# MONETARY OVERHANG: DO CENTRALLY PLANNED ECONOMIES HAVE EXCESSIVE MONEY STOCKS?

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*This paper investigates the issue of monetary overhang in centrally planned economies (CPEs). The analysis compares the money stocks in CPEs with those in market economy counterparts. Contrary to conventional belief, the findings here suggest that the money stocks in traditional CPEs do not tend to be excessive. This implies that CPEs suffer more from structural distortion than from monetary overhang in their traditional stage.*

## I. INTRODUCTION

The problem of monetary overhang has serious implications for the former centrally planned economies (CPEs) in their transition to market equilibrium. Many analysts believe that monetary overhang is prevalent in CPEs prior to the reform. As prices are liberalized, this excessive money stock causes high inflation, forming a major obstacle to successful reform. Some economists challenge this popular view. Alexeev (1992, p. 39) discusses reasons for "consumers in CPEs to save less than their counterpart in market economies at similar economic development stages." He implies that money stocks in CPEs might not be excessive, or might even be insufficient by the standards of market economies in otherwise similar conditions.

Alexeev's view seems unconventional but can be justified on theoretical grounds under certain circumstances. The question of whether the money stocks in CPEs tend to be excessive is debatable and deserves further investigation on the basis of economic data. Alexeev does not give a quantitative comparison of the money stocks between CPEs and market economies. Quantitative work has been done on monetary disequilibrium in CPEs, but most previous studies attempt to estimate monetary overhang or forced savings from the time series data of the CPE under investigation, rather than from cross-country comparisons (e.g., IMF et al., 1991). In addition, many of these studies raise theoretical or technical problems.

First, many of these studies actually estimate forced savings rather than monetary overhang. Analysts often use the terms "forced savings" and "monetary overhang" interchangeably. However, the concepts are different. Indeed, they may not consistently indicate the same disequilibrium state. The presence of forced savings does not imply the existence of monetary overhang (Chang, 1993).

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**Abbreviations**
CPE: Centrally Planned Economies
FRG: Federal Republic of Germany

Second, some studies adopt unsatisfactory econometric approaches. The IMF et al. (1990) model relies too heavily on *ad hoc* and strong assumptions. The canonical disequilibrium model is computationally complicated and thus fragile with respect to even a slight error in data or model specifications (see Chang, 1992a, 1992b). Because of the problems, the disequilibrium models may perform even worse than a simple market model in estimating disequilibrium states. For instance, in the IMF study on monetary overhang in the USSR, a simple consumption function works better than the more complicated specification with disequilibrium indicators. The IMF tested various versions, including disequilibrium models containing disequilibrium indicators. However, the specification that performed best was the simple traditional consumption function, which implicitly required the condition of consumption equilibrium (see IMF, 1990, pp. 383–413). This is rather ironic: the traditional consumption function estimation implicitly requires the equilibrium condition, and theoretically it should not be a proper specification for estimation of a disequilibrium state. A disequilibrium model that performs even worse than the traditional function naturally raises skepticism about the estimates derived from the disequilibrium (see Kornai, 1982).

## II. METHODOLOGY

Do CPEs tend to have excessive money stocks? One can and should answer this question straight forwardly. Instead of conjecturing the monetary overhang by going through estimations of consumption or forced savings, the analysis here directly compares the money stocks between CPEs and market economies and draws meaningful inference about monetary overhang in CPEs. This simple, direct method has a rather profound theoretical justification.

Let the existing money stock be $M$. Given general price level and real output in the economy, there is a desired money stock that would clear the goods market, $M^*$. One roughly can assume that in market economies, $M$ equals $M^*$. In a command economy, however, $M$ does not equal $M^*$ in general. Monetary overhang is defined as the actual money stock in excess of the desired level—that is, $M - M^*$. If a CPE possesses monetary overhang, then its money stock $M$ must be greater than the money stock of its market economy counterpart, $M^*$, under otherwise similar conditions.

