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China
Statistical System in Transition

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CURRENCY EQUIVALENTS

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Y 1.00 = $0.19

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ABBREVIATIONS AND ACRONYMS

AFA	-	Accumulation of Fixed Assets
CPI	-	Consumer Price Index
DRC	-	Development Research Center
ESCAP	-	Economic and Social Commission for Asia and the Pacific
EUROSTAT	-	Statistical Office of the European Community
FIFO	-	First-In/First-Out
GDP	-	Gross Domestic Product
GFCF	-	Gross Fixed Capital Formation
GSO	-	Gross Social Output
GVAO	-	Gross Value of Agricultural Output
GVIO	-	Gross Value of Industrial Output
ICP	-	International Comparisons Project
I-O	-	Input-Output
ISIC	-	International Standard Industrial Classification
MPS	-	Material Product System
NMP	-	Net Material Product
NVA	-	Net Value Added
OG	-	Own-Grain
RPI	-	Retail Price Index
SNA	-	System of National Accounts
SPC	-	State Planning Commission
SPB	-	State Price Bureau
SRC	-	System Reform Commission
SSB	-	State Statistical Bureau
TVE	-	Township and Village Enterprise

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STATISTICAL SYSTEM IN TRANSITION

Preface

This report is based on the findings of a mission comprised of R. Chander (Statistical Advisor, DECVP, Mission Leader), Michael Ward (Principal Economist, EA1CO), Mete Durdag (Senior Economist, EA2CO), Albert Keidel (Consultant), and K.C. Yeh (Consultant), which visited China from November 4-20, 1990. Shahid Yusuf (Lead Economist, EA2DR) joined the mission for the first week while Chen Xingdong (EA2CH) assisted the mission in the field. Benjamin King (Consultant) prepared background documentation for use by the mission members. Anand Rajaram (Economist, EA2CO) assisted with the preparation of this report.

The mission was hosted by a team led by Mr. Long Hua, Director, Systems and Methods Department, State Statistical Bureau (SSB). The mission met with various departments of SSB in Beijing and with officials of the State Planning Commission, the Development Research Center, State Price Bureau, Ministry of Foreign Economic Relations and Trade, the Academy of Social Sciences, and the Systems Reform Commission. The mission visited Chongqing and met with officials of the Municipal Statistical Bureau and the County Statistical Offices. The mission wishes to record its thanks to officials of SSB for arrangements that allowed fruitful and constructive discussions.

The report reflects comments received from the Chinese authorities on the discussion draft.

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Executive Summary

A. Overview

i. The Need for Accelerated Statistical Reforms. China has recently begun systematic and far-reaching statistical reforms designed to accommodate its increasingly market-oriented economy. The current phase of these statistical reforms has led to the introduction of survey methods to supplement full reporting. In addition, China has attempted to modify its national accounting framework. A "Hybrid System" is the process of development that builds upon the Material Product System incorporating information on nonmaterial sphere activities to calculate aggregates that approximate those in the UN's System of National Accounts. This represents a marked improvement over earlier ad hoc reform arrangements and shows considerable ingenuity in combining prereform and international conventions. Given the scale and complexity of China's economy and statistical needs, the Hybrid System is an ambitious and challenging program. However, the Hybrid System suffers from a variety of shortcomings and may be insufficiently responsive to China's evolving circumstances, much less China's future needs as economic reforms unfold.

ii. Long- and Short-term Transitions. China's statistical system is currently in transition--in two senses. In a long-term sense, the system is in transition from its pre-1978 design to an eventual Chinese version of the United Nations' System of National Accounts (SNA), the basis of most statistical systems in use worldwide. The Material Product System previously in use relied heavily on the administrative collection of data recorded in a plan-oriented format and ignored nonmaterial sphere activities. The SNA, on the other hand, encompasses all economic activities. China's long-term reform goal is an "SNA with Chinese characteristics," and this statistical transition is expected to last at least another ten years. Over the short term, China's system is in transition from a system of ad hoc reforms introduced in the 1980s to the Hybrid System's full implementation, scheduled for 1995. The Chinese see this as a necessary stage in the longer-term development of an "SNA with Chinese characteristics."

iii. Current Reforms in Relation to SNA Standards. Chinese documentation frequently refers to the Hybrid System itself as the "Chinese SNA," but the Hybrid system falls short of SNA standards in four important respects. First, although the Hybrid System's national accounting framework has introduced many SNA elements missing in the MPS, the combination of activity classifications and sector categories is incomplete and lacks the versatility of SNA classifications functionally oriented for a market economy. Second, data collection channels underpinning the Hybrid System are administrative and hierarchical, requiring partial data aggregation at lower levels in the statistical system and resulting in lower reliability and higher cost than in a survey-oriented collection system. Third, data in the Hybrid System are based almost entirely

on MPS statistical concepts at the grassroots collection level, relying largely on plan-oriented physical indicators and much less on market-oriented financial indicators, resulting in distortions in reporting for some sectors, especially services. Finally, the Hybrid System is based on pricing, valuation and reporting conventions which misrepresent actual levels of useful economic activity in a variety of sectors, such as housing and in-kind employee benefits. Subsequent reforms need to address all of these shortcomings before China can enjoy the greater accuracy and flexibility promised by the SNA.

iv. Reporting of Output, Income, and Final Use. Overall, China's national accounts underreport output, income, and final use for many important sectors because of (a) scope limitations to data collection, (b) distortions in recording during grassroots data compilation, (c) conceptual misrepresentations of actual subsidy payments, and (d) insufficient value imputation to subsidized free or low-cost transactions. Some of these influences trigger a multiplier effect, because higher household consumption valuation, for example, implies higher labor cost valuation for every sector in the economy. In addition to underreporting GNP components in current prices for any given year, SSB's present methods also exaggerate China's real growth rate--in large part because GNP price deflators rely on MPS concepts and underreport the impact of price changes, resulting in insufficient corrections for inflation. Many of these issues will become more important as economic reforms--especially price reforms--continue, leading to even larger distortions.

v. Domestically-Funded Reforms and International Assistance. Recognizing the inertia of China's traditional statistical system and acknowledging the need for continuity with accustomed methodologies, this report recommends a parallel two-track design to reforms beyond the Hybrid System. One track would continue to improve Hybrid System coverage through existing administrative and ad hoc survey channels, and a second track would develop--among other changes--independent SNA measures based on concepts and techniques that reflect market-oriented financial data to measure output, income, and final use. The recommended program depends critically on a domestically-funded large-scale modernization program supplemented by compatible international provision of expertise, training, and computer technology.

