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China's Urban Unemployment: Exposed

"Disguised Unemployment" or Insufficient Aggregate Demand

Minqi Li*

China's enterprise reform has resulted in large-scale layoff of workers from state and collective owned enterprises. Mainstream Chinese economists argue that many of the workers in these enterprises are "disguisedly unemployed" and have to be laid off to achieve better economic performance. In this paper, I argue that the productivity of state and collective owned enterprises to a large extent depends on capacity utilization and the level of aggregated demand. If the government undertakes active aggregate demand policy, the performance of state and collective owned enterprises can be substantially improved without large number of workers being laid off.

1. Introduction

Since late 1970s China has been undertaking market-oriented economic reform. Unlike in Eastern Europe and the former Soviet Union, until early 1990s there had been no privatization of state and collective owned enterprises. In 1980s state and collective owned enterprises continued to provide job security and other benefits to the urban sector workers. Rapid economic growth was accompanied by rising living standards for the majority of people. In 1992, in the Fourteenth Congress of the Chinese Communist Party,

it was decided that China's goal of reform was to build a "socialist market economy." Next year, at the Third Plenum of the Fourteenth Party Congress, it was decided that the existing system of state and collective owned enterprises was to be replaced by the "modern enterprise system" based on " clarified property right, clearly defined responsibility and authority, separation of enterprises from the government, and scientific management." The Fifteenth Party Congress in 1997 took a further step, deciding that while collective owned enterprises and small state owned enterprises were to be privatized, large and medium-sized state owned enterprises were to be restructured as share holding corporations.

The enterprise reform in 1990s has resulted in large-scale layoff of workers. In 1980s there was virtually full employment in the urban sector. But since 1993, urban unemployment has been growing rapidly. By 1997, about 18.5 million workers had been laid off from state owned enterprises and urban collective enterprises, raising the actual urban unemployment rate to as high as about 10 percent. Table 1 shows the rapid growth of urban unemployment in 1990s.

Unlike in 1980s, in 1990s while the economy has continued to grow rapidly, the living standards of working people have been growing slowly, and for a significant part of them, have declined. Many of the laid off workers are living in poverty. The stagnation and the decline of the living standards of the majority people and rising inequality have undermined the legitimacy of the market-oriented reform, generated large number of protests and social unrest, and raised serious questions to the current strategy of reform (He, 1998, pp. 218-244).

In this paper I will focus on the unemployment in China's urban sector. I will argue that as far as the employment consequences of the enterprise reform are concerned, the current economic reform is misconceived and based on unsound theoretical beliefs. The rapidly rising urban unemployment is neither

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desirable nor necessary. By pursuing active macroeconomic policies intended to maintain and increase the level of aggregate demand, the efficiency of state and collective owned enterprises can be substantially improved without laying off of workers, with socially as well as economically desirable results. Part 2 of the paper presents and criticizes the argument of mainstream Chinese economists that the so-called redundant workers in state and collective owned enterprises are "disguisedly unemployed" and have to be laid off in order to achieve efficiency improvement. Part 3 of the paper argues that the underutilization of the labor force in state and collective owned enterprises may be caused by insufficient aggregate demand and an increase of the level of aggregate demand could lead to higher measured productivity and help to eliminate "disguised unemployment." This hypothesis is tested in part 4 and 5. Part 6 discusses the likely effect of active aggregate demand policy on "disguised unemployment" based on the empirical results presented in part 4 and 5.

[Table 1 is here]

2. State and Collective Owned Enterprises and "Disguised Unemployment"

Mainstream Chinese economists argue that the system of state property is in fundamental conflict with the basic requirements of a market economy (Liu and Gao, 1999, pp. 87-93; ZGFB, 1999). State owned enterprises suffer from unclarified property rights, which tend to increase transaction costs and lower the efficiency of market transactions. Related to this is the problem of "soft budget constraints" and the inability of the government as the principal to enforce the contracts with the agents--the managers of state owned enterprises. The managers have the authority to dispose of the assets of state owned enterprises

but do not have to bear the risks which are involved in the use of the assets. Losses and inefficiency are therefore unavoidable.

A similar critique is made to urban collective enterprises. Urban collective enterprises are technically owned by the workers, though the managers of these enterprises are often appointed by the local government and the behavior of these enterprises is widely considered to be similar to that of state owned enterprises (Simon, 1996, pp.274-284). Mainstream Chinese economists argue that the collective property is ill defined and the workers, without individual ownership stake in the firm, are not motivated adequately and do not care about the long term development of the firm. Government involvement in the management contributes to the inefficiency of urban collective enterprises by reproducing the soft budget constraint problem from which the state owned enterprises suffer.

The labor regime of state and collective owned enterprises is also believed to be inefficient. Mainstream Chinese economists argue that under the pre-reform system, instead of having the market determine the efficient level of employment, the level of employment is determined by labor supply. Government objectives dominate economic concerns and employment is essentially offered to all urban residents as a part of social welfare. The system results in excessive labor supply that is absorbed by state and collective owned enterprises without considering efficiency criteria. In this view, a large segment of those employed in state and collective owned enterprises are actually "redundant." (ZGFB, 1999, pp. 468-470)

There have been different estimates of the share of redundant workers in the total urban sector employment. A survey by the International Labor Organization and the Chinese Labor Department in 1995 estimated that redundant workers accounted for 18.8 percent of the state sector employment. The Chinese

State Statistical Bureau believes that about 20 percent of the state sector workers are "redundant." The State System Reform Commission and the State Council Development Research Center estimate the ratio to be 25 percent. Liu and Gao argue that the ratio could be as high as 40 percent (Liu and Gao, 1999, pp. 299-302). The World Bank (1999, p.60) estimates that there are 16-36 million of redundant workers in state and urban collective owned enterprises.

Mainstream Chinese economists argue that the redundant workers in state and collective owned enterprises should properly be categorized as constituting a pool of "disguisedly unemployed" workers. Because while these workers do receive income from their employment, their employment cannot be justified on efficiency grounds. Formally, the argument can be illustrated by figure A.