Clarifying the underlying definition of monetary overhang helps avoid possible concerns over the above statement. The actual money stock, $M$, is a well defined concept and is easily measurable. Yet, what is $M^*$, the desired money stock for a command economy? One can conceive two possible interpretations: the *status quo money demand* and the *would-be equilibrium state demand*. The status-quo-money demand is derived from the current disequilibrium state, subject to the constraints created by the existing command economy practices, such as rationing in various sectors and directive planning. The *would-be equilibrium state demand* is derived after removing all constraints and distortions created by the command economy practices. This demand is the *equilibrium-money-demand*. The two interpretations of the money demand can be quite different. Indeed, actual money stock, status-quo-money-demand, and the equilibrium-money-demand are three different concepts. Ignoring the differences would cause misunderstanding of the approach here and misinterpretation of results of the present analysis.

Some previous studies, implicitly equate monetary overhang to the money stock in excess of the status-quo-money-demand. This interpretation may be acceptable in some occasions but contains some theoretical problems. Spill-over effects of rationing and mandatory planning contaminate the status-quo-money-de-

mand. Chang (1993) proves that this contamination can cause the status-quo-money-demand to be smaller than the existing money stock even though the money stock, price, and output levels all are at the equilibrium levels. This conclusion leads to the following contradiction: On one hand, there is "monetary overhang" because the money stock is larger than the status-quo-money-demand; on the other hand, there is no monetary overhang because the money stock, price, and output levels all are at the equilibrium levels. Hence, this interpretation is theoretically flawed. In practice, using this interpretation may not give one the information about monetary overhang in a dynamic (or long-run) view of a country in economic transition.

Instead of the status-quo-money-demand, consider the equilibrium-money-demand, which is more informative as a CPE is moving to a market system. $M^*$ is the equilibrium-money-demand, which can be inferred from a CPE's market counterpart, so long as $M^*$ and the market counterpart are reasonably similar in all conditions except their economic systems (see Alexeev, 1990; Podkaminer, 1980). Of course, one can never find a perfect market counterpart for any given CPE. However, of primary interest is the systematic difference in the money stocks between the two economic systems. One can infer this difference from proper statistical two-sample comparison, which accommodates the unexplained variations in other aspects across countries in an error term.

In making cross country comparison, it is preferable to use the ratio of money stock to nominal GNP, in order to take into account variations in monetary units and price and output levels. Let $P$ and $y$ be the official price and real output respectively. Denote the ratio of the current money stock to the value of the national output in the economy by $m$, where $m = M/(Py)$. In the analysis here, $m$ is the *actual* money-output ratio, or the MO ratio. Mathematically, the MO ratio simply is the Cambridge $k$ or the reciprocal of *actual* velocity. The analysis here avoids using the notation $k$ because its connotation stems from the Cambridge school, which assumed it had little variation. The analysis also refers to the MO ratio rather than to the "velocity" because the term MO ratio is direct and more intuitive in comparing money stock or measuring monetary overhang. Let $m^*$ be the desired MO ratio. That is, $m^* = M^*/(Py)$. Monetary overhang hence is $m$ in excess of $m^*$. In other words, a monetary overhang exists if the actual MO ratio is excessively large.

## III. DO CPEs HAVE EXCESSIVE MONEY STOCKS?

Table 1 lists the actual MO ratios for six CPEs: Romania, Hungary, Poland, China, USSR, and Czechoslovakia. The sample period runs through 1988, the time shortly before major economic reform took place in most of these countries. The table also lists the MO ratios of some selected market economies for comparable years. For market economies, 1988 and 1990 are selected in order to follow the pattern of time period selection. For many CPEs, the period 1989–1990 was the eve of the economic revolution. Thus, their economic behavior did not follow traditional patterns during this period. The analysis here excludes 1989 and 1990 to avoid the effect of institutional changes. (Poland's and Russia's MO ratios grew rather fast during the final years prior to price liberalization. Russia's MO ratios in 1989 and 1990 were 0.651 and 0.733, respectively. Poland's MO ratio in 1989 was 0.629. The rapid monetary expansion was often explained as the consequence of the government's fiscal difficulty and reckless monetary policy. It is possible that to a certain extent monetary overhang might exist on the eve of the Big Bang in Poland and Russia. However, the absence of statistically significant evidence prevents drawing a definite conclusion on this matter.)

