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Education and Regional Economic Development in China: The Case of Shanghai

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In thirty years, Shanghai's economy has shifted dramatically from agriculture to industry and, more recently, services. With less than 10 percent of the workforce in agriculture in 1990, a limit is rapidly approaching for a continuation to this historical pattern. Government policy has been supportive of rapid modernization and economic growth, but despite a high level of educational investment in the past, we find evidence of underinvestment at present. We show how underinvestment in education, the shift to a market economy, and the constraint of housing that is not yet privatized are strongly interrelated.

Education and Regional Economic Development in China: The Case of Shanghai

China is experiencing dramatic change in the structure of its economy — from a planned to a market based system, and from a predominantly rural population to one that is becoming significantly more urban. Nowhere are these changes more evident than in Shanghai. In only thirty years, an agricultural economy has been industrialized and is now expected to shift rapidly from industry to services. To make such shifts, life-time employment is being modified, labor mobility is increasing, and educational training is changing to fit the needs of individuals who wish to take advantage of the opportunities that a rapidly growing, market economy affords. In this article, we examine the public policy choices that are influenced by rapid structural change. We use Shanghai as an interesting case of changes that are occurring throughout China.

China is pursuing a policy of gradual economic reform, and enterprise reform is a vital part of the effort. Socialist countries like China typically exhibit a large number of state owned enterprises, with significant levels of surplus workers. China's state sector, for example, constitutes approximately two-thirds of total urban employment and accounted for 56 percent of urban employment growth between 1978 and 1990.¹ State enterprise losses accounted for about two thirds of China's 1992 fiscal deficit of 2.6 percent of GDP.² Estimates of labor surplus in the state sector run as high as 29 percent of the total workforce.³

Enterprise reform through massive shedding of surplus labor in state owned enterprises would be difficult in any setting. It is particularly difficult in China because of the role that enterprises have traditionally played in the provision of income security, housing, medical attention, and other basic needs. For enterprise reform to progress significantly, provision of basic services such as these must be gradually detached from the employment relationship. Only then can employment levels approach rational allocation levels without creating socially unacceptable levels of open unemployment and economic insecurity.

China is aware of these needs and has pushed forward in reform of wage systems, housing, and income maintenance. Examples of on-going reforms include:

- a. gradual replacement of lifetime employment systems with a labor contract system beginning in 1980. This is being accomplished incrementally through policy changes related to new hires.
- b. gradual replacement of the state system of labor allocation to job placements through labor service companies (LSCs) and schools themselves, both secondary technical schools (STS) and worker schools (SWS).
- c. establishment of stronger links between performance and productivity through re-emergence of piece rates and bonus systems in some employment situations.

While these efforts continue, the Government, with the assistance of the World Bank, has formulated action plans within the past year which outline additional reforms to be pursued throughout the decade. These reforms are aimed at strengthening positive incentives so as to improve the functioning of labor markets. Elements of these plans may include:

- a. the weakening of work unit and local labor bureau control of worker

transfers so as to increase mobility across enterprises;

b. pooling and enlarging of pension, health care and unemployment funds at the municipal or provincial level, rather than at the enterprise level, to facilitate mobility;

c. expansion of available commercialized housing;

d. establishment of a labor code defining employee and employer rights;

e. diversification of rural economic options and weakening of urban subsidies and price distortions to slow rural to urban migration;

f. widening enterprise discretion in setting wages; and

g. gradual monetization of in kind payments and benefits (particularly housing) so as to establish compensation differentials providing market signals to motivate geographical, occupational, and industrial mobility.

Typically, international comparisons of economic development are made by country; yet, in China today, provinces and municipalities have much more autonomy than ever before in charting their own path toward economic development. We argue in this paper that a comparison of Shanghai's economic development with several Asian countries is appropriate given the large population of Shanghai (almost 13 million people) and the growing autonomy that it has in economic development policy; we also argue that policies adopted by Shanghai to maintain its already rapid economic growth will serve as a beacon to other areas as they engage in policies to promote their economic growth, particularly with respect to improving the development and allocation of human resources.

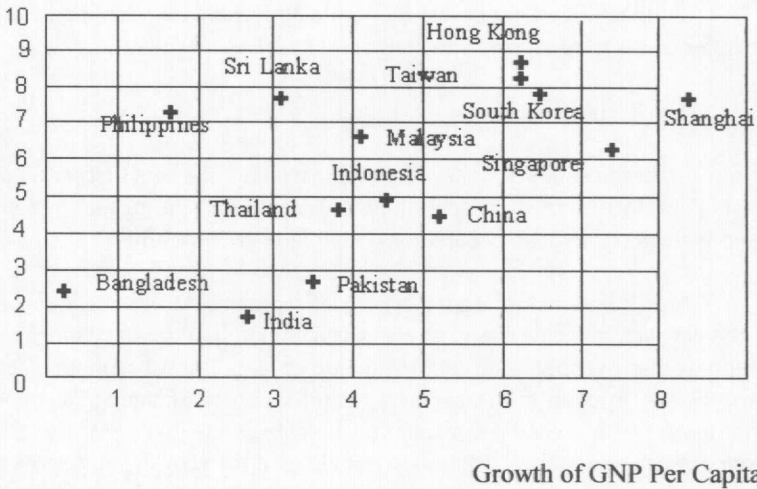
Educational investment and economic growth in Shanghai and other Asian countries

The relationship between Shanghai's level of educational investment and growth can be seen by plotting one against the other for Shanghai and 13 other Asian countries. The high level of education in Shanghai (mean years of schooling was 7.6 in 1982) and consistently high rates of percapita growth in GNP

since 1970 make its experience comparable to Singapore, South Korea, Taiwan, and Hong Kong and differentiate it considerably from China as a whole. Average annual rates of growth in GNP from 1970-1987 in Shanghai were 7.8%. (See Figure 1)

Figure 1
Schooling and Economic Performance

Schooling*



Sources: Data for Shanghai, Shanghai Institute for Human Resource Development. Data for other countries from Ogawa et. al., 1993, Figure 5.1, p. 167.