[Figure A is here]

In a market economy, the labor market is cleared at C where labor supply equals labor demand. However, in the pre-reform non-market economy, the government decides that the wage setting curve is AB and everyone who is willing to work at the prevailing wage is to be offered a job. Excess labor supply results because the supply of labor indicated by point B is greater than the demand for labor indicated by point A. Nevertheless the workers between A and B are employed by state owned or urban collective enterprises rather than left unemployed. However, at B, the wage level set by the government is above the marginal product of labor which is indicated by point D. This suggests that the employment between A and B is inefficient and not profitable. It therefore must be regarded as "disguised unemployment."

Mainstream Chinese economists argue that in the transition to the market economy, it is no longer

possible for state and collective enterprises, which for the most part have failed to compete with private enterprises effectively and are suffering from deteriorating profitability, to maintain the inefficient labor regime characterized by disguised unemployment. As such, the proponents of this view recognize that the "disguised unemployment" has to be exposed and turned into explicit unemployment. While this may have some undesirable social consequences in the short run, they do not see any practical alternative. Moreover, by freeing the redundant workers from inefficient state owned enterprises, it is possible to re-allocate these workers to private enterprises and the growing service industries where they can be more efficiently employed. In the long run, this will contribute to higher efficiency and higher living standards. Following this logic, the Chinese government decided in 1997 to accelerate the pace of privatization and layoff of workers. While 15 million workers had already been laid off from the state sector by 1997, it was planned that between 1998-2000, 15-20 million more workers were to be laid off, increasing the total laid off workers from the state sector to more than 30 million (ZGFB, 1998, 469).

There are several problems with the mainstream argument. First, firms that provide job security to their workers may suffer from "disguised unemployment" during the downturn of business cycles. But by offering the workers a long-term stake in the firm, job security encourages workers to make investment in firm specific human capital and may contribute to higher productivity in the long run (Aoki ,1988; Boyer, 1993; Lo, 1997). Buchele and Christiansen (1999) find that strong worker rights encourage workers' participation and are often associated with higher productivity growth.

Further, mainstream economists have failed to take into account the macroeconomic benefits of "disguised unemployment." When an economic downturn occurs, state and collective owned enterprises, help to dampen the multiplier effect and alleviate the effect of any unfavorable demand shock through

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maintaining their employment. By comparison, private enterprises tend to reduce employment and wage expenditures when shortfall of market demand occurs. Falling employment and wages further reduce the level of expenditure and tend to amplify the decline of aggregate demand.

Mainstream Chinese economists appear to have assumed that the transition costs for the workers who are displaced from state or collective owned enterprises to be re-employed in the private sector would be either negligible or way below the potential benefits of the re-allocation. However, this is unlikely to be the case. The workers in state and collective owned industrial enterprises are among the most skilled of China's blue-collar labor force. However, the skills or the human capital that they have accumulated on their jobs are not likely to be useful in the services industries that are generating most new jobs. Private enterprises are mostly characterized by low productivity, low wages, terrible working conditions and they use large number of unskilled workers. Thus, even if the workers displaced from state or collective owned enterprises are lucky enough to get jobs in private enterprises or service industries, it is likely that their skills would have to be downgraded substantially. This implies an enormous loss of human capital.

While it is true that state and collective owned enterprises have been suffering from a profitability crisis in recent years, the decline of profitability is not restricted to the state and the collective sector, but has actually occurred across enterprises of all types of ownership. *The China Statistical Yearbook* (various issues) provides profit rate data for industrial enterprises with independent accounts of different types of ownership. Measured by the ratio of the sum of profits and taxes to the original value (book value) of fixed assets. The state sector profit rate fell from 20.2 percent in 1988 to 7.3 percent in 1998. The collective sector profit rate fell from 27.3 percent in 1988 to 16.3 percent in 1998. In the so called "other" sector, which includes primarily foreign invested enterprises and enterprises invested by owners in Hong

Kong, Macau and Taiwan, the profit rate fell from 32.7 percent in1988 to 9.1 percent in 1998. Thus, between 1988-98, the profit rate fell by 63.9 percent in the state sector, 40.3 percent in the collective sector, and 72.2 percent in the other sector. Thus, the decline of profitability is neither restricted nor particularly severe in the state or the collective sector. The widespread decline of profitability suggests that the profitability crisis of state and collective owned enterprises is more a reflection of the general deterioration of the macroeconomic environment than a problem that results from ownership-specific microeconomic inefficiencies. If this is the case, then the solution to the problem must primarily be found in macroeconomic management rather than microeconomic adjustments such as layoff of workers.

3. Alternative Perspective: Underutilization of the Labor Force Resulting from Insufficient Aggregate Demand

The Chinese government conducted contractionary monetary policy in 1993 to contain double-digit inflation. By the end of 1996, the government declared that a "soft landing" had been successfully accomplished. However, the economy continued to slow down. In 1998, the Chinese economy was literally in deflation. The growth rates of consumer and producer prices fell into the negative territory, while economic growth rate fell to the lowest point since 1991. Price deflation and losing momentum of economic growth suggest substantial shortfalls in aggregate demand.

While the reasons for insufficient demand are manifold, including the 1997-98 Asian financial crisis, one may suspect that the misconceived enterprise reform and the large- scale layoff of workers have played an important part. Table 1 suggests that between 1993 and 1997, the actual urban unemployment rate increased from about 3 percent to about 10 percent. Assume a worker's annual income is half of the urban

sector's per employee output and a laid off worker loses half of her or his typical annual income. This implies that an increase of unemployment rate by 7 percent will lead to a direct fall of the urban sector aggregate income by 1.75 percent. The total effect on aggregate demand must be considerably larger when the multiplier effects are taken into account.

In the standard neoclassical synthesis macroeconomic model, a fall of aggregate demand actually results in higher labor productivity. The fall of prices raises the real wage and forces the employers to hire less workers. At lower level of employment, the marginal product of labor is higher, restoring equilibrium. A Classical or New Classical economist would have argued that this does not have to happen if the worker could realize that the fall of prices has actually increased the real wage, and in turn increases labor supply. Thus, while the labor demand curve shifts to the left, the labor supply curve (as a function of nominal wage) should shift to the right, resulting in lower nominal wage but higher level of employment.