B. National Accounts

vi. Integration of "Material" and "Nonmaterial" Variables. China's MPS national accounts by definition report only "material" output and consumption, which is to say, only output of physical commodities and those services making direct contribution to the production of physical commodities. At the same time, MPS definitions treat depreciation as an intermediate-input category. National income by these definitions is reflected as Net Material Product (NMP), which it reports by sector of origin as well as final use categories, and which it measures in current prices, along with historical index numbers showing real growth. The Hybrid System reports output in "nonmaterial" service-industry sectors such as health care, education, passenger transport, government administration, and residential housing. The Hybrid system combines nonmaterial services with NMP and depreciation estimates to form its officially reported GNP statistics, which regularly appear by sector of origin--but not by sector of use--measured in current prices, together with

index numbers for historical real growth. Hybrid System estimates of China's GNP are thus largely an elaborate formalization of ad hoc calculations earlier in the 1980s, which estimates GNP by attaching depreciation and nonmaterial output estimates to measures of NMP generated mainly by traditional MPS methods.

vii. Sources of Discrepancy. The presently compiled GDP accounts by final-use category reflect internal inconsistencies and reporting distortions. In general, data collection presently underreports output and income, so that when aggregate estimates for these variables are combined with demand for intermediate production inputs, remaining output might be insufficient to account for the scale of goods consumed by households and government or used for investment and net exports. As a result, a discrepancy arises between officially reported GNP and what would be obtained if shortcomings in the scope of data collection methods and valuation conventions were connected.

viii. Concern over the scope of coverage is greatest in sectors most affected by reforms, such as rural services, township and village enterprises, and services produced by the unofficial "floating" labor force of rural-urban migrants. In addition, with the breakup of administrative reporting through the commune system and with the conversion of agriculture to a household production basis, reliability of farm output reporting has deteriorated. Farm reporting inconsistencies are most serious for grain, vegetables, and animal husbandry. This report recommends--in addition to long-term reforms in data collection methods--that in the short term, SSB make satisfactory estimates of the degree of underreporting by sector and incorporate these estimates into subsequent GNP statistics.

ix. Pricing and Undervaluation. A second major cause of underreported GNP is the low valuation which Chinese prices and subsidy conventions assign to many activities--such as free enterprise housing and other benefits. MPS conventions also result in misreporting of output in an industrial sector when it belongs in a service sector. For example, commercial real estate services and most residential housing services have insignificant valuation. A second major cause of GNP discrepancies arises from misinterpretation of government subsidies, which appear in national accounts as compensation for (negative) enterprise losses rather than as government demand for (positive) output which is subsequently distributed as public goods and services. These and other conventions result in insufficient value imputations to economic activities which have grown rapidly in their own right and which have indirect multiplier influences on the valuation of virtually all other sectors in the economy.

x. Implications for Real Growth. While present practices, on balance, tend to underreport current-priced GNP in any single year, other conventions and distortions result in overreporting for real economic growth. The principal causes of overreported real growth are the too-low inflation measures used to construct GNP deflators. Consequently, a portion of reported real output growth is in fact due to inflation. In some cases, the data collected are meant to measure real growth directly--using administratively-set "constant" prices--unsophisticated practices have reported current-priced data instead. Finally, real growth exaggeration can be serious in sectors with a preponderance of new products or in which unsalable inventory is being

written down. Fuller implementation of SNA conventions would significantly reduce such distortions in real growth rate accounting.

C. Data Sources and Collection

xi. High Potential for Improvement. MPS concepts and procedures continue to dominate data recording and collection methodologies. For example, full administrative reporting is by far the most important channel for output statistics and results in numerous distortions in a variety of sectors. Reliability is further compromised because data recording at the grassroots level is still tightly tied to definitions and categories no longer suitable for China's increasingly profit-oriented economy. Sample surveys are well-developed only for the household sector--and even these have certain systematic distortions. For price surveys and indices, ad hoc reforms during the 1980s brought major improvements, but the price-reporting system remains grounded in MPS categories and on insufficiently robust weighting schemes in a system with many different prices for the same product. All-told, by far the greatest potential for statistical system reform is in China's data collection methods, which currently are responsible for the most serious shortcomings in national accounting.

xii. Full Administrative Reporting. The principal feature of China's basic data collection is its reliance on full administrative reporting for most output statistics. Administrative data collection evolved from China's centralized system of plan and production management, in that the same statistics used to evaluate production and performance at the individual management level also served as data for national output aggregates. Full administrative reporting has the convenience of speed and low cost for an industrial system with a few large and centrally managed enterprises. However, in China's rapidly diversifying economy in which the proliferation of smaller and more independent units is accelerating, the administrative reporting system breaks down as its costs of maintenance increase and as incentives for underreporting strengthen. Furthermore, the actual data collected tend to overemphasize physical output measures--a holdover from physical planning--which makes it difficult to check individual reports for internal financial consistency. Reporting based more heavily on profit, sales and balance sheet data--according to SNA guidelines--would help alleviate this weakness.

xiii. Household Surveys. SSB's household surveys--both urban and rural--are the principal tools for gauging consumer activity and citizen welfare, and in rural areas they provide critical information on the diversification of labor and output away from farming. In general, China's household sampling techniques and survey procedures have improved enormously during the 1980s and represent a relatively sophisticated capability. However, at a time when economic reforms are rapidly blurring urban-rural distinctions, the surveys suffer from their initial design, which treated the surveys mostly as a source of information on relations and differences between rural farm villages and subsidized urban households. Today, many urban workers remain officially registered in rural areas, and urban household surveys omit them from consideration. Furthermore, as late as 1990, neither the urban nor the rural survey provided any coverage of urban households in a third entirely new inmigrant registration category, because such households are outside the traditional urban subsidy system for grain and other necessities. As the

number of households in this category has increased, survey descriptions of urban household life have become increasingly inaccurate. In spite of these shortcomings, however, China's early successful experience in strengthening household survey techniques provides a valuable base for expanding survey coverage to other dimensions of the economy, especially to the measurement of output in all sectors.