* Mean years of schooling of labor force (early 1980s)

** Average annual percentage change of per capita GNP 1965-87

Table 1
Adult Literacy Rates and Gross Enrollment Ratios

	Shanghai	Indonesia	Philippines	Thailand
Adult Literacy				
1980		67.3	87.0	88.0
1982	83.5			
1990	93.0			
Primary				
1980		107	114	99
1982	100.2			
1986		118	106	99
1986	110.6			
Secondary				
1980		29	62	29
1982	52.4			
1986		41	68	29
1990	79.5			
Tertiary				
1977		2	24	5
1982	8.2			
1986		7	38	20
1990	15.3			

Source: Data for Shanghai, Shanghai Institute for Human Resource Development. Data for Indonesia, Philippines, and Thailand, Ogawa et. al., 1993, Table 5.5, p. 166.

Educational investment can be more finely differentiated by considering literacy, educational enrollment rates through secondary school, and enrollment rates for post-secondary education. Comparative data for Indonesia, the Philippines, Thailand, and Shanghai shows Shanghai in the lead in literacy rates and in enrollment rates through secondary school. At the post-secondary

level, however, Shanghai's enrollment rate of 15.3% in 1990 lags behind Thailand which recorded a rate of 20% in 1986 and the Philippines which showed a rate of 38% in that same year. (See Table 1).

Among Asian countries, India, Bangladesh, and Pakistan show comparatively low rates of overall investment in education and correspondingly low rates of economic growth. The Philippines has a high overall rate of investment in schooling but has not been able to convert this into a consistently high rate of economic growth. Shanghai is at the other extreme with an overall high rate of educational investment and correspondingly high rate of economic growth. Yet enrolment rates at the post-secondary level are relatively low. It is this gap between investment in high level technical skills and the demand generated for such skills by Shanghai's growth that we will focus on later in this study.

Education and Sectoral Shifts in the Labor Force

Projections are for 44% of Shanghai's employment to be employed in services by the year 2,000. From interviews conducted with a variety of government officials earlier this year, it seems clear that Shanghai's leaders want to encourage the anticipated natural shift to the service sector. This sectoral shift will be a sharp departure from the economic development patterns of the past, however. In 1952, 43 percent of Shanghai's workforce was employed in agriculture. By 1994, the percent in agriculture had fallen to less than 10 percent, a drop of more than 30 percentage points. A corresponding 30 point rise occurred in the proportion of people who were employed in the industrial sector, from 30 percent in 1952 to 60 percent in 1990, but this share is now declining, as the share in services is rising. By 1994, over one-third of Shanghai's employment was found in services. (see Table 2).

Table 2
Percentage Distribution of the Labor Force by Sector
Shanghai, 1952 – 1990

	Agriculture	Industry	Services
1952	42.6	29.6	27.8
1965	41.0	34.9	24.1

Table 2 (Continued)

1970	36.9	42.5	20.6
1980	29.2	48.7	22.1
1990	11.4	60.2	28.4
1994	8.9	53.1	37.9

Source: Shanghai Institute for Human Resource Development and State Statistical Bureau, China Statistical Yearbook 1995.

The dramatic changes that have occurred in sectoral shifts from agriculture to industry and services leads us to the following questions: Is Shanghai's educational system designed mainly for rapid growth in these sectors? Is it prepared for the rapid growth expected in services? To address these questions we turn to several issues — 1) whether the amount of educational investment has been adequate in the past 2) whether the kind of educational investment will be adequate in the future 3) whether labor markets will be effective in transferring the expected large numbers of trained workers from industry to services.

The Adequacy of Educational Investment in Shanghai: Is There an “Education Gap?”

The Role of Education in Production

Education and training are important in economic development because an educated labor force is a more productive labor force. Investment in education and other forms of *human capital* is now generally viewed to be as critical to a growing economy as investment in plant, equipment, and other forms of *physical capital*. The fact that human capital investment contributes a great deal to the production process doesn't necessarily mean that the investment is actually undertaken by business enterprises. Families have an incentive to make sure they and their children acquire the skills needed to be productive workers in order to enhance their income potential and to increase their level of prosperity. Indeed, the linkage between income, productivity, and investment in human capital is critical to our appraisal of whether an education gap exists in the Shanghai economy.

The Theory of How Education Affects Production

Education and training raise production by increasing the productivity of labor. This process is described theoretically by the relationship between an enterprise's output and its inputs, which is called the enterprise's *production function*. In its most general form, a production function can be written as

$$Q = f(L, K; E) \quad (1)$$

$$f_L, f_K, f_E > 0$$

where Q is production, L and K represent inputs of labor and capital services, respectively, and E represents education of the workforce.