The standard model assumes that the stock of capital is fixed in the short run and does not take account of changes in capacity utilization. The prediction of the standard model is not consistent with empirical observations. Productivity is typically lower rather than higher during a recession. This is because firms typically have large portion of the capital stock left idle during a recession. If the utilization of the capital stock is low due to insufficient aggregate demand, then the observed labor productivity would be lower than it otherwise could be even without changes in technology. In this case, the employers would hire fewer workers even if workers are willing to accept lower nominal wage in response to lower prices.

For Chinese state or collective owned enterprises, one can make a case that the impact of aggregate demand on productivity would have to be stronger than what is usually the case in a market economy. Because state and collective owned enterprises provide job security to their employees, one

would expect that for these enterprises, not only the capital stock but also the level of employment is a "fixed" input. Thus, a fall of aggregate demand would result in not only the underutilization of the capital stock but also the underutilization of the labor force. Thus, labor productivity fell for two reasons, because of the fall of the actually utilized capital stock, and because of the decrease of the degree of utilization of the labor force itself. Since the labor input is "fixed," a fall of labor productivity would be translated into an increase of "redundant" workers in state or collective owned enterprises. But if this is the case, then in principle, the so called "disguised unemployment" could be eliminated by increasing the level of aggregate demand. For an increase of aggregate demand could substantially improve the efficiency of state and collective owned enterprises by eliminating the underutilization of not only the capital stock but also the labor force, allowing the marginal product of labor to be lifted to a level above the real wage.

We can derive this conclusion through the following simple model. Assume a standard Cobb-Douglas production function (Y, K, L are for output, capital and labor), which takes the capacity utilization of the capital stock into account. The production function is written as:

(1) $Y = A(ZK)^{\acute{a}} L^{\hat{a}} M^{\tilde{a}}$

where Z is capacity utilization and M is intermediate inputs (materials). Let "y" be Y/L, then the production function is re-written as:

(2) $y = A(ZK)^{\acute{a}} L^{\hat{a}-1} M^{\tilde{a}}$

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Clearly, "y" is positively dependent upon Z, and $\partial y/\partial Z$ is $\acute{a}y/Z$. In a production function for Chinese

state or collective owned enterprises, there are "redundant" workers. Thus, not only the capital stock but

also the labor force may not be fully utilized. A production function of state or collective owned enterprises

may take the form:

(3) $Y = A(ZK)^{\acute{a}}(ZL)^{\hat{a}}M^{\tilde{a}}$

The productivity of state and collective owned enterprises is therefore more strongly dependent

upon the utilization of capacity.

(4) $y = AZ^{\acute{a}+\hat{a}}K^{\acute{a}}L^{\hat{a}-1}M^{\tilde{a}}$, $\partial y/\partial Z = (\acute{a}+\hat{a})y/Z > 0$

Now consider a revised Keynesian macroeconomic model of the following form:[1]

(5) $AD = a + b_1(N) + b_2(Z)$, $b_1' > 0, b_2' > 0$

(6) $AS = pY = p\tilde{n}Z\underline{K}$

(7) $AD = AS$

(8) $p = \grave{i} + \underline{w}N/Y = \grave{i} + \underline{w}/y(N, Z)$, $\partial y/\partial N < 0, \partial y/\partial Z > 0$

(9) $\underline{w} = ph(N)$, $h' > 0$

(5) gives the aggregated demand equation, where "a" is the autonomous expenditure which can be

determined by the government, $b_1(N)$ is the part of expenditure which depends upon the income from employment, and $b_2(Z)$ is the part of expenditure which directly depends on capacity utilization (for instance, higher capacity utilization may encourage investment). (6) is the aggregate supply function, which is equal to the total nominal output. "ñ" is the output to utilized capital ratio, and the capital stock is assumed to be constant.[2] (7) sets up the equilibrium condition.

(8) is the mark up equation (the equivalent of the labor demand equation in the standard model), where price is determined by adding a mark up factor "ì" to the unit labor cost, which is exogenously determined nominal wage (for example, it may depend on monetary conditions) divided by productivity. Productivity is assumed to be positively dependent on capacity utilization, and negatively dependent on the level of employment. (9) is the bargaining equation (the equivalent of the labor supply function in the standard model). Thus, instead of assuming workers decide labor supply based on the preference between real wage and leisure, real wage is assumed to be determined by workers' bargaining strength, which is here assumed to be a positive function of the employment level.

There are five equations and five unknowns (AD, AS, Z, N, p). The good market (equation 5-7) can be illustrated by figure B.

[Figure B is here]

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Figure B shows that the aggregate demand is positively dependent on capacity utilization. The intercept of the aggregate demand curve is the sum of autonomous expenditure and the part of expenditure that depends on the income resulting from employment. When aggregate demand is AD_0, the equilibrium capacity utilization is Z_0. At Z_0, there is a unique mark up schedule in the labor market, which is shown in Figure C.

[Figure C is here]

In Figure C, the mark up curve (MU) and the wage setting curve (WS) together determine the equilibrium level of employment and the real wage.[3] If the government engages in expansionary macroeconomic policy, in Figure B, the aggregate demand curve will be pushed up from AD_0 to AD_1, raising capacity utilization from Z_0 to Z_1. In the labor market, the increase of capacity utilization increases productivity, allowing firms to charge lower prices. The mark up curve is therefore shifted up. At the new equilibrium, the employment level is higher, and the price level is lower (implied by higher real wage). These changes should feed back to the good market, resulting in further shift up of the aggregate demand curve and the aggregate supply curve should rotate clockwise with lower prices. This will raise the capacity utilization to an even higher level. The feedbacks should continue until the good market equilibrium is consistent with the labor market equilibrium.

For state and collective owned enterprises, the equilibrium level of employment in Figure C may be understood as the level of employment desired by the management, and any employment above the

"desired" employment would be "disguised unemployment." An expansion of aggregate demand could bring about a higher level of "desired" employment, thus reducing the level of "disguised unemployment."