xiv. Price Statistics. A variety of price statistics to show the impact of inflation on various transactions, including retail sales, urban and rural household cost of living, and agricultural output are compiled by SSB. The sampling procedures for collecting price data for goods and services in different markets has improved dramatically throughout the 1980s, but because the major price indices originated with the prereform MPS system, several important indices are either still under preparation or are unavailable. The most important needs are for industrial producer price indices, purchased raw material price indices, and construction price indices. However, the most serious distortions in China's price reporting system result from weights which overemphasize transactions at subsidized low prices and underemphasize higher-priced transactions on periodic markets outside the subsidized plan system. For these and other reasons, subsequent phases in China's statistical transition should accelerate reform in price data collection and reporting.

D. Recommendations and Technical Assistance

xv. Domestic Modernization Program. The most important component in long-term statistical reforms needed to meet SNA standards is a domestically-funded modernization program supplemented with compatible international provision of expertise, training, and equipment. The overriding purpose of the modernization program would be to develop the collection of basic data that embodies market-oriented concepts. Data collection would emphasize the use of survey techniques based on economic and financial concepts. Design and implementation of the modernization program should include collaborative cooperation from a wide range of statistically-oriented national ministries and agencies, and one of its principal purposes should be a dramatic reduction in parochial statistical secrecy. This report agrees with SSB on the usefulness of an early seminar to review the many still poorly-understood dimensions of China's statistical system and familiarity with SNA standards.

xvi. Manpower Development Strategy. This report recommends that SSB prepare and implement an appropriate training and skill development strategy as the most important part of its modernization program. The manpower development strategy should concentrate on national accounting, sampling methodologies, and the use of microcomputing technology. Its conceptual orientation should emphasize SNA principles and standards, and it should draw heavily on existing materials and programs available from other countries with well-developed SNA systems and from international agencies engaged in statistical assistance. The manpower development strategy should include programs at all levels of the statistical system--but especially at the local level--and in addition to courses, classes, and seminars it should include foreign study tours and training programs. Technical sophistication at provincial and even some county-level statistical offices in China is already relatively high, and although staff exposure to SNA concepts is in general minimal and insufficient

for subsequent stages in China's statistical transition, the potential for rapid improvement is high.

xvi. Computer Technology. China's statistical modernization program should include improved computer facilities at virtually all levels, especially at regional and local levels. In this regard, however, the modernization programs most immediate task is a full evaluation of existing capacity, projected needs, and suitable technologies. Feasibility studies should pay especially careful attention to computational needs at levels below the central level, to enable data manipulation capacities adequate to benefit from the advantages of a fully integrated data collection network.

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STATISTICAL SYSTEM IN TRANSITION

I. OVERVIEW

A. Introduction

1.1 Since 1978, China has undertaken statistical system reforms as part of overall market reforms in its centrally planned economy. By 1991, China's statistical system was in early transition between the original pre-reform system and an eventual system closely related to those used by most countries in the world. China's original national accounting framework--adapted from the system used in the Soviet Union--was a version of the well-known Material Product System (MPS). It relied on full administrative collection of data recorded in a plan-oriented MPS conceptual format. The eventual goal of China's statistical reforms is a national accounting framework based on the United Nations' System of National Accounts (SNA). The SNA relies heavily on data reported in a market-oriented conceptual format. As part of the transition to a future national accounting system, China's State Statistical Bureau (SSB) has introduced a useful "hybrid national accounting system" (the Hybrid System), which generates national accounts summary statistics compatible with both MPS and SNA. SSB expects to complete full implementation of the Hybrid System (the Full Hybrid System) in 1995. In the meantime, SSB has already introduced early phases of the Hybrid System (the Early Hybrid System).

1.2 This report reviews China's Hybrid National Accounting System, both at its current Early Hybrid stage and in its anticipated Full Hybrid form. Both Hybrid Systems are under continuous improvement, and consequently this report acknowledges that its conclusions reflect incomplete information about the full extent of current Hybrid System development. Nevertheless, while noting that SSB is attempting to develop a practical and complex bridge between the MPS and the SNA, this report concludes that the approach suffers from several serious weaknesses. For example, data collection methods used to support the Hybrid System still depend heavily on MPS institutions and procedures, resulting in gaps and distortions; the Full Hybrid is unlikely to change this dependency. Secondly, Hybrid System categories and definitions contain inconsistencies with the complete SNA which complicate interpretation of statistical results. Finally, current data reporting is based largely on a traditional MPS price system, which frequently distorts the measurement of useful output. In light of these and other difficulties, this report recommends additional statistical reforms, which it considers most important for the next phase of the transition after 1995--beyond the Full Hybrid system. As part of a national program to finance these additional statistical reforms, the report further proposes a program of technical assistance for training and equipment.

1.3 In order to appreciate the complexity of China's current statistical system, it is important to stress that it is only an intermediate step in the long transition to global SNA standards. Before economic reforms began in 1978, China's statistical system was designed to support the management of a

planned economy through full administrative data reporting. During China's first 10 years of reforms, between 1978 and 1988, coverage and methodology gradually included surveys and supplementary calculations, until China's MPS framework had a crude makeshift SNA dimension. The system was still almost entirely dependent on administrative data reflecting MPS concepts and reporting formats. With the design and compilation of a new input-output table for 1987, China began development of its Hybrid System, which formalizes earlier makeshift SNA components and introduces many of the easier and less expensive steps useful for introducing full SNA conventions and standards. Future stages in the transition to full SNA coverage will be more time-consuming and more expensive. They will need to address three dimensions of the statistical system. First, China's Hybrid national accounting framework--its categories and sector definitions--needs revision and much fuller elaboration. Second, data collection channels need to reduce their reliance on administrative reporting and significantly increase their use of sample survey reporting. Third, grassroots data recording needs to shift from formats based on MPS planning concepts to formats based on SNA concepts. Further revisions to the accounting framework should be relatively easy and inexpensive, but additional reforms in data collection channels and grassroots recording formats will be much more difficult and expensive to introduce.