General and Specific Education and Training

Education and training increase productivity in a multitude of ways. Some of them are quite general in their effects. For example, mathematical and logical skills, communications techniques and practices, knowledge of business law and political processes raise productivity in the production of almost any good or service. Thus, we refer to an important category of education and training that is *general* in nature. Other kinds of education and training are *specific* to particular industries, occupations, and even to particular enterprises. For example, occupational-specific education courses provide instruction in business administration, data processing, medicine, the law, and so on. Moreover, few individuals enter the labor market with sufficient skill to perform a job as efficiently as an experienced worker. It is necessary to gain much knowledge of how particular occupations are performed and the practices of particular enterprises through training provided *on the job* by the enterprise that employs a worker.

The distinction between *firm or enterprise-specific* training is particularly important to the problems addressed in this report, because the person who receives the returns (in the form of increased production, profits, and earnings) may or may not be the person who pays for the training (the central government, provincial government, city government, the enterprise, or the individual worker) Under the traditional system in China, enterprise profits largely reverted to the government. Workers were paid far less than the value of the goods or services they produced and had little opportunity to move from

one city to another or to change jobs once employed. In this case, government and/or enterprises both paid for and received the benefits from the education and training of most workers. As China moves forward to a labor market system, workers will receive pay that is closer to the value of their production; who pays for training will be a critical decision for individuals, for firms, and for government since the returns to training will be shared.

Evidence on the Returns to Training from Industrialized and Emerging Market Economies

How valuable is the theory of human capital for understanding the growth patterns of industrialized and emerging market economies? We need to know the impact of investing in human capital on the level of production and its rate of growth. This information, when compared with the cost of educating and training the population, will tell us whether spending scarce resources on such programs pays off. Unfortunately, most studies of the returns to either education or training are indirect and focus on increased income or earnings. A basic assumption of these studies is that wage income is closely related to worker productivity. There are powerful theoretical reasons to believe that this is true in market economies. However, the assumption is not tenable for most workers in socialist or transitional economies, such as China and the former Soviet Union. This does not mean that such studies are not applicable to China. If productivity is correlated with earnings and if education increases both productivity and earnings, then education should increase productivity in non-market and market economies alike.

George Psacharopoulos⁴ (1985) studied the returns to education in a broad range of the world's economies using data on income. In developed industrial economies, Psacharopoulos found that the rate of return to education was, on average, less than the rate of return to physical capital. In other words, there was no evidence of underinvestment in education in advanced economies. In contrast, he found that the rate of return to education typically exceeded the rate of return to physical capital for developing countries, which is evidence of an education gap, or underinvestment in education.

Evidence from China

Psacharopoulos did not study the rate of return to education in China. In studies of the Chinese economy based on income data, Roberta Dessi (un-

dated) estimates the rate of return to education to be about 7% for completing a university degree compared to graduating from high school and about the same for completing secondary school compared to graduating from primary school.⁵ For university graduates, then, the marginal rate of return per year of schooling in addition to high school would be approximately 1.7%. Raymond P. Byron and Evelyn Q. Manaloto⁶ estimate a rate of return for an additional year of schooling to be less than 5% (again holding experience constant). These rates of return are quite low—lower than those estimated by Psacharopolous. However, as we note above, earnings data are not likely to reflect productivity in the Chinese situation, especially for the majority of the urban population who work in the government sector.

Estimation of returns to investment in education and training in China calls for direct evidence on the relationship between human capital and production. There are very few such studies for any economy, let alone China. Data sources containing information on detailed labor force characteristics are usually obtained from households, while information on production is usually obtained from surveys of enterprises. However, studies by Fleisher, Dong, and Liu and by Fleisher and Chen⁷ report estimates of the effect of education on worker productivity that are very large. One of these combines firm-level production data with survey data on employees in order to examine the effects of worker characteristics, especially education, on productivity at the firm level. The other study relies on aggregate data from each of 25 provinces (including Shanghai).

While the study by Fleisher, Dong, and Liu is not based on a cross section of Chinese industry, the authors believe that their results for the paper industry do not grossly distort the true situation in the Chinese economy. They report that the marginal product of labor with less than a high-school education is 10,399 *yuan* in 1990 prices per year and that the marginal product of labor that has at least graduated from high school is 19,700 *yuan* in 1990 prices. In other words, a worker who has graduated from high school is approximately twice as productive as the average employee who has completed only primary or lower middle school. They also report evidence on the productivity of professional and managerial personnel. They find that such personnel who have less than a 4-year college degree appear to be very unproductive. In fact, their impact on total output seems to be nearly zero. In contrast, they find that contribution to output of one additional four-year college-trained manager or engineer to be 1,890,512 *yuan* per year measured in 1990 prices. To put what may appear to be an extraordinarily large number in perspective, we can express the marginal product of one-more college-graduate manager

or engineer as a proportion of enterprise output at the sample mean. These are large enterprises, and mean output in 1990 prices is 238,069,530 *yuan*. To find that one additional college graduate could raise output by 0.756% is not terribly shocking, especially when one notes the substantial variation in the number of four-year college graduate professionals per enterprise, from zero up to a little more than six per cent of total employment.