4. Testing the Alternative Perspective

In this section, I will test the hypothesis that the productivity of state and collective owned enterprises is strongly dependent upon capacity utilization in the industrial sector. If this hypothesis is not rejected, it would be possible for one to argue that active aggregate demand policies that lead to higher capacity utilization may result in substantial improvement in the observed efficiency of state and collective owned enterprises and "disguised unemployment" in these enterprises could be dealt with by active aggregate demand policies rather than by laying off workers. I will also test to what extent the productivity of private enterprises depends on capacity utilization.

The relationship to be tested is as follows:

(10) $\quad Y = AK^{â1}L^{â2}M^{â3}Z^{â4}$

which is equivalent to:

(11) $\quad y = Ak^{â1}m^{â3}L^{â1+â2+â3-1}Z^{â4}$

where "k" and "m" are the capital-labor ratio and the materials-labor ratio respectively. Rewrite equation

(11) in growth rate form:

(12) $(dy/dt)/y = \hat{a}^0 + \hat{a}^1(dk/dt)/k + \hat{a}^3(dm/dt)/m + (\hat{a}^1 + \hat{a}^2 + \hat{a}^3 - 1)(dL/dt)/L + \hat{a}^4(dZ/dt)/Z$

For state and collective owned enterprises, $\hat{a}^4$ is expected to be positive and significant. For "other enterprises," which are private enterprises, $\hat{a}^4$ is also expected to be positive, but the estimated coefficient is expected to be smaller than that for state and collective owned enterprises.

Data

To test equation (12), it is necessary to have the following data: output, capital input, materials input, labor input, and capacity utilization. *The China Statistical Yearbook* (CSY, 1985-1999) provides the relevant data or the necessary information from which the required data can be constructed for the *industrial enterprises with independent accounts.* In 1997, all industrial enterprises with independent accounts accounted for 58.7 percent of China's gross output value of industry. In the same year, the state owned enterprises accounted for 41.7 percent of the total output of all industrial enterprises with independent accounts, the collective owned enterprises accounted for 29.6 percent, the share holding corporations accounted for 7.4 percent, the foreign owned enterprises accounted for 12.3 percent, and the enterprises owned by residents in Hong Kong, Macau and Taiwan accounted for 9.0 percent.

Before 1993, the share holding corporations, the foreign owned enterprises, and the enterprises owned by residents in Hong Kong, Macau and Taiwan are all included in the category of "other enterprises." The share holding corporations were originally state owned enterprises that were later restructured as corporations. The government continues to have majority ownership in most of these corporations. Thus, it is more appropriate to include them into the state sector. For the rest of this paper,

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the "state owned enterprises" refer to not only those that are referred to as the state owned enterprises according to the Chinese official statistical categorization, but also those that are referred to as the share holding corporations. Data for the state owned enterprises and the collective owned enterprises are available or can be constructed for 1980-98. Data for other enterprises are not available until 1988. Since 1993, the foreign owned enterprises and the enterprises owned by the residents in Hong Kong, Macau and Taiwan are combined as "other enterprises." Thus, for other enterprises, data are available or can be constructed for 1988-98.

For details of data construction, see Appendix.

Results

Table 2 presents the regression results for the state owned enterprises. The dependent variable is the growth rate of productivity (output per employee). The independent variables are the growth rate of capital-labor ratio, the growth rate of materials-labor ratio, the growth rate of labor input, and the annual change of capacity utilization rates. Three regressions are run. The first does not include capacity utilization. The result of the second regression suggests that capacity utilization has positive and significant impact on the productivity of the state owned enterprises. A one percent increase of capacity utilization is associated with about 0.7 percent increase of productivity. The third regression corrects for auto-correlation by using the iterative Cochrane-Orcutt procedure, the estimated coefficient of CAPACITY is 0.75 and strongly significant.

[Table 2 is here]

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Table 3 presents the regression results for the collective owned enterprises. The result of the second regression suggests that a one percent increase of capacity utilization is associated with 0.59 percent increase of productivity. But the coefficient of CAPACITY is not significant. The D-W statistic is 1.35, suggesting strong auto-correlation. However, when auto-correlation is corrected, the coefficient of CAPACITY is estimated to be 0.79, slightly higher than that for the state owned enterprises.

[Table 3 is here]

Table 4 presents the regression results for other enterprises. The second regression reports that a one percent increase of capacity utilization is associated with 0.51 percent increase of productivity. D-W statistic suggests strong auto-correlation. The third regression corrects for auto-correlation and finds that the coefficient of CAPACITY is reduced to 0.375 and not significant.

[Table 4 is here]

The results reported in Table 2, 3, and 4 are generally consistent with the hypothesis that the productivity of the state and collective owned enterprises is positively correlated with capacity utilization, which reflects the level of aggregate demand. Moreover, the regression results suggest that the increase of capacity utilization tends to have a larger and more definite impact on the productivity of state and collective owned enterprises than the impact on the productivity of other enterprises. While a one percent increase

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of capacity utilization is associated with 0.7-0.75 percent increase of productivity of the state owned enterprises, and 0.59-0.79 percent increase of productivity of the collective enterprises, it is only associated with 0.38-0.51 percent increase of productivity of other enterprises.

To the extent the variable of capacity utilization, as is measured in this study, does reflect the level of aggregate demand, the regression results reported in Table 3-5 suggest that the government may use active aggregate demand policies that lead to higher capacity utilization, which in turn leads to higher productivity of the state owned and the collective enterprises, to deal with "disguised unemployment." The validity of this argument apparently depends on the assumption that capacity utilization does reflect the level of aggregate demand and does respond to changes in autonomous demand variables. The government does not directly control capacity utilization, but it should be able to control or influence certain autonomous demand variables (such as government expenditures or investment). Therefore, it is necessary to establish the relations between autonomous demand variables and capacity utilization, and the relations between autonomous demand variables and productivity.

