



How much slack was there in the Chinese economy prior to its economic reform of 1978? [☆]



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ABSTRACT

The existence of economic slack or inefficiency is a common phenomenon of economies that operate under mandatory central planning. It implies that the economy operates in the interior of its set of production possibilities and not on its frontier. It also implies that output can be increased without any increase in the inputs if the constraints which prevent the economy from operating on the frontier in the first place are removed. Thus, there is “surplus potential output” that is not directly observable and cannot be identified by conventional analysis of the relationship between inputs and output alone. The objective of this study is to attempt to identify and estimate the surplus potential output in the Chinese economy prior to its economic reform in 1978. This will help answer the question of how much of the Chinese economic growth since 1978 can be attributed to the reduction and elimination of the pre-existing economic slack. This question is important because the increase in output due to the reduction or elimination of the economic slack can only take effect once and cannot be continuing. It will also affect the attribution of the sources of Chinese economic growth. Our investigation suggests that a reasonable estimate of the magnitude of the surplus potential output of the Chinese economy on the eve of its reform is approximately 50% of the actual realized output in 1978.

1. Introduction

China has made tremendous progress in its economic development since it began its economic reform and opened to the World in 1978. It is currently the fastest growing economy in the World—averaging 9.7% per annum over the past 36 years (even though its rate of growth has recently slowed down to around 7%). It is, however, historically unprecedented for an economy to grow at such a high rate over such a long period of time.

What are the sources of this Chinese economic growth? They include the growth in the conventional tangible inputs, physical capital and labor; the growth in intangible inputs, such as human capital and R & D capital; technical progress, also known as the growth of total factor productivity (TFP); and technology transfer from abroad. They include the effects of the realization of economies of scale. But they should also include the reduction and elimination of the economic slack or inefficiency that existed in

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the Chinese economy prior to its economic reform and opening to the World in 1978.

The existence of economic slack or inefficiency is a common phenomenon of economies that operate under mandatory central planning. It implies that the economy operates in the interior of its set of production possibilities and not on its frontier. The “distance” between where an economy operates and its frontier is then the economic slack. It also implies that output can be increased without any increase in the inputs if the constraints which prevent the economy from operating on the frontier in the first place are removed. Thus, there is “surplus potential output”. The objective of this study is to attempt to identify and estimate the surplus potential output in the Chinese economy prior to its economic reform in 1978 and to help answer the question: How much of the Chinese economic growth since 1978 can be attributed to the reduction and elimination of the pre-existing economic slack? This question is important because the increase in output due to the reduction or elimination of the economic slack can only take effect once and cannot be continuing. When an economy already operates on its production possibilities frontier, there is no more surplus potential output and further increases in output will have to come from the outward movement of the production possibilities frontier, which requires increases in tangible and intangible inputs or technical progress. It will also affect the attribution of the sources of Chinese economic growth.

While many studies, including Bettelheim (1988), Hsueh and Liu (1980), Lin (1988, 1992), Rawski (1994, 1995, 1999) and Naughton (1995, 2007) have analyzed the effects of Chinese reforms on the Chinese economy, there has not been any quantitative estimate of the size of the pre-existing economic slack that was reduced and eliminated through the economic reform. It is, however, in general difficult, if not impossible, to identify and distinguish from aggregate time-series data of a single country or region how much of a given increase in output is due to a movement from the interior of the set of production possibilities to its frontier and how much is due to a movement of the frontier itself. This is true regardless of whether the economy in question is a centrally planned or a market one. Yet, it is well known that for an economy operating under mandatory central planning, there is inherent economic inefficiency, and hence economic slack, even though the size of the slack is not known.¹ Stochastic production frontier analysis has been proposed to identify and estimate the frontier of the set of production possibilities (see, for example, Aigner, Lovell, and Schmidt (1977)). However, such an approach is not possible with aggregate time-series data of only a single economy. If cross-sectional or panel data are available within an economy, it may be possible to identify and estimate the frontier of the set of production possibilities under some assumptions. Yet in a centrally planned economy, even cross-sectional data are of no help as all the production units in a centrally planned economy are likely to operate in the interior of their sets of production possibilities.

But for economies transitioning from a centrally planned system to a market system, as in the case of China, there is actually an opportunity to identify the pre-existing slack, by observing the economic performance before, during and after the implementation of the market-enabling economic reform.² Our objective here is to introduce two different simple methods to estimate the size of the surplus potential output, or its mirror image, the economic slack, in China before its economic reform in 1978. This possibility hinges on a number of observations and assumptions discussed below:

First, economic reform can remove the constraints in the economy which prevent it from operating on its production possibilities frontier in the first place. The effect of the economic reform on the reduction and elimination of the economic slack, if any, when it is fully implemented, is for one-time only and not continuing. Moreover, the effect is not instantaneous, as it takes time for the prior constraints in the economy to be removed so that the economic slack can be reduced and eliminated and the surplus potential output realized. Thus, it is necessary to look beyond the first year(s) of the economic reform, although the effect will eventually dissipate. In this study, we make the working assumption that on average, it takes six years for the full effect of the economic reform to be realized.³ We thus compare the economic performance of the pre-reform, reform, and post-reform periods to try to identify the effect of economic reform on the reduction or elimination of the pre-existing economic slack and the corresponding realization of the surplus potential output.

Second, it is also necessary to try to control for the effects of additional inputs, if any, during the reform period, as they would have caused the production possibilities frontier to move outward and output to be increased. Even in the absence of economic reform, the set of production possibilities might still be expanding, although the economy could continue to operate in its interior rather than on its frontier. Thus, the increase in output during the reform period cannot be entirely attributed to the economic reform itself—the effects of the “usual and customary” increases in inputs during the same period must also be taken into account and deducted first. Since data on the quantities of the additional inputs during the reform period are not readily available, we make the assumption that the effects of the increased inputs during the reform period, if any, on the growth of output can be approximated by the trend rate of growth of output in the six years before the reform period. Thus, the increase in output during the reform period is attributable to economic reform only after the subtraction of the increase in output that would have occurred if output had continued to grow at the pre-reform trend rate. While this assumption may seem arbitrary, it is actually quite realistic in the Chinese case, as throughout the reform period, say from 1979 to 1984 in the case of agricultural reform, the mandatory central plan continued to be

¹ With aggregate time-series data of more than one economy, it is in principle possible to identify and estimate the degree of relative economic inefficiency under suitable assumptions. Conventional methods that rely on inputs data to estimate production frontier/efficiency cannot identify slack because they ignore that the same input could be utilized in different intensity and thus has different impacts on outputs.

² In the absence of a transition from a centrally planned to a market economy, it would be difficult to identify and estimate the economic slack, as the slack may persist over time. It is only when the economic slack is reduced or eliminated over time because of economic reform that it has a chance of being identified and estimated.

³ We also experimented with alternative assumptions on the duration of the economic reform period. However, our results are robust as to whether the reform period is assumed to be four, five or six years (see Appendix Table 1). They are also robust with regard to the assumed durations of the pre-reform and post-reform periods (see Appendix Table 2).

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