Is There an Educational Gap? Social Costs and Returns

By itself, a very high rate of return to education does not mean that there is an education gap in China. We also need to know whether the resources required for additional education might be more productively used elsewhere. A measure of the *opportunity* cost of education is required, and it involves estimating the foregone production cost of workers attending college instead of working, the cost of teachers, buildings, books, etc., to provide a college education, and a measure of the opportunity cost of capital. A reasonable measure of this opportunity cost of capital is the rate of return to alternative investments, particularly investment in physical capital. Fleisher, Dong, and Liu estimate that the marginal product of capital in the Chinese paper industry is approximately 38 percent. Using the 38% rate of return as a measure of the opportunity cost of human capital, and 20,000 *yuan* per year as the marginal product of one high-school graduate, they calculate that the capitalized cost of the foregone output associated with sending a typical high-school graduate through four years of college would be 138,200 *yuan* in 1990 prices. Using the same rate of return and assuming an infinite working life, the present value of the additional output due to one more college-trained engineer or manager would be approximately $1,900,000/0.38 = 5,000,000$ *yuan* in 1990 prices, over 35 times the cost.

The study by Fleisher, Dong, and Liu is based on data from enterprises in several areas of China (including Shanghai), but does not refer to Shanghai specifically. The paper by Fleisher and Chen does, however, derive estimates of the rate of return to higher education for specific provinces, *including Shanghai*. It is based on aggregate data for all sectors, including agriculture and services, and therefore provides an interesting comparison to the industry-specific study cited above. Using similar methods, Fleisher and Chen estimate that the rate of return to *university* education in Shanghai is currently around 18% per year. The estimate for Shanghai forms part of a pattern of extremely high rates of return, ranging from 14% in Beijing to an extraordinary 252%

per year of education in Yunnan province. While these estimates are not as high as those estimated for the paper industry alone in China, they nevertheless suggest an extraordinarily high payoff to investing in human capital—particularly at the university level.

Private Incentives to Acquire Education

The implied social rates of return to schooling we have calculated are not only substantial; they are also much larger than the private rates of return that have been estimated using income data in China and the private rates of return estimated in Fleisher, Dong, and Liu's study of the Chinese paper industry. The private rate of return to schooling *in terms of monetary income* for employees in the paper industry is illustrated in the estimated earnings equations reported in Table 3.

Table 3
Earnings Equation

(Dependent Variable, Monthly Earnings Including Cash Bonuses)

Independent Variable	Monthly Earnings	Ln Monthly Earnings
Constant Term	83.11 (13.40)	4.54 (112.1)
Total Work Experience	1.25 (11.53)	.008 (11.77)
Firm Work Experience	2.03 (14.84)	.012 (13.90)
Education 16 Years +	65.67 (9.87)	.39 (8.97)
Three Years College	34.09 (5.66)	.22 (5.54)
Special training or technical school	35.23 (5.75)	.21 (5.34)
Total schooling more than 12, less than 15 years		

High school graduate	23.85	.14
Total school less than 15 years	(3.97)	(3.60)
Middle-school graduate,	9.78	.046
Total school less than 12 years	(1.68)	(1.22)
Sample Size	1950	1950
Adjusted R ²	0.36	0.34

(*t*-statistics in parentheses)

Note: Sample size of 1950 is based on the number of completed questionnaires with useful data for 70 worker interviews per enterprise (30 total). The dependent variable is monthly cash earnings plus cash bonuses (in 1992). The independent variables include dummies for the education levels indicated (schooling less than middle-school completion being the excluded variable), total years' work experience, and years' work experience with the current firm. The coefficients of schooling show, for example, that a university graduate receives a monthly cash income of approximately 65 yuan (less than U.S. \$10 in 1992 prices) more than a worker who received less than 9 years' education and approximately 31 yuan more than a worker with only three years of college. The estimates in table 1 indicate that a typical 4-year college graduate earns only 48% more than a typical worker with only a primary-school education (or less), implying an approximate average rate of return to an additional year of schooling of about 4.0%.⁸ The private pecuniary returns to other schooling levels are similarly small.

Fleisher, Dong, and Liu's estimates of the private pecuniary return to schooling in China are within the range of other estimates reported above. Dessi estimates the rate of return in China to be about 7% for completing a university degree compared to graduating from high school and about the same for completing secondary school compared to graduating from primary school. For university graduates, then, the marginal rate of return per year of schooling in addition to high school would be approximately 1.7%.⁹ Byron and Manaloto estimate a rate of return for an additional year of schooling to be less than 5% (again holding experience constant).¹⁰

One complication in estimating private returns to schooling in China from income data is that monetary income is a relatively small share of total

employment benefits, compared to most industrialized nations. Employers (work units) often provide housing and other in-kind income, and we suspect that in general the proportion of in-kind income to monetary income rises with tenure, rank, and skill level. Therefore, estimates of marginal private rates of return to schooling based on monetary income data may be downward biased. In the paper-industry sample, the proportion of college graduates with enterprise-provided housing is 54 percent, compared to 34 percent for the entire sample. (Presumably the employees without enterprise-provided housing live in housing provided by their spouses' employers, by parents or by other family members, although this cannot be verified.) It seems nearly certain that this bias cannot account for the very large gap between others' estimates of the private return to schooling derived from income data and our estimates of the social rate of return derived from production data. For those whose housing was provided by their employer in the paper industry, Dong, Fleisher and Liu estimated a "wage" equation, using square meters of housing as a dependent variable (in log form) and experience and schooling as independent variables. The estimated private return to schooling was only a little lower than when wage income was used as the dependent variable.