5. Autonomous Demand, Capacity Utilization and Productivity

Table 5 reports the results of three regressions. Capacity utilization is the dependent variable. Independent variables are INVESTMENT, FISCAL, EXPORTS, IMPORTS, INVLAG, FISLAG, EXLAG, and IMLAG. INVESTMENT is the nominal growth rate of total fixed investments, FISCAL is the nominal growth rate of the non-investment central and local government expenditures, EXPORTS and IMPORTS are the nominal growth rates of merchandise exports and imports, and INVLAG, FISLAG, EXLAG, and IMLAG are the one year lag of INVESTMENT, FISCAL, EXPORTS, and IMPORTS

respectively. Among all independent variables, INVESTMENT is the only one that is significantly and positively correlated with capacity utilization. A one percent increase of the nominal growth rate of investment is associated 0.25 percent increase of the capacity utilization rate. The regression results suggest that the government may use public investment as a tool to achieve the desirable capacity utilization rate.

[Table 5 is here]

The central government, the local governments, and the state owned enterprises together accounts for over 50 percent of the total fixed investments. About five percent of the total fixed investments are directly financed by government fiscal budget, and about 20 percent of the total fixed investments are financed by loans provided by the state owned banks. Thus, through its control over the fiscal budget and the state owned banks, the central government directly controls about 25 percent of total investments; and through its influence over the local governments and the state owned enterprises, it may influence the size and the structure of another 25 percent of the total investments. Given that the state sector investments account for over 50 percent of the total fixed investments, and the total fixed investments account for about 35 percent of China's gross domestic product, the Chinese government is in a position to use public investment as an effective tool to control the level of the total investments and the level of aggregate demand.

Table 6 shows how changes in autonomous demand variables impact on the productivity of the state owned, the collective owned and other enterprises. The first regression shows that INVESTMENT has significant and positive impact on the productivity of the state owned enterprises. A one percent

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increase of total investments is associated with 0.2 percent increase of productivity. INVESTMENT and

FISCAL have positive impacts on the productivity of the collective owned enterprises. But none of the two

coefficients is significant. Interestingly, the productivity of other enterprises is negatively correlated with

INVESTMENT, FISCAL and EXPORTS, but positively correlated with IMPORTS. These results

confirm the hypothesis that the government may carry out active aggregate demand policy (for example, by

increasing public investment) in order to improve the productivity performance of state and collective owned

enterprises.

[Table 6 is here]

6. Removing "Disguised Unemployment" with Aggregate Demand Policy

To what extent can active aggregate demand policy help to alleviate "disguised unemployment"?

In 1998, the capacity utilization rate was as low as 0.75.[4] If the capacity utilization rate can be increased

by 25 percent, that is, back to its long-term trend, the regression results of Table 2 and 3 suggest that the

productivity of the state owned enterprises can increase by 17.5-19 percent, and the productivity of the

collective enterprises can increase by about 15-20 percent. In the context of Figure C, an increase of

productivity resulting from an increase of capacity utilization is reflected by a shift up of the mark up curve.

With the mark up curve shifted up, to increase effective employment, it is necessary to move down along

the new mark up curve until where it intersects the wage setting curve. How much of "disguised

unemployment" can be eliminated depends on the slope of the mark up curve and the slope of the wage

setting curve.

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In Table 2, the implied labor elasticity of output for the first, the second, and the third regression is 0.179, -0.063, and -0.124 respectively.[5] In Table 3, the implied labor elasticity of output for the first, the second, and the third regression is 0.181, 0.111, and 0.095 respectively. The second and the third regression in the two tables include capacity utilization in the explanatory variables. Thus, when capacity utilization is taken into account, the labor elasticity of output of the state and collective owned enterprises is estimated to be either negative or close to zero. Considering that many of the state and collective sector workers are "disguisedly unemployed," these numbers are not surprising. However, for the purpose of finding out how much of "disguised unemployment" can be eliminated, one needs to know the labor elasticity of output not for the total employment, but for the "desired" employment. The available information does not tell how much the labor elasticity of output for the "desired" employment is. But one should expect it to be a positive number.

If the labor elasticity of output is zero, it implies that a one percent increase of employment is associated with one percent fall of productivity. Thus, the implied slope of the mark up curve would be one. Assume a 25 percent increase of capacity utilization raises the productivity of state and collective owned enterprises by 18 percent, with a flat wage setting curve, the 18 percent increase of productivity can generate 18 percent increase of "desired" employment with the slope of the mark up curve being one. However, the labor elasticity of output for the "desired" employment is most likely greater than zero. It follows that the slope of the mark up is most likely smaller than one. Therefore, it is safe to say that a 18 percent increase of productivity can generate at least 18 percent more "desired" employment.

With the labor force more fully utilized, workers may have more bargaining power, resulting in higher real wages. As a result, the actual increase of "desired" employment would be smaller than with a

flat wage setting curve. To estimate how workers' real wage may increase with the increase of "desired"

employment, I run two regressions, the results of which are reported in Table 7. In the first regression, the

dependent variable is the growth rate of nominal compensation, which is the sum of the nominal wage rate

of workers in the state owned industrial enterprises and the average insurance and benefits fund of the state

sector employees. The relevant data are available in *The China Statistical Yearbook*. The independent

variables are the previous year's inflation rate (measured by the producer's price index of industrial

products), the growth rate of the capital-labor ratio (to control for long-term technological changes), and

capacity utilization. In the second regression, the dependent variable is the inflation rate, measured by the

producer's price index of industrial products, and the independent variables are the previous year's inflation

rate and nominal compensation. The regression result says that a one percent increase of capacity utilization

is associated with about 0.8 percent increase of nominal compensation, and one percent increase of nominal

compensation is associated with about 0.5 percent increase of the inflation rate. Thus, a one percent

increase of capacity utilization is associated with about 0.4 percent increase of real wage.

If the government is going to undertake active aggregate demand policy, with the goal of increasing

capacity utilization by about 25 percentages in the course of five years, this would require a nominal growth

rate of total fixed investments of about 20 percent in each year. This is not unrealistic. Total fixed

investments grew at an average nominal annual rate of 21.1 percent between 1980 and 1998, and grew at

an average nominal annual rate of 25.8 percent between 1990 and 1998 (CSY, 1999, Table 6-2). This

would result in a total increase of real wage by about 10 percent. Since 25 percentages of increase of

capacity utilization can result in about 18 percent increase of productivity, with 10 percent going to the

increase of real wage, there is 8 percent left, which can be translated into the increase of "desired"

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employment. Assume the slope of the mark up curve is one, this implies an increase of "desired" employment by 8 percent. Since most estimates put the share of "redundant workers" in the state sector employees within the range of 20-25 percent, a 8 percent increase of "desired" employment could eliminate one-third to two-fifths of the so called "disguised unemployment." Given that the slope of the mark up curve is most likely to be smaller than one, the actual amount of "disguised unemployment" that can be eliminated by active aggregate demand policy is likely to be significantly greater.