**TABLE 1**
The MO Ratio of Some Countries in Some Selected Years

| Country | 1970 | 1972 | 1974 | 1976 | 1978 | 1980 | 1982 | 1984 | 1986 | 1988 | 1990 | Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Market Economies | | | | | | | | | | | | |
| Indonesia | 0.094 | 0.145 | 0.129 | 0.162 | 0.159 | 0.158 | 0.177 | 0.200 | 0.269 | 0.296 | 0.430 | 0.202 |
| Turkey | 0.306 | 0.310 | 0.283 | 0.276 | 0.263 | 0.218 | 0.312 | 0.304 | 0.315 | 0.277 | 0.257 | 0.284 |
| India | 0.253 | 0.285 | 0.263 | 0.320 | 0.373 | 0.388 | 0.405 | 0.427 | 0.463 | 0.469 | 0.465 | 0.374 |
| Korea | 0.359 | 0.389 | 0.351 | 0.322 | 0.345 | 0.358 | 0.398 | 0.376 | 0.416 | 0.489 | 0.565 | 0.397 |
| Thailand | 0.315 | n.a. | n.a. | 0.394 | 0.394 | 0.411 | 0.472 | 0.593 | 0.667 | 0.682 | 0.784 | 0.524 |
| Ireland | 0.669 | 0.604 | 0.680 | 0.595 | 0.613 | 0.636 | 0.526 | 0.503 | 0.457 | 0.441 | 0.471 | 0.563 |
| F. R. Germany | 0.552 | 0.587 | 0.578 | 0.609 | 0.644 | 0.618 | 0.634 | 0.638 | 0.656 | 0.665 | 0.715 | 0.627 |
| U.S. | 0.625 | 0.668 | 0.621 | 0.657 | 0.624 | 0.608 | 0.642 | 0.663 | 0.709 | 0.683 | 0.674 | 0.652 |
| Greece | 0.465 | 0.561 | 0.534 | 0.572 | 0.686 | 0.678 | 0.766 | 0.807 | 0.830 | 0.895 | 0.909 | 0.700 |
| Spain | 0.745 | 0.849 | 0.852 | 0.855 | 0.787 | 0.801 | 0.822 | 0.665 | 0.681 | 0.689 | 0.692 | 0.767 |
| Taiwan | 0.408 | 0.500 | 0.466 | 0.584 | 0.720 | 0.640 | 0.740 | 0.911 | 1.155 | 1.407 | 1.476 | 0.819 |
| Italy | 0.846 | 0.994 | 0.902 | 0.936 | 0.971 | 0.868 | 0.815 | 0.776 | 0.773 | 0.776 | 0.807 | 0.860 |
| Singapore | 0.711 | 0.708 | 0.620 | 0.747 | 0.786 | 0.817 | 0.946 | 0.973 | 0.914 | 1.188 | 1.289 | 0.882 |
| Japan | 1.021 | 1.252 | 1.182 | 1.281 | 1.347 | 1.404 | 1.518 | 1.585 | 1.692 | 1.817 | 1.892 | 1.454 |
| Centrally Planned Economies | | | | | | | | | | | | |
| | | | | | | | | | | **1987** | **1988** | |
| Romania | n.a. | n.a. | n.a. | 0.269 | 0.318 | 0.354 | 0.397 | 0.374 | 0.407 | 0.418 | 0.455 | 0.374 |
| Hungary | n.a. | 0.374 | 0.433 | 0.448 | 0.464 | 0.489 | 0.493 | 0.459 | 0.498 | 0.489 | 0.436 | 0.458 |
| Poland | n.a. | n.a. | n.a. | n.a. | n.a. | 0.616 | 0.477 | 0.417 | 0.427 | 0.438 | 0.408 | 0.464 |
| China | n.a. | n.a. | n.a. | n.a. | 0.248 | 0.374 | 0.437 | 0.519 | 0.655 | 0.702 | 0.684 | 0.517 |
| USSR | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 0.515 | 0.572 | 0.612 | 0.566 |
| Czechoslovak | n.a. | n.a. | n.a. | n.a. | n.a. | 0.532 | 0.604 | 0.633 | 0.644 | 0.667 | 0.715 | 0.633 |
| Socialist Economy with Labor Management | | | | | | | | | | | | |
| Yugoslavia | 0.543 | 0.583 | 0.599 | 0.689 | 0.717 | 0.684 | 0.662 | 0.625 | 0.510 | 0.602 | 0.778 | 0.636 |