The major implication we draw from comparing the private with the social rate of return to schooling is that market liberalization has introduced tremendous incentives for all kinds of workers to seek jobs in private employment where they can reap a larger share of the return to their human capital. As beneficial as market reforms have been, they may nevertheless have introduced distortions, because private returns to obtaining jobs in the private sector do not reflect full social opportunity costs (that is, foregone marginal product in the traditional sector).

The Situation in Shanghai

Evidence from other countries, both advanced and developing, as well as from specific industries in China, demonstrate the social productivity of an educated workforce. What does this mean for education policy in Shanghai? It is already well known that the Shanghai labor force is perhaps the most productive in China. Per capita GDP in Shanghai was 7,406 *yuan* in 1991 (measured in 1990 prices), compared to 6,846 *yuan* in Beijing and 5,894 *yuan* in all cities with population of two million or more.¹¹ In the study by Fleisher and Chen., total factor productivity in Shanghai is approximately twice as great as in the rest of China. It seems to be part of the "common wisdom" that

management and labor in Shanghai work harder and have more “know how” than is typical elsewhere.

It is clear that if Shanghai is to retain and improve upon its current advantages in attracting investment in new enterprises, especially those involving the participation of overseas capital, it will be necessary to enhance the educational qualifications of its labor force. There are two ways to do this: (1) Qualified workers may be brought into Shanghai from other areas of China., and (2) Shanghai can increase its own educated labor force. Both of these solutions have serious costs. The first approach requires increasing Shanghai’s population, which is already large, given serious constraints on housing, sanitation facilities, highways, and public transportation. The second approach requires spending more on educational institutions and staff and finding ways to assure that the Shanghai region captures the benefits that flow from these new investments in human capital. The two approaches are not exclusive. Both can be tried, and both require acceleration in the reform process by which China is gradually moving toward a market economy. In order to assure that the Shanghai region is not overwhelmed by job seekers without housing, housing and other municipal services must be priced so that providers will increase their supply while encouraging users to economize on their demands. To assure that the government and enterprises in Shanghai do not subsidize the education and training of workers who move to other regions or enterprises, an appropriate scheme of payments and incentives must be devised.

With properly designed incentives, we are confident that a self-financing system of education and training can be provided for the Shanghai region. Given Shanghai’s traditions and reputation as a leader in industrial productivity, education and training themselves may develop into one of Shanghai’s leading economic sectors in the future, not only providing a fundamental resource for the growth of enterprises in traditional industries, but also a growth industry in itself, whereby Shanghai becomes a provider of human-capital investments for the rest of China.

The Importance of Shanghai’s Educational Gap

When international comparisons were made earlier in this paper, we found that Shanghai’s historical experience with human capital investment compares well with other Asian countries that have invested heavily in education and have had correspondingly high rates of economic growth (Figure 1). This seems somewhat contradictory to our analysis that a significant educa-

tional gap exists at present. The educational gap could mean that with more human capital investment, past growth would have been even faster, but Shanghai's experience as shown in Figure 1 is fairly comparable to the Asian growth leaders of Hong Kong and Taiwan. The educational gap analysis probably means that more recent educational investment has not kept pace with the rapid economic growth that has occurred. This seems even more likely when we examine the experience of South Korea.

For the past 30 years, South Korea's annual growth rates have been quite high, averaging almost 9 percent.¹² But since 1992, growth has slowed in the Korean economy, leading analysts to ask whether external factors in the depressed world economy or internal factors in Korea itself have been most responsible for the slump. Kinsu Kim¹³ argues that public policy mistakes in human capital investment have had a significant effect, mistakes that Shanghai's policy makers would do well to avoid.

Referring to the same relationship between human capital investment and economic development that we presented in Figure 1, Kim cites work done by Harbison and Myers in 1964. They predicted the expected level of economic growth Korea should have had, given the experience of 73 developing countries in the 1950's and 60's. Korea's actual growth in per capita income was farther from its predicted growth pattern than any of the other countries (in other words, it experienced higher growth than expected). Kim attributes this to an excess of human capital investment provided largely by Korean families themselves:

... the government assigned high priority to education, raising the share of education in the total government budget, for instance, from 2.5 percent in 1951 to over 17 percent in 1966. Government expenditures, however, accounted for only one-third of the total expenditures in education, the remainder being borne by the private sector and parents, reflecting the high commitment for education within Korean society.¹⁴

Kim goes on to argue that success may have been due as much to the "well-balanced expansion" in education as to the high level of investment that occurred. He cites as evidence for the present day slow down in growth the fact that:

... Korea has failed to develop the stock of highly trained scientists and engineers who would be necessary to sustain its international competitiveness in the changing global environment in the 1990s. In contrast to overinvestment

for education in the 1950s and 1960s, one of the major mistakes made by the Korean government in national development is its underinvestment in higher educational institutions in the subsequent periods.¹⁵

Some evidence exists that Shanghai may be facing similar constraints on its economic growth in the near future. In a personal interview earlier this year, we obtained data on scientists employed in Shanghai. Using the soviet system of classification of job skills, "scientists" age 30-40 only account for 25% of the total scientists employed. Those over age 50 account for about 70 percent.¹⁶

A second way of assessing the balance in educational investment that exists in Shanghai is to compare the educational qualifications of professional and managerial occupations with some of Shanghai's nearest competitors. We were able to obtain comparable data for Shanghai, Indonesia, and Thailand, as shown in Table 4.