1.4 In spite of many improvements, data collection methods at the heart of China's Early Hybrid System are still MPS methods reflecting the original needs and capabilities of China's pre-1978 economy. At the central level, the State Statistical Bureau (SSB) sets reporting forms and standards and presides over the collection and compilation of data. Provincial, municipal and local statistical bureaus each perform a dual role: (i) receiving reports from lower-level units and supervising supplementary data collection activities, and (ii) aggregating the information for transmission to SSB. Most recording of statistics is done at the enterprise or production unit level, but for agricultural data since the break-up of China's communes in 1981-83, responsibility for basic collection of output information and for its transmittal through the statistical chain of command has fallen to village and township officials. As a consequence, China's statistical system is still largely dependent on grassroots statistics originally intended for economic plans and bureaucratic enterprise management. For example, accounting practices at the production unit level typically pay close attention to main MPS variables--such as commodity or "material" output--and under-emphasize the recording of "nonmaterial" service outputs, which are monitored through a system of makeshift surveys and ad hoc reporting forms. Beyond the main statistical system managed by SSB, selected ministries and bureaus maintain parallel channels for gathering data from reporting units at the lowest levels of the system.

1.5 China's current price system presents a major challenge to a meaningful implementation of SNA standards because it maintains many of the essential features of pre-1978 prices. The SNA is designed to measure and analyze the extent of useful economic activity in a society. In other words, prices and values recorded and totaled under the SNA are assumed to reflect the value and usefulness to society of underlying output and consumption activities. These prices and values are called "market" prices and "market" values because through market transactions they themselves maintain a balance of supply and demand. In China, however, although many prices used for reporting output value in both current and comparable prices approximate market values, many

others are still centrally monitored and regulated, and a few are set outright by government agencies. While price regulation and intervention are common in most economies, in China certain prices are still sufficiently distorted that they misrepresent the extent of economic activity. In some extreme but widespread cases--such as for housing services--production and consumption activities are assigned little or no value at all.

1.6 In terms of China's macroeconomic national accounting framework, both the Early and Full Hybrid systems continue to use MPS aggregates, based on Marxist-Leninist economic concepts, which it expands to include the most basic aggregates of the SNA. In this way, the evolving Hybrid accounting framework still segregates "material output" from "nonmaterial" output, because one is central in the MPS while the other is important in the SNA. Nonmaterial output sectors include a variety of nonmaterial services excluded from traditional MPS reporting (see Chapter III for details). Nonproductive services are still estimated at the central government level from a variety of makeshift reporting extensions and supplementary special-purpose surveys. Other important dimensions of Hybrid national accounting reflect the incomplete nature of overall economic reforms, its dependence on MPS antecedents, and the financial and time limitations on more thorough statistical reforms. The central government still sets many low fixed depreciation rates, based on historical costs. Many currently generated social and demographic statistics were originally meant to satisfy the state's need for information on rural collectivization and delivery of rationed goods to the cities, and these older statistical traditions impact on the calculations of national accounting aggregates.

B. Brief History

1.7 The history of China's statistical system is important for understanding the strength and durability of its MPS foundation. China established its statistical system before and during its First Five-Year Plan (1953-57), when like most other new economic institutions, it was influenced heavily by models adopted by the Soviet Union. Compilation techniques and concepts adopted were based on Soviet practices. Centralization of statistical work, subordination to planning, adoption of the MPS, the emphasis on quantitative data, and a strong preference for complete enumeration through administrative reporting were main features of the system. Sample surveys employing probability sampling did not feature in the gathering of data. "Key" and "model" surveys were used to gather data to probe and verify data obtained through the reporting system.

1.8 In the second period (1958-65), with the onset of the Great Leap Forward and its aftermath, the statistical system experienced profound shocks. The distortion of statistical reports to meet politically established output targets, in the absence of checks and balances for verification of statistical reports, severely tested the credibility of the system. In the wake of the Great Leap Forward, legislation was introduced to reaffirm the importance of accuracy in statistical reporting. However, the basic organizational structure and the methods of statistical work were not altered.

1.9 The third major period encompassed the Cultural Revolution and its aftermath (1966-78) when the statistical apparatus was virtually eliminated.

There was no formal organization for gathering data, although some statistical compilations continued at the local level. Statistical work was restored in 1974 but was, in part, hindered by continuing political uncertainties and changes, which continued for a period after Mao Zedong's death in 1976. In the period immediately following the Cultural Revolution, the estimation of missing indicators, adjustment of data, and reconstitution of the reporting system were major preoccupations of the statistical authorities. No attempts were made to change the essential features of the system or the methods used for collection of data, which continued to operate through a system of periodic reports (of 10 days, 1 month, 3 months, 6 months and annual periods) sent from production units.

1.10 The task of restoring the statistical system was signaled by the State Council in October 1979 when it adopted the "Decision on Strengthening Statistical Work and Improving Statistical Organizations." The SSB was removed from the jurisdiction of the State Planning Commission (SPC) and placed directly under the control of the State Council. However, at the grassroots level, local government entities and party officials continued to exercise considerable influence over statistical activities. Distortions in reporting and the absence of statistical integrity were issues which emerged to the fore following the exposure of the Dazhai Production Brigade's inflated reporting of grain output. SSB gained greater control over local-level statistical matters. The expansion on a countrywide basis of SSB-managed sample surveys using probability sampling techniques of household incomes and prices permitted SSB to obtain independent data sets which bypassed the reporting system, thus providing some independent checks on data quality. SSB's control over budgets for statistical work at the various levels of government, and institution of a system of random checks further strengthened SSB's role. A significant step in this context was the enactment of the Statistics Law of the People's Republic of China. The law gave SSB the power to control all statistical work, to investigate and correct misreporting as well as suspected violations of data integrity. It also gave SSB the right to impose legal sanctions.