*Note*: n.a.: Data unavailable. The MO ratios are obtained by dividing broad money stocks by nominal GDP figures.

The selected market economies resemble one or more of these CPEs in some of the following aspects: development stage, price stability, size of the nation, and geographic location. Table 1 reveals that the MO ratios of CPEs do not clearly tend to be higher than those of their market counterparts. The individual MO ratios of the market economies in the sample range from 0.094 to 1.892, with a median of 0.604 and a mean of 0.630, while most of the individual MO ratios of CPEs fall below these values.

Compare Poland to Ireland or Italy for example. Some previous studies (e.g., Podkaminer, 1980) take Ireland and Italy as the market economy counterparts for Poland in estimating the Polish equilibrium state. Table 1 shows that Poland's MO ratios demonstrate a definitive downward pattern as compared with those of Ireland and Italy. However, comparing Poland to Turkey shows that Poland's MO ratios are relatively higher, although both countries have similar GNP per capita level, population size, and price instability. Ambiguity also exists in comparisons between China and its market economy counterparts. The Chinese reform occurred in the early 1980s. In the early stage, from 1978 through 1982, China essentially was a command economy, and its MO ratios were between 0.25 and 0.43. They were lower than those of India and Thailand but higher than those of Indonesia in the same period. In the late 1980s, the price system was gradually liberalized, and the MO ratio increased rapidly. The MO ratios in 1987–1988 were substantially larger than those of Indonesia, India, Thailand, and Korea, yet they were still lower than those of Taiwan, which has the same culture and customs as mainland China. More importantly, China's high MO ratio in the late 1980s likely was not a result of monetary overhang but a product of monetization and marketization.

Inspecting the MO ratios of other CPEs reveals a large variation within the group. For instance, Czechoslovakia has high MO ratios, and Romania has quite low MO ratios. In summary, one cannot definitely refute the existence of monetary overhang in CPEs, but the cross country comparison shows that the CPEs do not demonstrate a systematic upward pattern in MO ratios as compared with market economies.

Determining whether the MO ratio for CPEs as a group tends to be larger than that for market economies involves conducting statistical tests between the two groups. The sample for CPEs covers the period 1972–1988. Most available data are from this period, during which major reform did not occur in most of these countries. In order to make the comparison more efficient, the analysis here screens the entire market economy group and constructs a sample that better resembles the CPEs. The analysis takes into account four factors that would affect MO ratios: inflation, monetary institutions, monetization, and development stage. In particular, the analysis omits market-economy countries with the following characteristics: (i) Countries that have experienced hyperinflation and have had annually an inflation rate on average of greater than 50 percent, (ii) Countries whose population size was less than one million in 1978. These countries tend to have primitive monetary institutions and deficient data. (iii) Countries where labor force in agriculture as the percentage of total labor force is greater than 80 percent. This percentage measures the extent of monetization and marketization. (iv) Countries that had GNP per capita of less than $300 or greater than $20,000 in 1988. The GNP per capita serves as the proxy of development stage. This screening process results in a market economy sample totaling 1,067 observations from 67 countries. The sample period for market economies also is 1972–1988.