Table 4
Percentage Distribution of Education Level
of Employed Professionals and Managers:
Shanghai, 1990, Indonesia, 1985 and Thailand, 1985

Level	Shanghai 1990		Indonesia 1985		Thailand 1985	
	Prof'l	M'gl	Prof'l	M'gl	Prof'l	M'gl
None...	-	0.3	2.0	5.3	5.2	31.1
Prim'y	2.7	8.1	3.7	7.3	1.1	5.9
J'r. Hi..	18.9	30.2	3.7	7.1	4.0	12.8
S'r. Hi..	20.2	21.0	10.7	32.6	3.0	5.5
Voc. Hi	20.9	9.5	61.2	12.8	8.7	10.6
Acad'y.	18.2	20.3	11.0	17.7	57.0	8.4
Univ....	18.8	9.8	7.7	17.2	20.2	23.3
All Edu	100.0	100.0	100.0	100.0	100.0	100.0
'000s	1,075	295	2,151	98	817	336

Sources: Shanghai Institute for Human Resource Development; Indonesian Intercensal Survey as reported in Ogawa et al., 1993, Table 8.5; Thailand Labor Force Survey as reported in Ogawa et al., 1993, Table 8.5.

Notes: For all jurisdictions, 'Primary School' includes those with incomplete junior high school; 'Junior High School' includes those with incomplete senior high school. For Indonesia: 'Vocational High School' includes those with junior and senior vocational high school. For Thailand: 'none' includes those with less than Pratom 4 and lower elementary; 'Academy' includes those with technical, vocational, and teacher training.

In Shanghai in 1990, about 19 percent of those employed in professional jobs had a university education. This compares well with Thailand where in 1985, 20 percent of its professionals were equipped with a university degree and far exceeds Indonesia where only 8 percent of professional workers had such training. The problem for the future appears in the managerial group. In Shanghai, only 10 percent of its managers had a university degree in 1990. Five years earlier, Thailand was already preparing 23 percent of its managers with a university education. The corresponding number for Indonesia was 17 percent. The bias in Shanghai's educational system can be seen in the data for post secondary education that involves technical, vocational, and teacher training ('Academy'). Twenty percent of Shanghai's managers were receiving this type of training in 1990, whereas only 8 percent of Thailand's managers received such training in 1985. For Shanghai to avoid the same constraints on growth that Korea is experiencing, substantial investment should be made in university education, particularly for managerial training. Heavy investment should also be made in all scientific areas to replace the many scientists who will soon be retiring.

Education and Training in General and Specific Skills

The provision of higher education at the college and university area should concentrate on disciplines that provide general skills that increase worker productivity in many industries. Training in mathematics, general business practices such as accounting, basic legal principals, and personnel management provide lifetime skills that can be applied usefully in any kind of business enterprise in China's growing civil society. Insofar as education is paid for by the Shanghai government it should be of such a general nature. Training in specific skills is best designed and carried out by the enterprises in which the skills will be used and which have the best judgment of the relationship between costs and benefits. It is noteworthy in this regard that the study by Fleisher, Dong, and Liu. found that there was very little payoff to training

of management and engineers in technical schools, but a very large payoff to graduates of 4-year colleges and universities, where general rather than specific skills are most likely to be learned.

The Importance of Intersectoral Mobility and Housing Reform

Proper education and training will prepare young people for the coming shift in Shanghai's economy from one based on production to one where services are increasingly important. But significant numbers of workers who are already employed may also be needed in the service sector. If so, policy makers should pay close attention to barriers that exist in occupational mobility. One of the main barriers to labor mobility throughout China is the provision of housing. If a labor market is to develop where individuals can take advantage of increased investment in education and training, the provision of housing must be reformed.

Debate has occurred over whether housing reform should occur rapidly or whether it should be phased in slowly. Blanchard et al.¹⁷ argue for rapid privatization whereas McKinnon¹⁸ favors a more gradual approach. Because company owned housing restricts intersectoral mobility among the employed, a gradual approach to housing reform means that the burden of Shanghai's predicted shift to services will fall heavily on new job entrants. Competition among employers will inflate the salaries of relatively scarce new employees while more experienced workers remain in their jobs, holding on to their housing. For this reason, we argue for a more rapid approach to housing reform, but one that recognizes the institutional problems in shifting from a planned to a market economy.

Buckley, Hendershott, and Villani¹⁹ recommend that quick privatization of housing be done by giving away housing through a voucher plan. The initial price of an enterprise owned apartment would first be set in terms of the total number of housing vouchers required to purchase the apartment. Vouchers would be distributed to occupants of the housing units, recognizing that wages have been suppressed for many years to help subsidize housing. Thus older, longer tenured occupants would receive more vouchers than younger. The difference between the initial price of the housing and the vouchers that a person possessed would be paid to the enterprise and, presumably, be financed through long term loans. The funds that the enterprise receives from occupants to pay for their housing could then be transferred to housing accounts established for the youngest workers who had not yet received housing, thus

creating a greater degree of equity between those who were fortunate enough to have housing and those who were still in the housing queue.