The above analysis suggests that if the government undertakes aggregate demand policy based on the expansion of public investment in a sustained and consistent way, it is possible to substantially alleviate the "disguised unemployment" in the state and the collective sector and improve the performance of state and collective owned enterprises. One possible objection to such a policy would be that the expansion of aggregate demand may cause excessive inflation pressures. However, the regression results of Table 7 suggest that the increase of the inflation rate that may result from five years of demand expansion is likely to be small. A one percent of the inflation rate in the previous year can be directly translated into about 0.4 percent of inflation in the current year. Since one percent of the inflation rate in the previous year is associated with about 0.6 percent increase of nominal compensation, it indirectly leads to about 0.3 percent more inflation in the current year. That is, one percent of inflation in the previous year directly and indirectly results in 0.7 percent of inflation in the current year.

In recent years, China has been experiencing deflation rather than inflation. If in each year, capacity utilization increases by 5 percent, this will result in about 4 percent increase of nominal compensation and about 2 percent increase of inflation. Assume we start from a point when the price is falling by one percent a year, after the first year of the increase of capacity utilization, the inflation rate would be 1.3 percent.

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After the second, third, fourth, and fifth year of the expansion, the inflation would be 2.9, 4.0, 4.8, and 5.4 percent respectively. That is, inflation is likely to be well under control and the fear of inflation should not be a reason against active aggregate demand policies.

7. Conclusion

In the past decade, with the acceleration of the state owned enterprise reform in China, the living standards of large sections of the urban working class have been stagnating or deteriorating. Economic reform no longer brings about material benefits to working people. Mainstream Chinese economists argue that state and collective owned enterprises and their employment regime are fundamentally inefficient, and better economic performance requires large-scale layoff of the state and the urban collective sector workers. In this paper, I argue that the mainstream reform strategy is misconceived. The large-scale layoff of the state and the urban collective sector workers not only involves enormous social costs that are unjustifiable, but also has directly contributed to the recent economic downturn by contracting working people's consumption demand. This paper shows that the productivity of state and collective owned enterprises to a large extent depends on capacity utilization and the level of aggregated demand. If the government undertakes active aggregate demand policy, such as expanding public investment, the performance of state and collective owned enterprises can be substantially improved without large number of workers being laid off, and this can be done with only a small increase of inflation. If this is the case, then a more open minded approach of economic reform with a consideration of the macroeconomic aspect (that is, the fundamental instability of a market economy and the indispensable role of an interventionist government) and social justice can lead to socially as well as economically more desirable results.

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[1] For an illustration of Keynesian macroeconomic model, see Davidson (1998).

[2] "ñ" (the output to utilized capital ratio) is assumed to be exogenous. Strictly speaking, the output to utilized capital ratio varies with the level of employment and cannot be decided without the determination of the labor market equilibrium. It is apparent from Figure C and equation (8) and (9) that each level of capacity utilization corresponds to a unique labor market equilibrium. Assume that at all labor market equilibria, the output to utilized capital ratio remains constant. This allows "ñ" to be treated as exogenous.

[3] Since equation (8) assumes that price is set by adding a constant mark up to unit labor cost, profit-maximizing firms should expand employment and output until they meet the constraint of workers' bargaining power. It follows that the labor market equilibrium is determined where the mark up curve intersects the wage setting curve.

[4] For the estimate of capacity utilization rates, see Appendix.

[5] The implied labor elasticity of output is calculated by using the formula: implied labor elasticity of output = 1 + LABOR – CAPITAL – MATERIALS, where LABOR, CAPITAL, and MATERIALS are the coefficients of these variables.

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Appendix: Data Construction

(1) Output

Output is defined as real gross output value, which is the gross output value deflated by the producer price index of industry.

(2) Capital

Real stock of capital is constructed from the original value of fixed assets (book value of capital) by using the following formula:

$$(13) \qquad K_T = \sum_{t=1}^{T} (V_t - V_{t-1})/P_{Kt}$$

where V_t is the original value of fixed assets in year t, and P_{Kt} is the fixed investment price index in year t. For the state owned enterprises and the collective owned enterprises, the original value of fixed assets in 1980 is assumed to be equal to the newly added fixed assets in 1980. For the other enterprises, similar assumption is made with respect to the original value of fixed assets in 1988.

This method of deflating the original value of fixed assets is widely used in the Chinese and English literature. It is the same method as that used by Lo (1997), and similar to that used by Jefferson, Rawski, and Zheng (1996), and Li and Zhong (1998). Jefferson et al. and Li and Zhong are able to exclude non-productive investment (such as employee residential buildings, employee hospitals and schools provided to employees' children) from the state sector investment. However, the relevant data are not available to this author.

The fixed investment price index is available in *The China Statistical Yearbook* since 1991. I regress the fixed investment price index between 1991-98 on the producer price index of the machine building industry and the implicit GDP deflator of the construction industry. The result is as follows: PFI = 0.75686*MACHINE + 0.262488*CONSTRUCTION, adjusted R-square is 0.9992. This equation is then used to estimate the fixed

investment price index before 1991.

(3) Materials

The materials input is defined as the difference between the gross output value and the value added. The real materials input is the materials input deflated by a constructed materials input price index, which is a weighted average of the producer price index of the mining and quarrying industry (with a weight of 0.25), the producer price index of raw materials industry (with a weight of 0.5), and the purchase price index of industrial farm crops (with a weight of 0.25).

The value added of industrial enterprises with independent accounts is available since 1992. Between 1988-91, it can be calculated by adding the net output value with depreciation fund. For collective owned enterprises, I regress the value added between 1988-98 on the gross output value and the inverse of the gross output value (the inverse is used to control for the level of the value added in the initial year). The regression result is then used to estimate the value added between 1980-88 (the estimating equation is: VADDED = 157.289871 + 0.255734*GOV - 9.367822*GOVINVERSE, adjusted R-square is 0.9708).