Examining the entire market economy group reveals that the distribution of $m^*$ is skewed to the right and hence is not normal. (The distribution of $m^*$ resembles an

**TABLE 2**
Do CPEs have Higher MO Ratios than Market Economies?

| System | Number of Observations | Median | Mean |
|---|---|---|---|
| CPEs | 69 | 0.455 | 0.472 |
| Market Economies | 1067 | 0.434 | 0.469 |

The Mann-Whitney Test Results:

$W$ = 42618.0

P-value for $H_0$: Median (CPE) = Median (Market economies) is 0.1992

The 95 percent confidence interval for the difference between the two medians is −0.017 — 0.076

*Note:* Minitab is used for estimation.

$\chi^2$ distribution, skewed to the right. It is dispersive but quite tractable: it is unimodal and has its two tails limited in the range from 0.05–1.95.) The conventional two-sample test is undesirable because it is inefficient in the non-normal distribution case. Instead, using non-parametric statistics, a distribution-free method, is preferred. Mann-Whitney approach is used here to test for a systematic difference between the two systems. Table 2 shows the results. The median of the MO ratio in CPEs, 0.455, is slightly higher than that in market economies, 0.434. However, the difference is statistically insignificant (with a P-value for the null hypothesis equal to 0.199). Hence, one cannot reject the hypothesis that the MO ratios are the same between the two groups. Thus, one cannot conclude that CPEs tend to have excessive money stock as compared with their market counterparts. The CPEs, especially at the traditional stage, may not be characterized by a prevalence of monetary overhang.

## IV. FURTHER EVIDENCE

The above test compares the two groups of economies, taking into account price stability, size of the nation, and the development stage by removing countries with fewer similarities. However, the cross-country examination reveals that some other institutional differences, including cultural difference, also would cause the disparities in the MO ratios. For instance, compare Japan to the Federal Republic of Germany (FRG) or to the United States. The countries share comparable development stage, price stability, and population size. Yet during the period 1972–1988, the average MO ratio was 1.454 for Japan and 0.627 and 0.652, respectively, for FRG and the United States—a two-to-one difference (see table 1). The fact that the Japanese tend to have a high propensity to save, a trait which probably is rooted in their culture and institutions, may partially explain this disparity.

Detailed discussion of how cultural differences might cause disparity in the MO ratios is beyond the scope of this study. However, taking cultural differences into account when comparing CPEs and their market counterparts may be worthwhile. Compare Eastern European countries including the former Soviet Union, to European market economies, for example. As-

**TABLE 3**
Comparison Between CPEs And 19 Market Economies In Europe

| System | Number of Observations | Median | Mean |
|---|---|---|---|
| CPEs | 56 | 0.453 | 0.472 |
| Market Economies | 318 | 0.664 | 0.718 |

The Mann-Whitney Test Results:

$W = 4742.5$

P-value for $H_0$: Median (CPE) = Median (Market economies) is less than 0.0001}

The 95 percent confidence interval for the difference between the two medians is -0.260 — -0.161

*Note:* Minitab is used for estimation. The 19 European market economies include: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom.

sume that both Eastern and Western European countries are basically similar in terms of culture and possibly other environmental factors, such as resource-to-population ratio. The sample includes five European CPEs: Romania, Hungary, Poland, Czechoslovakia, and USSR. The sample also contains 19 European market economies. The median of the MO ratios of the European CPEs is *smaller* than that of European market economies—0.452 versus 0.664—at a very statistically significant level (see table 3). The P-value of the null hypothesis from the Mann-Whitney test is less than 1/10,000. This result seems to suggest a negative monetary overhang for CPEs, but the difference in income levels also may explain this disparity. The GNP per capita of the European CPEs ranges from 1,400 to 6,000 U.S. dollars, while those of most European market economies are well above 10,000 U.S. dollars. (The dollar figures of GNP per capita for CPEs can be quite disparate when various exchange rates are used in conversion. For instance, the GDP per capita in the USSR in 1990 was $5,862 according to the official exchange rate, and $609 according to the tourist exchange rate.) Using purchasing power parity instead of exchange rate in currency unit conversion would make the difference in income level much smaller. However, the difference conceivably remains substantial. Avoiding this problem involves making a further comparison between the European CPEs and those market economies at comparable income levels. Three European market economies have GNP per capita below $6,000: Malta, Portugal, and Greece. A test between the CPEs and these three countries again demonstrates that the MO ratios for CPEs were relatively lower—0.4525 versus 0.8950 (see table 4). One should interpret the outcomes cautiously, but the results at least demonstrate that the European CPEs are not likely to possess excess money stock.