In Russia and in several countries of Eastern Europe, the US has been helping to privatize housing through AID's (The Agency for International Development's) Office of Housing and Urban Programs. In the case studies we will examine here, housing has been privatized by giving apartments to their owners. In some cases, owners must pay a larger fee based on the size and condition of the apartment, but age of the resident is not a factor. Over time, this system will invariably create inequity between current residents who can eventually sell their apartments and retain their capital and young people who do not yet own apartments. The plan suggested by Buckley et al. would vary the purchase price of the apartments with regard to age and would therefore not create so sharp a distinction between those who receive apartments now and those who do not.

Inter-firm labor mobility would be encouraged by privatization since apartments could immediately be bought or sold. With privatized apartments, institutions would also need to be created for the ongoing maintenance of apartment buildings. Housing cooperatives could be organized, or enterprises could establish their own management companies that would, in turn, provide maintenance for residents based on service fees. We view these reforms as critical to an effective labor market that facilitates mobility between the manufacturing and service sectors of the economy. Initial reform experiments could be done to work out problems in privatization. But for labor markets to be strengthened, the housing reforms would ultimately have to occur for all enterprises simultaneously. A gradualist approach would not work since mobility must be achieved from any and all firms in the manufacturing sector to all firms in the service sector.

Two AID projects in Russia and Albania are helpful for demonstrating the problems that could occur as housing is privatized in Shanghai. In both cases, the US has provided technical assistance to help make the transition to privatized housing. In the Russian city of Novosibirsk, the municipality owns and operates about one half of the housing stock (about 175,000 units). When economically troubled enterprises have had insufficient funds to maintain their housing, more and more of the housing has been transferred to municipal ownership. But "the city [also] faces the problem of a severe lack of financial resources to address its deteriorating housing stock. Virtually all city owned buildings are in serious need of repair."²⁰

Privatization of housing units began in Novosibirsk in January of 1992. The Office of Privatization expected that by the end of 1993 about 20 percent

of the housing stock would have been privatized. The city, however, had not yet decided in 1993 how much would be charged to the newly privatized units for building maintenance. It is this problem that AID addressed in a study funded in 1993. The authors of the study observed the following:

A competitive private management company industry produces an environment in which the value of property is maintained or enhanced at the least expense to the owner. . . . No such private management company industry exists in Novosibirsk. . . . For buildings in which more than 50 percent of the units have been privatized, a property management company industry will offer owners choice in the cost and quality of services they may wish to obtain for their buildings. This may be the only opportunity owners of privatized units will have to exercise choice until the supply of housing increases to meet demand, a situation not likely in the foreseeable future.²¹

The report recommends encouragement of a management company industry and the enactment of "laws to establish the legal framework within which resident groups can contract with private management companies, such as condominium laws."²² We strongly support the same recommendation for Shanghai as it begins the process of privatization.

The US government's Agency for International Development (AID) has also provided financial assistance to Albania as it privatizes its housing. Albania has chosen to privatize much more rapidly than Novosibirsk. In 1989, the state owned over 200,000 individual housing units in urban areas.²³ At the end of 1992, the government passed a housing privatization bill. About 1/4 of the housing units (older, smaller units) were to be transferred to private ownership free of charge. Newer, larger units were transferable subject to a schedule of fees that were to be paid in a lump sum or in negotiated installments. By the end of 1993, 90 percent of the occupants of state owned housing units had applied for privatization and by October of 1993, 83 percent of the occupants had signed binding contracts to obtain their own housing units.²⁴

The speed with which privatization has occurred is remarkable, but the privatization will not be a success unless it is supported by equally rapid legal reforms and changes in the system of building maintenance:

It is now legally possible for a privatized owner to sell or lease his apartment, and we hear that a few have done so. But the apartment buildings are still theoretically managed by the [Albania state agency,] *Banesa*, whose policies with respect to maintenance and tenant services have not changed and whose fiscal resources are evaporating. Housing privatization will be a colossal fail-

ure unless management policies change and operating budgets increase dramatically.

The legal framework for reforming housing management is in place but has not been implemented. Few tenants of privatized apartments understand that they have acquired new responsibilities along with their titles of ownership. During the coming months, it is imperative that privatized apartment houses be legally transformed into condominiums and that the condominium owners be educated about their new powers and responsibilities.²⁵

We recommend a rapid privatization of housing in Shanghai using policies and procedures similar to Albania. But the Albanian case points out the extreme importance of coordinating legal reform and building management policies with the process of privatization.

Summary and Conclusions

In the past thirty years, Shanghai's economy has shifted dramatically from one based on agriculture to one based on industry and, more recently, services. With less than 10 percent of the workforce in agriculture in 1990, a limit is rapidly approaching for a continuation to this historical pattern of change. Expectations are now for an equally dramatic change from an industrial to a service economy. Is Shanghai ready for such change? Will current government policy support or constrain such change?

Government policy was clearly supportive of rapid modernization and economic growth in the past. When compared with thirteen Asian countries, Shanghai's large educational investment and corresponding high level of economic growth in the 1970s and 80s make its experience comparable to Singapore, South Korea, Taiwan and Hong Kong. When compared with Indonesia, the Philippines, and Thailand, Shanghai is clearly in the lead in overall literacy rates and in enrolment rates in primary and secondary school. These achievements have supported the change from an economy based on agriculture to one based on industry.

