprises.

3.3.3. Liaoning. This province is strong in manufacturing - especially mature industries like automobiles - less in agriculture and natural resources. Strategic advantages of this province over Jilin and Heilongjiang are that it offers the only harbor facility in the region (Dalian), and it is closer to the main Chinese markets (Beijing, Shandong, etc.). Clearly, the gravity pull for Liaoning is China. This, combined with a larger population than in the rest of the North-East Region, identifies two important features for growth: a relatively larger local demand for goods and services, and a platform to provide industrial products and services to the even larger markets of the rest of China. These features, combined with a long-lasting tradition of science, technology and manufacturing and with the presence of a skilled labor force, clearly identify two main development strategies for this province: the promotion of direct foreign investment (DFI) to service local markets; the export of cheap skilled labor by promoting export-oriented manufacturing.

3.4 Lessons from Other Countries

Although economic development exhibits features common to all developing countries, no single recipe for development exists that is valid for all countries. Not only, in fact, different countries can adopt different development strategies, but the same strategy may have a different degree of success depending on the different social, political and cultural backgrounds. For this reason, one cannot possibly offer a single "model" of development for North-East China, the differences in comparative advantages and gravity pulls above described notwithstanding. However, we can extract from the experience of other countries some important lessons about things to do and things to avoid.

In certain aspects, the process of development of the three provinces of North-East China - particularly, of Heilongjiang - exhibits potentially negative features similar to Australia's. More specifically, without a deep reform of its heavily regulated state-owned industry, Heilongjiang’s growth pattern could easily repeat Australia’s failure. In the sixties, as a
consequence of the old British empire subdivision of economic specializations among the
countries of the Commonwealth, Australia's economy was characterized by modern and
highly productive agricultural and natural resources sectors (particularly, coal and minerals),
and by a very weak and overly protected industrial base. To modernize its industries,
particularly manufacturers of consumer goods, Australia acquired foreign technology by
exporting foodstuff, unprocessed minerals and coal. However, by failing to remove
protections of the domestic industry and extensive market regulations, this injection of new
technology to a large extent did not feconde into a thriving innovative industry. Protections,
in fact, as elsewhere in the world, led to a misallocation of resources, in this case in the form
of a shift of income from consumers to producers through higher prices for domestically
manufactured goods. The lesson to be learned from the Australian case is that, once again,
adopting economic plans and incentives - such as, for example, selling coal, oil and timber to
expand refineries or innovate steel mills in Heilongjiang and Jilin - without simultaneously
correcting institutional distortions is bound to fail in the long run.

Whereas the Australian case offers an example of things to avoid - its experience
underlines the importance of avoiding niches of protectionism and market regulations - South
Korea and Japan, on the other hand, offer examples of things to do: the experience of both
countries underlines the utmost importance of encouraging a climate of internal competition.
However, as South Korea is poor in natural resources and weak in agriculture, it does not
offer a good development model for Jilin nor Heilongjiang, but its export-oriented strategy
could be a model for Liaoning. In fact, as Liaoning is a gate to the vast Chinese domestic
market, a better model for this province is Japan, whose development has been sustained also
by tapping on its huge domestic market.

In this discussion, one should not underestimate the importance of global politics as a
factor of regional growth: during the Cold War, it was of utmost strategic importance for the
US to promote economic development in Japan and South Korea. As the best card to play
was to open the vast US market to Japanese and Korean products, it is not surprising that the
growth policies of these two countries largely followed the export-oriented model of
development. A similar unlimited access to vast markets, such as now Japan, in addition to
the US, may be unavailable to North-East China.

South Korea offers another important lesson to follow: promoting development while
simultaneously preserving a very high degree of equity in income distribution, as opposed to
other development experiences such as Thailand, Hong-Kong, Brazil, Mexico, to name a few.
A high degree of equity creates a climate of fairness that in turn generates consensus toward
reforms and government policies, consensus which - as the contrary example of South
America shows - ultimately may prove to be the key for sustained development.

4. Conclusions

This paper sets some foundations for a quantitative approach to designing development
strategies for the North-East Region of China, which comprises the provinces of
Heilongjiang, Jilin and Liaoning. Upon investigating historical series of output and labor force, in total and for the agricultural and industrial sectors separately, the paper identifies a number of development potential features for the three provinces, by focusing on their main gravity pulls and comparative advantages. The gravity pull for Heilongjiang is Siberia, and by extension Europe; for Jilin it is South Korea, and by extension Japan; for Liaoning it is China. While all three provinces can offer cheap skilled labor as the basic building block of their development, additional promising growth strategies for Heilongjiang and Jilin are the development of agriculture and natural resources.

Institutional reforms aimed at reducing extensive market regulations and eliminating protections of inefficient heavy industries are a key factor for sustained development. Underestimating the importance of institutional reforms, and concentrating exclusively on economic plans and incentives, could stifle the growth process. Provincial governments should concentrate more on reforming the institutional environment and creating the right climate for growth, and leave the details of economic decision-making (what, where and how to produce) to the private sector. Equally dangerous for sustained development is to underestimate the importance of consensus, to be promote through appropriate policies aimed at maintaining a degree of equality in income distribution and at developing human capital (education, health care, clean and safe environment, etc.).
References

Ermini L., 1991, "Recent Developments in Regional Econometric Modelling", working paper no. 91-14, department of economics, University of Hawaii.

Ermini L., 1993, "Forecasting growth rates of North-East China", manuscript.