Next consider the Asian CPEs. Of the Asian CPEs including China, North Korea, and Vietnam, only China publishes the data required for the test. One can compare China with the market economies in East, Southeast, and South Asia. Table 5 lists the MO ratios of 14 Asian market economies as well as those of China. China's MO ratios are comparable to those of Thailand, which generally are lower

**TABLE 4**
Comparison Between CPEs And Low Income Market Economies In Europe

| System | Number of Observations | Median | Mean |
|---|---|---|---|
| CPEs | 56 | 0.453 | 0.472 |
| Market Economies | 51 | 0.895 | 1.002 |

The Mann-Whitney Test Results:

$W$ = 1678.5

P-value for $H_0$: Median (CPE) = Median (Market economies) is less than 0.0001

The 95 percent confidence interval for the difference between the two medians is −0.566 — −0.394

*Note:* Minitab is used for estimation.

than those of East Asian countries but higher than those of South Asian countries. China is closer to the former in culture and to the latter in economic development stage. Table 6 shows the Mann-Whitney test between China and the 14 Asian countries. Although the median MO ratio for China is somewhat larger, the difference is not statistically significant.

Comparing China with the low income Asian economies—that is, removing Japan, Singapore, Hong Kong, Taiwan, and Korea from the market economy sample—reveals that China's MO ratios show a definite upward trend. Does this mean that monetary overhang has been prevalent in China? The case of China is somewhat special.

The Chinese economic reform started in 1978. China's MO ratio before the economic reform was quite average for those developing countries at the same development stage (table 5). For instance, in 1978, China's MO ratio was 0.248, compared to 0.373 for India and 0.251 for the Philippines. Since 1978, China's MO ratio has increased rapidly. The MO ratio reached 0.830 in 1990 and 0.945 in 1991 (*World Bank*, 1993). This is somewhat puzzling. The figures may suggest that monetary overhang emerged and increased during this period, especially given the extremely high MO ratio in the late 1980s as compared to other LDCs at the same development stage. However, carefully examining the available prior information and applying economic theories would lead to the exact opposite conclusion. During the period when China experienced a rapid economic reform, prices had been widely liberalized. By 1992, imperative planning determined only 7 percent of total industrial output in China. In addition, prices of more than 80 percent of capital products, 85 percent of agricultural products, and 90 percent of (consumer) commodities in retail markets were liberalized (Gao, 1993). By any measure, in 1992 China was more of a market than a planning economy. As price liberalization proceeded during this period, monetary overhang, if it had existed, should have gradually diminished. Why? In a market economy, an excessive money supply can be only temporary. The excessive money supply would cause an open inflation (rather than being suppressed into a repressed inflation in a command economy), and the price increase would eliminate the existing (temporary) monetary overhang. Although many economists said that the money supply in 1991 in China was excessive, the inflation dur-