Despite the high level of educational investment in the past, we find evidence of underinvestment in education. We reported on new evidence of the returns to educational investment in China (and in Shanghai in particular) that are very high. Earlier reported returns to education were based on income data (Psacharopolous, Dessi, Byron and Manaloto) and were quite low, but in

data (Psacharopolous, Dessi, Byron and Manaloto) and were quite low, but in the Chinese economic system of the past, earnings were unlikely to reflect productivity and therefore did not provide good evidence of the returns to education. Fleisher, Dong, and Liu and Fleisher and Chen solve this problem by estimating the return to education directly from production data.

We believe that the present system of housing in Shanghai is a powerful deterrent to capitalizing on high potential returns to education and training beyond secondary school. We recommend a rapid privatization of dwelling units using Albania's experience as a model. We believe that the change to privatization will not have the desired effects on labor market mobility unless the process of privatization occurs rapidly. Yet rapid privatization means that other supportive policy must also be designed and put into place rapidly. Appropriate pricing for dwelling units must be decided upon by government authorities so that standard pricing policies are used by all enterprises. We believe that housing units should be given away to the most senior employees, recognizing their long term acceptance of subsidized housing in lieu of higher wage rates. Prices should rise inversely to seniority, since the youngest employees will be the ones most likely to see rising wage rates in the future. This pricing scheme will avoid the serious inequity that would occur if apartments were all given away to those who currently reside in them, leaving the next generation to fend for themselves.

The case of Novosibirsk in Russia leads us to recommend the immediate development of property management companies with which apartment residents can contract for maintenance services. A legal environment must be created to allow maintenance companies to sell their services. Legislation must also be created that spells out the rights and responsibilities of condominium owners.

Housing reforms will encourage mobility by removing an important economic constraint. Labor market information can, however, also be a serious constraint on the efficient allocation of labor in a market economy. We do not recommend that labor market information be provided through a centralized process of manpower forecasts. World experience shows that resources would better be invested in facilitating and monitoring some very basic labor market information which we call "labor market signals." In our opinion, a key institution for improving labor market signals is the "labor service company" (LSC) being set up by local bureaus of the Ministry of Labor and by various state-owned enterprises. The main role of the LSC should be to promote interfirm mobility and expansion of activity into new businesses rather than hiding or hoarding excess labor. Shanghai may be poised at a fairly important decision

point in this regard. The shift to a service economy may not produce the kind of rapid economic growth anticipated if skills are low. Only if the high rates of return to post-secondary education are capitalized upon, both by government and by private individuals, will high rates of growth be sustained.

Notes

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2. World Bank, *Sustaining Rapid Development in East Asia and the Pacific*, Washington, D.C., 1993.
3. World Bank, China: Country Economic Memorandum — Reform and the Role of the Plan in the 1990s, Report No. 10199-CHA, June 1992, Washington D.C.
4. George Psacharopoulos, "Returns to Education: A Further International Update and Implications," *Journal of Human Resources*, 20 (4), Fall, 1985, 583-604.
5. Roberta Dessi, "Income, Occupation and Education in China," Cambridge, U.K., Department of Applied Economics, University of Cambridge, DAE Working Paper No. 9107, 191.
6. Raymond P. Byron and Evelyn Q. Manaloto, "Returns to Education in China," *Economic Development and Cultural Change* 38 (1990), 783-796.
7. Belton M. Fleisher, Keyong Dong, and Yunhua Liu. "Education, Enterprise Organization, and Productivity in the Chinese Paper Industry." *Economic Development and Cultural Change*, 44,6:571-89 (April, 1996). Belton M. Fleisher and Jian Chen, "The Coast-Noncoast Income Gap, Productivity, and Regional Economic Policy in China," *Journal of Comparative Economics* 25, 2:220-36 (October, 1997).
8. The estimate in Table 3 of the natural log of the ratio of the earnings of a typical college graduate to those of a typical primary school "graduate" is 0.39. The antilog of 0.39 is 1.48, implying a ratio of 48 percent. There it takes ten years beyond primary school to complete four years of college education, and $(1.48)^{10} = 1.0399$.
9. Dessi, op. cit., p. 191.
10. Byron and Manaloto op. cit., pp. 783-796.

11. *China Statistical Yearbook, 1992*, p. 618.
12. Kinsu Kim, "Toward Reinventing Korea's National Management System in the Changing Global Environment," *East Asian Institute Report*, New York: Columbia University, October 1993, p. 1.
13. Kinsu Kim, *ibid.*, p. 22.
14. Kinsu Kim, "Absorptive Capacity and Industrial Growth: A Conceptual Framework and Korea's Experience," *East Asian Institute Report*, New York: Columbia University, March 1993, p. 7.
15. Kim, "Toward Reinventing . . ." *op. cit.*, p. 15
16. Interview with Mr. Shen Rong-Hua, Vice Director of Shanghai Public Administration and Human Resources Institute, Shanghai Personnel Bureau, March 1994.
17. Olivier Blanchard, Rudeger Dornbusch, Paul Krugman, Richard Layard, and Lawrence Summers, *Reform in Eastern Europe*, Cambridge, Mass.: Massachusetts Institute of Technology Press, 1991.
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21. *ibid.*, pp. 15-16.
22. *ibid.*, p. 16.
23. Ira Lowry, *Housing Privatization in Albania*. Final Report for United States Agency for International Development. Bureau of Private Enterprise, Office of Housing and Urban Development. Washington, D.C.: PADCO, Inc., 1012 N Street, NW, January 1994, p. 5.
24. *ibid.*, p. 17.
25. *ibid.*, p. 17.

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