1.11 The restoration and rehabilitation of the statistical system after the upheavals of the Cultural Revolution was largely accomplished by the mid-1980s and involved a series of adjustments and makeshift improvements to the basic pre-reform system. This phase coincided with the introduction of economic reforms and restructuring of the economy. SSB responded to new needs for timely, accurate and more comprehensive data. In terms of emphasis, SSB commenced work on transforming the MPS aggregates into their corresponding SNA equivalents, in large part to provide international comparability and to satisfy the requirements of international donor agencies. Compilation of overall current GDP estimates, along with the construction of a time series, was given priority. Since the economic reforms had introduced markets for some products, with prices determined in part by market forces, the expanded need for price statistics was met through the collection of prices in various markets and the compilation of expanded indices of urban and rural prices. An industrial census was carried out in 1986. External trade statistics based on the Standard International Classification of Trade were collected beginning in 1981. SSB extended its program of urban and rural surveys of households. The dissemination of data became an important aspect of SSB's work with regular release of statistical bulletins, and the publication of the Yearbook starting

in 1981. Chinese and foreign researchers began to make international comparisons, and obtain a fuller understanding of Chinese statistical methods.

1.12 SSB also moved ahead in a number of other areas which prepared the way for gradual introduction of the Hybrid System in the early 1990s. The compilation of input-output tables for 1981 and 1987 necessitated the collection of new statistical series and interconnected data which, in turn, led to improvements in the coverage of the economy, especially in the services sector which was growing rapidly as a consequence of the introduction of market-oriented reforms. New mechanisms for gathering information in the agricultural sector were put in place following the elimination of the commune system. The growth of township and village enterprises (TVEs), operating under relatively less regulation, posed new challenges for the statistical system, as business registers had to be developed and reporting arrangements put in place for the collection of data from these medium- and small-scale enterprises outside the traditional state-owned and urban collective system. Alongside these changes, SSB began a reexamination of the pure MPS aggregation framework to prepare for its eventual replacement by the Hybrid System, that would generate economic aggregates to meet both MPS and SNA prescriptions. This effort continued through 1991, so that by 1992 the Chinese authorities will have a dual system of national accounting. Even the Full Hybrid System maintains basic MPS features to satisfy central planning requirements still important for managing the current economic system. The Hybrid System's incorporation of SNA components, at least in part, is being pursued with two objectives in mind, namely to provide information for purposes of international comparisons and as a tool for measuring and monitoring the progress of an increasingly market-oriented economy.

1.13 The gains made by China in the statistical field over the past decade are indeed impressive and much has been achieved. Yet, much more needs to be done. The challenge in the years ahead is for China to put in place a system that adequately responds to the changing institutional framework of an economy in transition to one with much greater reliance on market forces. The existing system of reporting from the grassroots level, through forms using MPS-related concepts, will need to be modified into a system of questionnaires that employ basic SNA accounting and economic concepts. In brief, China's statistical system, which at present is essentially an expanded bookkeeping system, will need to be transformed into a system whose orientation is statistical in the sense that it employs appropriate commercial accounting and economic concepts associated with a market-oriented economy. The transformation must begin with an overhaul of the national accounting framework going beyond the changes embodied in the Hybrid System, and proceed to the use of surveys and censuses to supplement administrative reporting.

C. Features of China's Statistical System

1.14 Three features of China's statistical system are most important for evaluating its effectiveness and suitability for a market-oriented economy: (i) the formal framework in which final and intermediate national accounts are presented, (ii) the way that basic data at the lowest level are reported, collected, collated, corrected, and sent to higher offices for aggregation and ultimate publication, and (iii) the degree to which the nature of the statistical system itself--and especially its data collection arrangements--intro-

duce systematic quality and reporting irregularities. In other words, fundamental to any judgments about the quality of Chinese statistics is a proper understanding of how and why the basic numbers are put together at the primary source of information.

1.15 Altering the National Accounting Framework. In the field of national accounts, the SSB has made serious attempts at least to change the presentation of its measures of China's development progress. At first, in the middle 1980s, supplementary SNA measures were limited to estimation of GDP and GNP for selected benchmark years. Government officials explained that early GNP statistics were based on the application of a crudely estimated percentage allowance for nonmaterial services and an adjustment for depreciation. Later in the 1980s, GNP was reported in three sectors (primary, secondary, and tertiary) in current- and constant-priced time series going back to 1978. SSB also began reporting labor force statistics according to these same three categories. In its national accounting statistics for 1990, SSB added additional GNP subsector time series for industry, construction, transport, and commerce.

1.16 In spite of these makeshift adaptations of MPS data to SNA categories in the latter 1980s, the basic underlying system of data organization, existing accounting guidelines and procedures, and standard reporting conventions at the enterprise level were altered very little. Nor do plans exist to fundamentally change these procedures under the Hybrid System. Production data continue to be collected within the context of the traditional requirements, focusing primarily on material output and physical volume measures. Nonmaterial sectors and service inputs, which are rapidly changing and expanding, are insufficiently quantified and covered. Activities outside direct state control and supervision are poorly captured in official statistics. Overall, shortcomings of the current transitional system are of two kinds: those that are random in nature, and those that have a significant skew in one direction or another. SSB has endeavored to launch new inquiries to meet these challenges, but more rapid progress will depend on SSB having enhanced authority and additional resources.

1.17 Developments in Data Collection. In spite of the comprehensive nature of the data collection network inherited by reformers in the 1980s, there were built-in incentives for distorted reporting at the most basic levels, incentives which continue to exist. China's MPS before 1978 needed a comprehensive standardized statistical reporting system as a management tool on a short-term basis to monitor production inputs and outputs. More than this, the system of data collection also served to measure the degree of success or failure in physical plan fulfillment. In the pre-1978 period, such regular data reporting rapidly became established as an integral element of the overall performance rating of the units concerned.

1.18 Although its data collection methods are going through a complex transition, the SSB still relies heavily on its traditional mainstream bureaucratic and plan management reporting procedures because, in principle, this procedure promises comprehensive, 100 percent coverage of all economic activities. In recent years with the development of a dual-track statistical system of surveys and comprehensive reporting, the situation has become more complex, and data collection for critical subsectors has increasingly relied on sample

surveys. SSB is nevertheless still guided by the belief that for planning purposes the state needs full information on economic activity. It further believes that, if some units were to slip through the net of enterprise performance monitoring, statistics would be incomplete.