**TABLE 5**
The MO Ratio of Some Asian Countries

| Country | 1970 | 1972 | 1974 | 1976 | 1978 | 1980 | 1982 | 1984 | 1986 | 1988 | 1990 | Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| East Asia | | | | | | | | | | | | |
| Korea | 0.359 | 0.389 | 0.351 | 0.322 | 0.345 | 0.358 | 0.398 | 0.376 | 0.416 | 0.489 | 0.565 | 0.397 |
| Taiwan | 0.408 | 0.500 | 0.466 | 0.584 | 0.720 | 0.640 | 0.740 | 0.911 | 1.155 | 1.407 | 1.476 | 0.819 |
| Hong Kong | n.a. | n.a. | n.a. | n.a. | 0.859 | 0.807 | n.a. | n.a. | n.a. | n.a. | n.a. | 0.833 |
| Singapore | 0.711 | 0.708 | 0.620 | 0.747 | 0.786 | 0.817 | 0.946 | 0.973 | 0.914 | 1.188 | 1.289 | 0.882 |
| Japan | 1.021 | 1.252 | 1.182 | 1.281 | 1.347 | 1.404 | 1.518 | 1.585 | 1.692 | 1.817 | 1.892 | 1.454 |
| Southeast Asia | | | | | | | | | | | | |
| Indonesia | 0.094 | 0.145 | 0.129 | 0.162 | 0.159 | 0.158 | 0.177 | 0.200 | 0.269 | 0.296 | 0.430 | 0.202 |
| Philippines | 0.212 | 0.308 | 0.253 | 0.251 | 0.308 | 0.290 | 0.320 | 0.278 | 0.287 | 0.341 | n.a. | 0.285 |
| Thailand | 0.315 | n.a. | n.a. | 0.394 | 0.394 | 0.411 | 0.472 | 0.593 | 0.667 | 0.682 | 0.784 | 0.524 |
| Malaysia | 0.362 | 0.442 | 0.546 | 0.655 | 0.701 | 0.775 | 0.973 | 0.970 | 1.347 | 1.200 | n.a. | 0.725 |
| South Asia | | | | | | | | | | | | |
| Bangladesh | n.a. | n.a. | 0.191 | 0.158 | 0.185 | 0.167 | 0.177 | 0.238 | 0.265 | 0.275 | 0.318 | 0.179 |
| Nepal | 0.106 | 0.125 | 0.152 | 0.162 | 0.206 | 0.237 | 0.258 | 0.275 | 0.308 | 0.337 | 0.375 | 0.231 |
| Sri Lanka | 0.279 | 0.326 | 0.250 | 0.272 | 0.343 | 0.395 | 0.388 | 0.368 | 0.367 | 0.389 | 0.347 | 0.338 |
| India | 0.253 | 0.285 | 0.263 | 0.320 | 0.373 | 0.388 | 0.405 | 0.427 | 0.463 | 0.469 | 0.465 | 0.374 |
| Pakistan | 0.435 | 0.513 | 0.359 | 0.378 | 0.400 | 0.415 | 0.408 | 0.399 | 0.433 | 0.414 | 0.391 | 0.413 |
| China | | | | | | | | | | | | |
| China | n.a. | n.a. | n.a. | n.a. | 0.248 | 0.374 | 0.437 | 0.519 | 0.655 | 0.684 | 0.830 | 0.535 |

*Note*: n.a.: Data unavailable. The MO ratios are obtained by dividing broad money stocks by nominal GDP figures.

*Source of data*: For Taiwan, from Council for Economic Planning and Development, Republic of China, "Taiwan Statistical Data Book: 1992," p. 25, p. 135; other data are from the World Bank, "World Table," issues 1990 and 1993.

**TABLE 6**
Comparison Between CPEs And Market Economies In Asia

| System | Number of Observations | Median | Mean |
|---|---|---|---|
| CPEs | 13 | 0.468 | 0.473 |
| Market Economies | 219 | 0.395 | 0.537 |

The Mann-Whitney Test Results:

$W$ = 1660.0

P-value for $H_0$: Median (CPE) = Median (Market economies) is 0.537

The 95 percent confidence interval for the difference between the two medians is −0.1089 — −0.1481

*Note*: Minitab is used for estimation.

ing the following years quickly eliminated any possible monetary overhang. No strong evidence exists of persistent monetary overhang.

How, then can one explain the increase of the MO ratio in China during the price liberalization? During that period, as reform went on, marketization and privatization accelerated in China. Rapid economic growth at an average annual rate of 9 percent was accompanied by speedy monetization. As a result, money demand dramatically increased (Yi, 1991). This increase in real balances rather than an accumulation of the monetary overhang should explain the increase in the MO ratio.