The value added of all industrial enterprises with independent accounts before 1988 can be estimated by assuming that the share of all industrial enterprises with independent accounts in the China's Industrial Gross Domestic Product is the same as their share in China's gross output value of industry. The difference between the estimated value added of all industrial enterprises with independent accounts and the estimated value added of the collective owned enterprises is then assumed to be the value added of the state owned enterprises.

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(4) Labor

Numbers of staff and workers of the *entire* state, collective, and other industrial sectors can be found in *The China Statistical Yearbook*. The numbers of staff and workers of the state, collective, and other industrial enterprises with independent accounts are estimated by assuming that the average labor productivity of the industrial enterprises with independent accounts of each type of ownership is the same as the average labor productivity of the entire industrial sector of the relevant type of ownership. The gross output value of the state, collective, and other industrial sectors is available, allowing the calculation of these sectors' labor productivity.

(5) Capacity Utilization

There is no official measure of capacity utilization for the industrial sector. I use the ratio of the time trend of the capital-output ratio of all industrial enterprises with independent accounts over the actual capita-output ratio as a proxy. The time trend of the capital-output ratio is calculated from the following equation: TREND = -13.734753 + 0.007466 * YEAR, where YEAR is between 1980 and 1998.

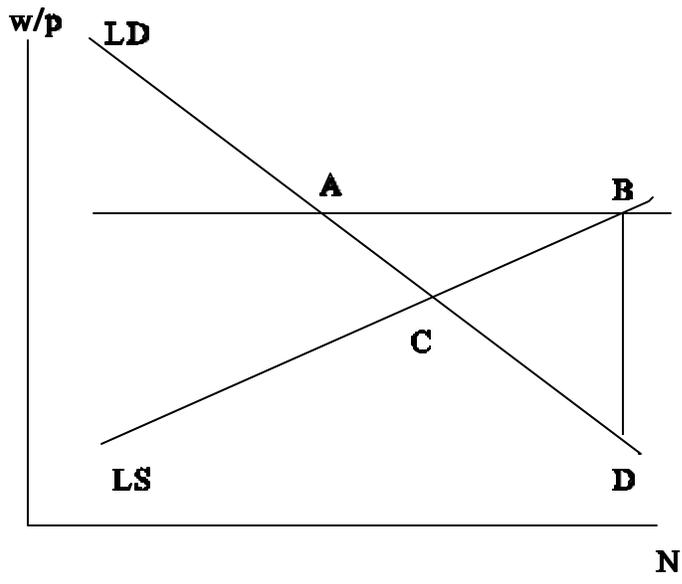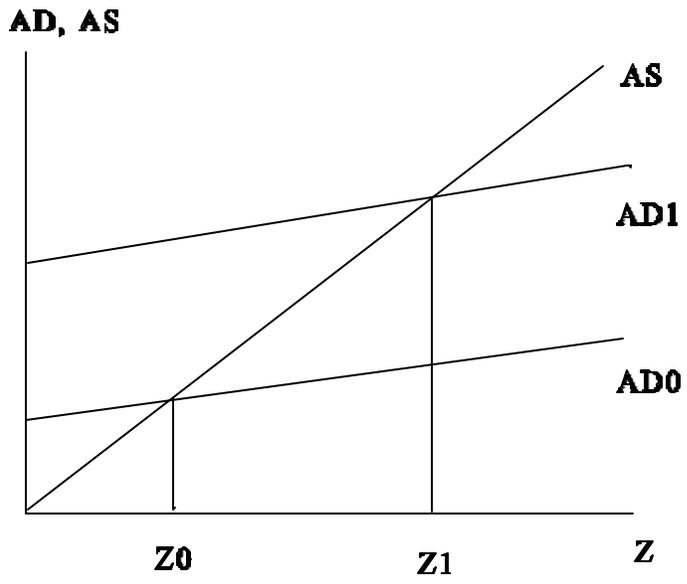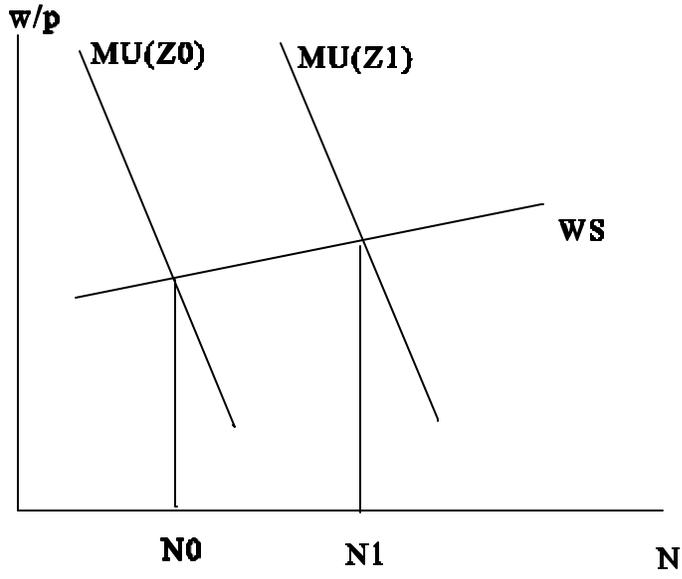The above data are available to reader by request.

Figure A

Figure B

Figure C

w/p

MU(Z0) MU(Z1)

WS

N0   N1

N

Table 1

China's Urban Unemployment, 1990-97

	Registered Unemployment (ten thousand)	Registered Unemployment Rate (%)	Unemployed Laid Off Workers (ten thousand)	Actual Unemployment Rate (%)*
1990	383.2	2.5		
1991	352.2	2.3		
1992	363.9	2.3		
1993	420.1	2.6		
1994	476.4	2.8	about 300	4.6
1995	520.0	2.9	409	5.2
1996	552.8	3.0	591	6.2
1997	570.0	3.1	1366	10.5

* Ratio of the sum of the registered unemployed and unemployed laid off workers to the urban labor force.