1.19 Many opportunities for error in the current system are random in nature. Because local officials and operators sometimes modify the data they submit to higher authorities and to the SSB; and because, further up the line at the provincial and state levels where the data are compiled, there is no easy way of discovering the modification, it is difficult to apply objective methods to test the reliability of the statistics. Indeed, few report forms are ever queried or returned for checking and revision, unless gaps have been left in the schedule. This is not least because SSB itself does not have the capacity. While the degree of reliability varies according to the type of data, key statistics relating to unemployment, sector growth rates and price movements are good cases in point where Chinese officials themselves have raised these concerns.

1.20 Basic Data Collection and Reporting Distortions. In spite of the attraction of comprehensive coverage through administrative reporting, the inextricable linkage between data collected as a basis for policy analysis, and data which report on the fulfillment of government objectives (which in many instances have the status of directives) leads to incentives and opportunity for reporting distortions. Under the circumstances, some and possibly many producing units will circumvent official inspection and associated "in-depth" study not so much by meeting their defined goals, but by adjusting their books to appear to have done so. They reconcile differences in input and output levels, or discrepancies between production and sales, for example, by adjusting changes in stocks. In this way, enterprises can paint a better picture than justified by their actual performance. Some production units also alter their records to take maximum advantage of various investment and export incentives and other subsidies. Thus, under the traditional comprehensive data collection system, the nature of the data collection system itself promotes distortions in statistics on both the structure of production and the level of output.

1.21 What is more, newly introduced sample survey procedures, as presently employed, may represent very little improvement over traditional reporting methods. While allegedly "random," these surveys are often based on the use of incomplete sampling frames, mostly generated by the registration process. Furthermore, the extraordinary high survey response rates that have been achieved in official surveys which, in most instances, are in the region of 99 percent of the units chosen (with each unit providing allegedly 100 percent full reporting) seem to reflect what are technically known as both a selection bias and a response bias. In China's circumstances, the role of official enumerators and their direct involvement in these surveys can also be seen as having either a negative or positive effect on the nature of the responses obtained.

D. Agenda for the Future

1.22 This report reviews existing statistical procedures and practices and points out the methodological, conceptual, and computational shortcomings

that currently characterize the compilation of various statistical series. An attempt is made to indicate how these practices influence the calculation of national accounting aggregates in both the MPS and SNA frameworks, including currently published estimates of national income and GDP. This report notes the distortions that exist in estimates of national output and income and their respective components under both MPS and SNA formats. From a macroeconomic policy viewpoint, the implications of these output and growth rate distortions are serious enough to warrant a review of the existing national accounts by SSB, acting collaboratively with major state agencies and external national accounting experts. Chapter VII contains a number of specific recommendations in this regard.

1.23 The report goes on to assess SSB's proposed Full Hybrid System of national accounts, which will permit the calculation of both NMP and GDP estimates. The report questions how much the Hybrid System will be able to satisfy China's desire for a system to serve the needs of a "Socialist Commodity-Planned Economy." It should be noted again that the Hybrid system will retain an MPS orientation at its core. The weaknesses of the MPS, as an organizing framework for national accounting, have been widely recognized by countries that have traditionally employed the MPS system. Most of these countries are now--like China--in the process of adopting the SNA. If China were to treat its Hybrid System as the end-product in its transition to a national accounting system compatible with widespread market activity, it would be the only major country that intends to retain a core reliance on the MPS approach to national accounting. This report argues that the Hybrid System will not sufficiently articulate China's needs over the longer term, and hence this report proposes further reforms in the direction of a full SNA--or, at least, a full SNA with Chinese characteristics.

1.24 Chapter VIII recommends that China eventually adopt the full SNA, because of China's need for a tool for managing its vast and increasingly complex economy, and as a basis for improving its development strategy based on more accurate international comparisons. The report concedes, however, that adoption of a full SNA framework in the immediate future would be problematic, because present data collection arrangements will not permit such a rapid introduction. Reforming the statistical system with all its data collection complexities will take time and will, of necessity, have to precede actions on the national accounting front.

1.25 The report argues that, as its next step, SSB should retain a dual system that permits calculations of both MPS and SNA aggregates (such as Net Material Product or NMP, as well as GDP). However, GDP calculations should be organized more systematically within the context of a clearly established set of tables employing well-defined classifications, accounting rules and conventions that recognize world standards for the SNA. The report therefore, recommends that SSB move forward in three distinct phases:

(a) review and adjust the presently evolving Hybrid System of national accounts, eliminating systematic distortions as much as possible;

(b) introduce, alongside the maturing Hybrid accounting system, a parallel interim SNA-based set of accounts; SNA-based concepts should be

embodied in sample surveys and into the administrative collection of data; and

(c) fully adopt the SNA at the end of a transition phase spanning five to seven years during which SSB should train its staff and introduce changes in the procedures underlying the recording and collection of primary data.

1.26 China's long isolation from the international statistical community and the 1966-76 Cultural Revolution left legacies which, although rapidly disappearing, are still evident in the statistical system. One of these legacies is a general scarcity of highly skilled statistical personnel and a shortage of specialists familiar with the SNA and compatible techniques. Modernization of the statistical system and the introduction of such a different approach to statistical work will demand the upgrading of skills. Training, therefore, assumes the highest priority. Given the size of China's statistical system and the number of personnel involved, the process of training will take time. A dual approach is required: training senior officials by exposing them to international statistical practices and approaches, while training the bulk of statistical personnel through well-managed in-country programs at various levels of the statistical system. Recommendations along these lines are outlined in Chapter IX, built around proposals that SSB itself has identified in part. International technical cooperation in this regard is essential, and it is recommended that a program--to complement SSB's own efforts--be developed and funded for this purpose.

1.27 Although SSB has made progress in adopting modern computing technology, particularly in processing the population census of 1990, existing computing capacity is limited. The availability of hardware at the local level, and at the provincial and county statistical offices, in particular, falls short of requirements. It is recommended that additional hardware be installed. While SSB itself has computing capacity for aggregating and tabulating summary returns from the lower levels of the statistical system, it needs to enhance its capacity for handling larger volumes of data that will inevitably flow as new surveys and collections are introduced. Furthermore, if the recommendation that SSB receive a selection of original forms, rather than just provincially aggregated returns, is adopted, SSB will require a larger computing capacity. For these reasons, it is recommended that SSB seek authority to acquire additional computing hardware, and, in parallel, develop appropriate software.