Alexeev's (1990) hypothesis, which assumes that residents would increase their money holdings due to the rise in uncertainty during economic transition, also may partially explain the increase in the MO ratio. These explanations reconcile the seeming contradiction between price liberalization and the MO ratio growth in China during the reform.

## V. CONCLUDING REMARKS

The analysis here demonstrates a lack of strong empirical evidence to support the claim that CPEs possess excessive money stock as compared to their market counterparts. However, one should be cautious in interpreting this conclusion. First, it is stated in probabilities and does not definitely deny the existence of monetary overhang in CPEs. Second, it states that CPEs *as an economic system* do not tend to have excessive money stock and does not deny that some CPEs could experience a monetary overhang in a particular time period.

Lack of monetary overhang does not automatically preclude a general shortage or forced savings. As Chang (1993) demonstrates, general shortages and forced savings still can exist even without monetary overhang. It is very possible that widespread shortages in consumption goods markets and forced savings by households persist in a CPE that does not exhibit excessive money stock at the going aggregate price and output levels. Structural imbalance and price distortion, rather than monetary overhang may cause the shortages. For instance, a CPE, such as the former Soviet Union, might produce too much steel and other heavy industrial goods but too little consumption goods and housing, a practice that would result in widespread shortages of consumption goods. However, an examination of its

MO ratios might not indicate excessive money stock. The reason is that the overproduced, unwanted goods such as the heavy industrial products are included in nominal GNP. This increases nominal GNP, the denominator, and thus lowers the MO ratio.

If in the traditional CPEs money stock is not excessive but shortages still are widespread, then the CPEs suffer more from structural distortion than from monetary overhang. Hence, policymakers' major task in economic transition should be economic restructuring. According to conventional wisdom, the restructuring should be implemented through price liberalization, marketization, and privatization. If prices are reasonably flexible, economic restructuring in the transition does not have to lead to price explosion. Some prices will go up and some prices will go down, leaving the aggregate price level relatively stable. Eliminating shortages in the goods market will not necessarily require high inflation. However, this ideal scenario requires several conditions. (i) Prices should be reasonably downward flexible so that some prices can go down to partially offset the price increases in other goods. (ii) The government should maintain a cautious monetary policy during the transition period so that the newly-increased money supply will not push up prices. (iii) The overall money stock should not be excessive—that is, there should be no monetary overhang—on the eve of price liberalization. The analysis here eases concern over this preexisting monetary overhang. However, the first two conditions remain unsatisfied in practice. Hence, structural rigidity or reckless monetary policy rather than the unleashing of a previously existing monetary overhang better explains the current high inflation in Eastern Europe and in the former Soviet republics.

Finally, the difference between the *would-be-equilibrium money demand*, and the *status-quo-money-demand* has important policy implications. Suppose that in 1978, China was in a disequilibrium state. The actual MO ratio was 0.248. Suppose also that one somehow knew that the true status-quo-money-demand was 0.200 and the true equilibrium-money-demand was 0.300. According to the status-quo-demand definition, there was a "monetary overhang." Therefore, one might suggest a tight monetary policy in price liberalization. However, this tight money supply could be disastrous. As the country decontrolled prices and moved to the free market economy, the demand for money would increase because the equilibrium-money-demand was 0.300, larger than the current stock 0.248. This increase in money demand due to restructuring would be frustrated by the tight money supply, leading to a crisis of money shortage, known as "credit crunch," a rather common phenomenon in economic transition. Factories could not operate at their capacities, and production would fall because of the money shortage. Indeed, some politicians and economists have blamed credit crunch for the decline of national output in Russia and Poland. The findings here suggest that the monetary policy of the former CPEs in economic transition should take a dynamic vision. The money supply should follow the changes in money demand in restructuring and be aimed at the desired level at the final equilibrium state. The analysis here thus calls for a new monetary policy orientation as well as more extensive examination of the new policy.

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