# Table 1

Average growth rates (%) of selected variables (standard errors in parentheses)

<table>
<thead>
<tr>
<th>variable</th>
<th>Full Sample: 63-89</th>
<th>First Period: 63-80</th>
<th>Second Period: 80-89</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Output</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHINA (C)</td>
<td>9.56 (7.4)</td>
<td>9.02 (8.75)</td>
<td>10.59 (4.1)</td>
</tr>
<tr>
<td>HEILONGJIANG (H)</td>
<td>7.45 (6.08)</td>
<td>7.57 (7.51)</td>
<td>7.36 (1.6)</td>
</tr>
<tr>
<td>JILIN (J)</td>
<td>8.11 (10.4)</td>
<td>7.46 (12.22)</td>
<td>9.35 (5.9)</td>
</tr>
<tr>
<td><strong>Agricultural Output</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>4.68 (3.96)</td>
<td>3.94 (4.21)</td>
<td>6.07 (3.22)</td>
</tr>
<tr>
<td>H</td>
<td>4.42 (9.7)</td>
<td>5.07 (10.71)</td>
<td>3.18 (7.8)</td>
</tr>
<tr>
<td>J</td>
<td>4.12 (11.5)</td>
<td>3.56 (11.6)</td>
<td>5.13 (12.1)</td>
</tr>
<tr>
<td><strong>Industrial Output</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>11.53 (9.62)</td>
<td>11.1 (11.4)</td>
<td>12.35 (5.33)</td>
</tr>
<tr>
<td>H</td>
<td>8.79 (14.23)</td>
<td>9.24 (11.77)</td>
<td>7.96 (2.69)</td>
</tr>
<tr>
<td>J</td>
<td>9.37 (13.6)</td>
<td>8.58 (16.48)</td>
<td>10.86 (5.59)</td>
</tr>
<tr>
<td></td>
<td>Total Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-----------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1.86 (0.40)</td>
<td>2.15 (0.60)</td>
<td>1.31 (0.18)</td>
</tr>
<tr>
<td>H</td>
<td>2.20 (1.30)</td>
<td>2.95 (0.97)</td>
<td>0.78 (0.40)</td>
</tr>
<tr>
<td>J</td>
<td>1.73 (0.90)</td>
<td>2.18 (0.82)</td>
<td>0.86 (0.22)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rural Labor Force</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>2.38 (1.18)</td>
<td>2.17 (1.37)</td>
<td>2.79 (0.5)</td>
</tr>
<tr>
<td>H</td>
<td>2.00 (3.20)</td>
<td>2.14 (3.25)</td>
<td>1.76 (3.26)</td>
</tr>
<tr>
<td>J</td>
<td>2.82 (5.4)</td>
<td>1.00 (3.4)</td>
<td>6.25 (6.9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Urban Labor Force</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>4.38 (1.7)</td>
<td>4.87 (1.77)</td>
<td>3.48 (1.18)</td>
</tr>
<tr>
<td>H</td>
<td>4.96 (3.79)</td>
<td>5.70 (4.36)</td>
<td>3.56 (1.85)</td>
</tr>
<tr>
<td>J</td>
<td>5.02 (4.00)</td>
<td>5.42 (4.85)</td>
<td>4.16 (1.35)</td>
</tr>
</tbody>
</table>
(Table 1 continues)

<table>
<thead>
<tr>
<th></th>
<th>Total Productivity</th>
<th>Rural Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>6.75 (7.15)</td>
<td>2.29 (3.36)</td>
</tr>
<tr>
<td></td>
<td>6.28 (8.48)</td>
<td>1.78 (4.00)</td>
</tr>
<tr>
<td></td>
<td>7.34 (3.75)</td>
<td>2.83 (3.02)</td>
</tr>
<tr>
<td><strong>H</strong></td>
<td>3.91 (6.39)</td>
<td>2.41 (10.2)</td>
</tr>
<tr>
<td></td>
<td>3.59 (7.82)</td>
<td>2.94 (11.6)</td>
</tr>
<tr>
<td></td>
<td>4.38 (2.05)</td>
<td>1.78 (7.22)</td>
</tr>
<tr>
<td><strong>J</strong></td>
<td>4.39 (10.9)</td>
<td>1.29 (12.6)</td>
</tr>
<tr>
<td></td>
<td>4.52 (12.5)</td>
<td>2.57 (10.9)</td>
</tr>
<tr>
<td></td>
<td>3.62 (7.30)</td>
<td>-1.13 (14.9)</td>
</tr>
<tr>
<td>TABLE 2</td>
<td>Causal Relations in Growth Rates of Output³</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Total Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HT = 0.0682 + 0.736 CT-1 - 0.454 JT-1 - 0.557 HT-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JT = 0.0947 + 1.161 CT-1 - 1.168 HT-1 - 0.529 JT-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Agricultural Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA = 0.0405 + 1.590 CA-1 - 0.276 HA-1 - 0.371 JA-1 + 1.279 CA-2 - 0.759 JA-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JA = 0.0408 + 1.964 CA-1 - 0.712 JA-1 - 0.782 JA-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Industrial Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HI = 0.0784 - 1.129 HI-1 + 1.174 JI-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JI = 0.0938 - 0.782 HI-1 + 0.756 JI-1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. C = China; H = Heilongjiang; J = Jilin; T = Total Output; A = Agricultural Output; I = Industrial Output; -1 = lagged one; -2 = lagged two.
Figure 7

Figure 8

Figure 9

Figure 10

Figure 11