Source: ZGFB, 1998, pp. 467; Yang, 1997, pp. 218-221; Liu and Gao, 1999, pp. 299-304. The Chinese State Statistical Bureau provides statistics of registered unemployment rates in the urban sector. A registered unemployed person is one who makes registration at the government office as unemployed. Workers who are "laid off" (*xiagang*) from state and collective owned enterprises are technically not considered to be unemployed. There are no official statistics of laid off workers. But some economists have made estimates of numbers of laid off workers in recent years. These estimates are available in Liu and Gao (1999) and Yang (1997).

Table 2

Analyzing the Productivity Growth of the State Owned Enterprises

(1981-98, 18 observations)

Dependent Variable	PRODUCTIVITY	PRODUCTIVITY	PRODUCTIVITY
INTERCEPT	0.063	0.035	0.040
	(0.038)	(0.028)	(0.027)
CAPITAL	-0.344	0.178	0.121
	(0.350)	(0.279)	(0.264)
MATERIALS	0.490	0.317	0.323
	(0.100)****	(0.083)***	(0.078)***
LABOR	-0.675	-0.568	-0.680
	(0.460)	(0.324)*	(0.310)**
CAPACITY		0.699	0.747
		(0.178)***	(0.164)****
AR(1)			-0.375
			(0.309)
Adj. R-square	0.672	0.838	0.828
D-W	1.712	2.302	2.099

Standard errors are in parentheses.

* Significant at 10% level. **Significant at 5% level.

*** Significant at 1% level.

**** Significant at 0.1% level.

Table 3

Analyzing the Productivity Growth of the Collective Owned Enterprises

(1981-1998, 18 observations)

Dependent Variable	PRODUCTIVITY	PRODUCTIVITY	PRODUCTIVITY
INTERCEPT	0.002	-0.018	-0.035
	(0.028)	(0.029)	(0.031)
CAPITAL	0.142	0.591	0.834
	(0.248)	(0.354)	(0.322)**
MATERIALS	0.809	0.488	0.366
	(0.134)****	(0.228)**	(0.205)*
LABOR	0.132	0.190	0.295
	(0.164)	(0.158)	(0.175)
CAPACITY		0.593	0.787
		(0.351)	(0.332)**
AR(1)			0.400
			(0.289)
Adj. R-square	0.888	0.901	0.903
D-W	1.840	1.350	2.036

Standard errors are in parentheses.

* Significant at 10% level. ** Significant at 5% level.

**** Significant at 0.1% level.

Table 4

Analyzing the Productivity Growth of Other Enterprises

(1989-1998, 10 observations)

Dependent Variable	PRODUCTIVITY	PRODUCTIVITY	PRODUCTIVITY
INTERCEPT	0.033	0.035	0.041
	(0.042)	(0.030)	(0.036)
CAPITAL	0.131	0.323	0.299
	(0.135)	(0.122)**	(0.109)*
MATERIALS	0.706	0.641	0.618
	(0.140)***	(0.104)***	(0.081)***
LABOR	-0.089	-0.111	-0.121
	(0.126)	(0.091)	(0.087)
CAPACITY		0.513	0.375
		(0.199)**	(0.180)
AR(1)			0.520
			(0.487)
Adj. R-square	0.757	0.875	0.857
D-W	1.018	1.245	1.465

Standard errors are in parentheses.

*Significant at 10% level. ** Significant at 5% level.

*** Significant at 1% level.

Table 5
Autonomous Demand Variables and Capacity Utilization

Dependent Variable	CAPACITY	CAPACITY	CAPACITY
INTERCEPT	-0.023 (0.039)	0.031 (0.037)	0.026 (0.026)
INVESTMENT	0.212 (0.121)*	0.268 (0.113)**	0.260 (0.073)***
FISCAL	-0.226 (0.209)	-0.253 (0.233)	-0.281 (0.132)**
EXPORTS	-0.018 (0.091)	-0.013 (0.079)	
IMPORTS	-0.008 (0.095)	-0.012 (0.077)	
INVLAG		-0.014 (0.121)	
FISLAG		-0.012 (0.195)	
EXLAG		-0.148 (0.075)	-0.139 (0.059)**
IMLAG		-0.064 (0.080)	-0.077 (0.051)
Adj. R-square	0.008	0.371	0.556
D-W	2.254	1.629	1.594

Standard errors are in parentheses.

* Significant at 10% level.

** Significant at 5% level.

*** Significant at 1% level.

Table 6
Autonomous Demand Variables and Productivity

Dependent Variable	Productivity (State)	Productivity (Collective)	Productivity (Other)
INTERCEPT	0.053 (0.032)	-0.045 (0.042)	0.241 (0.136)
CAPITAL	-0.532 (0.277)*	0.238 (0.292)	0.206 (0.121)
MATERIALS	0.498 (0.082)****	0.751 (0.146)****	0.626 (0.110)**
LABOR	-0.951 (0.368)**	0.142 (0.210)	-0.505 (0.236)
INVESTMENT	0.193 (0.054)***	0.167 (0.107)	-0.261 (0.263)
FISCAL	0.004 (0.099)	0.093 (0.179)	-0.688 (0.359)
EXPORTS	0.041 (0.041)	0.013 (0.077)	-0.415 (0.238)
IMPORTS	-0.098 (0.042)**	-0.052 (0.095)	0.897 (0.503)
Adj. R-square	0.807	0.883	0.922
D-W	2.602	2.074	2.513

Standard errors are in parentheses.

* Significant at 10% level.

** Significant at 5% level.

*** Significant at 1% level.

**** Significant at 0.1% level.

Table 7

Capacity Utilization and Inflation

Dependent Variable	COMPENSATION	INFLATION
INTERCEPT	0.053	-0.030
	(0.030)*	(0.030)
EXINFLATION	0.550	0.370
	(0.219)**	(0.195)*
CAPITAL	0.680	
	(0.260)**	
CAPACITY	0.820	
	(0.389)**	
COMPENSATION		0.537
		(0.209)**
Adj. R-square	0.330	0.476
D-W	1.937	2.071

Standard errors are in parentheses.

* Significant at 10% level.

** Significant at 5% level.