1.28 The report further argues, however, that a large training and hardware acquisition program is possible only if the government expends significant resources to introduce a parallel interim SNA-based data recording and collection network of the kind described above. Changes in design and computing capacity need to be matched by introduction of a basic and comprehensive sample survey data collection system independent of traditional enterprise performance statistics and management personnel. Without investment now in an interim SNA-based system, China by the end of the century will still find that its national accounting measures of economic performance provide insufficient support for short-term macro policy and insufficient background information for improving longer-term development strategies.

E. Structure of the Report

1.29 The following chapters examine the MPS-SNA hybrid system of national accounting with a view to identifying its adequacy for macroeconomic policy formulation as well as international comparison. Chapters II and III provide a detailed description of the methods used to derive current-price estimates of GDP and identifies the problems of valuation and coverage in need of correction. Chapter IV discusses China's price system and the estimation of national accounts at constant prices. Chapter IV is especially significant for understanding the distortion in measurement of inflation, real growth of GDP, and growth of its sectoral components. Chapter V reviews construction of price indices in China. The design and coverage underlying household surveys is the subject of Chapter VI. Chapter VII provides an assessment of the quantitative significance of distortions in the various components of China's GDP. This assessment suggests that making appropriate corrections to the measurement and coverage errors will, in net, lead to an upward adjustment of the estimate of China's GDP. On the other hand, estimates of the rate of growth of GDP will tend to be revised downward. Finally, Chapter VIII provides an assessment of the hybrid system of national accounts, and Chapter IX closes with recommendations for organizational and methodological reform.

II. NATIONAL ACCOUNTS IN CURRENT PRICES

A. Introduction

2.1 This chapter, together with Chapter III on the service sector, provides a review of the current estimation of Gross National Product (GNP) in current prices, one of the most important aggregate statistics. These two chapters explain the special features of this Early Hybrid process and its origins in China's prereform Material Product System (MPS) methodologies. These chapters also identify the main drawbacks in China's current-price national accounting, many of which result from continued dependence on MPS concepts and data collection arrangements. In terms of statistical data gathering, the current Early Hybrid System relies heavily on comprehensive reporting by production units, even though it has added some household, farm, and enterprise surveys. In calculations and final statistics, the Early Hybrid System supplements its MPS reporting with basic SNA aggregates, such as GNP and its closely related GDP counterpart, but an MPS orientation continues to set and articulate the Early Hybrid System's national accounts, including its intrinsic axioms, definitions, classifications, and assumed interrelationships.

B. Structure of the Statistical System

2.2 The organizational structure of China's statistical system is based on centralized leadership at the national level, with responsibilities distributed to different levels of the governmental machinery. Acting under the authority of the State Council, the central leadership's role is discharged by the State Statistical Bureau (SSB), which has the overall responsibility for defining statistical priorities, standards, methodologies and for arranging the collection of statistical information by lower-level entities at the provincial, county and municipal levels. Thus, SSB is in charge of organizing, directing, and coordinating statistical work throughout the nation. At the provincial level, the Provincial Bureaus perform functions for, and on behalf of, SSB, but also undertake other statistical tasks that are determined and funded by Provincial Governments. Local governmental-level bureaus execute statistical programs within their respective jurisdictions and collect data through reporting forms from reporting units. These reports are then aggregated and the results transmitted to the Provincial Bureaus. The Provincial Bureaus in turn aggregate reports from the local statistical offices for eventual transmission to SSB. SSB has the responsibility for aggregating reports received, and consolidating survey results, apart from the preparation of national accounts. The statistical organization of China is best depicted graphically. Chart 9.1 shows the interrelationships between various organs of the government. SSB's internal organization structure is depicted in Chart 9.2.

2.3 Functional Ministries at the central level also play a significant statistical role. These statistical units in turn have statistical cells at the provincial and local levels. The data gathering activities of these non-SSB statistical agencies are similarly organized as in the mainline statistical system managed by SSB. Although these statistical units are separately funded and managed by the functional ministries, SSB's role is that of provid-

ing professional and technical guidance to staff in these units at various levels of the system. Thus, even though there is a dual-track system in place, SSB can and does have overall jurisdiction in guiding statistical work, and all staff belonging to the statistical cadre.

2.4 Underpinning the entire statistical system are the staff engaged in statistical work at the enterprise or production unit level. SSB officials indicated that there are approximately 70,000 staff engaged in statistical work at and above the county level. If account is taken of personnel at the enterprise level, there are approximately 800,000 workers in all engaged on statistical work. This number is considerably enlarged when a special survey or census is undertaken and it should be noted that since the central government funds the budgetary expenditures of the provincial and local statistical bureaus, SSB is able to exercise control over statistical operations throughout the nation. However, the provincial bureaus do obtain supplementary funding for those tasks that are to support purely local needs. These supplementary resources are used for special collections on topics not mandated by SSB or for enlarged coverage of reporting units.

C. China's System of National Accounting

(a) Valuation and Pricing

2.5 The legacy of China's pre-1978 MPS valuation framework heavily influences China's Early Hybrid System of national accounting. The MPS framework, with its insignificant valuations for many bartered and rationed goods and with its many state-determined prices, distorts the measurement of economic activity. Some of these distortions, such as the near-zero valuation for many housing services, are obvious and can be fairly easily corrected. Other distortions are more subtle and much more difficult to correct, such as the combination of nonmarket input and output prices in some energy sectors, a combination which often results in official data showing enterprise losses and large government subsidies. These data misrepresent the contribution of these energy sectors to the national economy and result in a statistical underreporting of their corresponding value-added components in GNP. The fundamental difficulty with relying so heavily on MPS valuation principles is that although they refer to actual transactions, many transactions in China are not market transactions. That is to say, goods and money change hands in many transactions, but the amounts involved are determined by bureaucratic regulations, and the prices implied by the transactions frequently have little bearing on the social usefulness of the goods and services involved.

2.6 Controversy over the correspondence between actual price and underlying value is as old as Economics itself. This theoretical issue's practical significance, however, is rarely as clear-cut as in China. China's prices and valuation conventions significantly distort officially reported GNP. But practical and consistent remedies are hard to prescribe, and more accurate measurements are dependent upon China's gradually unfolding national price reform. Nevertheless, three pricing dimensions are important for evaluating China's national accounts. First, near-zero valuations for many transactions and low MPS-based estimates for poorly reported sectors are a major source of distortion in overall results. Second, subsidy accounting conventions, which distort the role of government finance, introduce irregularities in reporting

for some sectors--for example, when they misinterpret (positive) government purchases of output as (negative) government subsidies. Third, the data collection process often reports transactions at their actual government-regulated prices rather than converting them to values based on more meaningful market-oriented transactions, and as a result, the corresponding GNP components themselves misrepresent the true extent of economic activity. Questions of pricing and valuation appear throughout these and subsequent chapters. Chapter VII addresses their possible quantitative significance.

(b) Statistical Categories and Sectors

2.7 As noted earlier SSB has endeavored, since the late 1970s, to derive SNA-based estimates of Gross Domestic Product and Gross National Product from national accounts based on the MPS by using broad adjustments for elements that are excluded from Net Material Product (NMP). These adjustments cover (a) output estimates for those activities that are considered "nonmaterial" in the MPS and (b) the addition of estimates for depreciation. The latter adjustment is made to obtain "gross" national income measures like GDP and GNP (in contrast to NMP, which is net of depreciation). This makeshift methodology remains at the heart of China's current estimates of national income, which nevertheless do have significantly more detail and internal consistency than estimates from earlier phases of China's statistical transition.

2.8 The present accounts show separate information on both Material Production, recognized by the MPS, and Nonmaterial Production, an important part of the SNA. The two areas are defined as follows:

(a) Material production includes five sectors: agriculture, industry, transportation, construction, and commerce. The dominant material production sectors recognized in the MPS in China are the primary and secondary sectors (see below).

(b) Nonmaterial production sectors include all kinds of services other than commerce and certain personal transport services. It should be noted that commerce is statistically classified as part of the material production sector. There are many areas where material and nonmaterial services cannot be easily distinguished and hence separated from each other in practice. Even when measuring output in a branch of industry, particularly in services, the distribution method, i.e., income approach, is used.

2.9 Output, investment projects, and labor are classified as productive or nonproductive according to whether they are directly related to material production. Productive projects refer to those which increase material production or that directly serve material production. Nonproductive projects refer mainly to such services as residential building services, public services, and facilities for scientific research, culture, education, and health care.

2.10 China's GNP estimates combine both productive and nonproductive activity and divide output estimates into three main sectors: the primary (agriculture, animal husbandry and fisheries), the secondary (mining, manufacturing, water, gas and electricity, and construction) and tertiary (all other)

industries. This section of the report reviews general Early Hybrid System methodologies, while subsequent sections focus on individual sectors in more detail. In considering output estimates for different sectors, the underlying valuation procedures and the extent of their coverage have direct and indirect effects on their shares of national output. These procedures are especially important when considering different types of enterprise. Generally, faster growing private and collective enterprises are far less well accounted for in total output analysis than those in the State sector. As these nonstate-sector operations increase their share of total output, the problem of their adequate valuation will become increasingly significant.

2.11 Enterprise types and their nonproductive status deserve special attention because so many MPS-based statistics refer exclusively to state-system productive activities; nonproductive, rural, and other nonstate-system activities receive much less emphasis if they appear at all. If a statistic is comprehensive in the SNA sense, it is often referred to as "of society" or "social," e.g., total investment of society, social labor force. The addition of the words "social" or "of society" means that data include all forms of ownership. For example, "social labor force" includes all employed and self-employed individuals by all kinds of ownership units in urban and rural areas, and "social" consumption essentially refers to goods and services collectively provided by enterprises or the state where the specific individual beneficiary cannot be directly identified.

2.12 The Early Hybrid System's major extension beyond the traditional MPS is its addition of information on nonproductive tertiary activities. The tertiary industry as defined by SSB, however, roughly corresponds to only part of the SNA service sector, and there are important gaps and differences (see Chapter III). The Early Hybrid System tertiary sector comprises four broad categories of service industries. The first category includes the following distributive services: freight and passenger transport, post, telecommunications, commerce, food catering, material supply, marketing, and storage. The second category consists of activities serving production and personal consumption, such as financial institutions, insurance, geological surveys, technical services, consultative and information services, real estate, public utilities, and personal services (tourism, hotels, barber shops, bathhouses, laundry, photo shops, repair shops, and miscellaneous personal services). The third category includes the social services, such as education, cultural services, radio and television broadcasting, research and scientific services, health services, sports and social welfare services. The fourth category relates to public services, including public administration, national defense, police, and political and social organizations.

(c) Data Collection

2.13 China's present national accounts are a significant improvement over the pre-1978 MPS accounts and their post-1978 makeshift extensions, and many of those extensions included new statistical elements and data collection categories. Nevertheless, the overall Early Hybrid system data collection framework is still based fundamentally on MPS concepts and definitions. As a transitional arrangement, the MPS foundation has a wide variety of important advantages, including continuity, reliability, familiarity, and its vast supporting network of skilled and trained statistical personnel. As a foundation

for more useful SNA-oriented national accounts at later stages in the transition, however, the Hybrid data framework is disadvantaged by its MPS origins.

2.14 The whole approach and emphasis of information compilation in market economies is different from that of a planned economy. It represents a significant movement away from a data system that focuses primary attention on physical output measurement. The treatment of stocks (inventories)--and the perception of their importance--highlights several of the fundamental differences between MPS principles and market-oriented SNA philosophies. In the former, stocks are seen as a source of wealth and a protection against shortages. Seen in an SNA context, however, any significant change in stocks represents a potentially important signal that may reflect a shift in market conditions. It indicates a possible switch in the pattern of demand. The two approaches therefore lead to entirely different underlying concepts of valuation. In the centrally planned and essentially supply-driven case, net income and GDP tend to get exaggerated when inventories accumulate; in a market-oriented demand-driven system, a portion of the value of unsalable stocks is often written off and accounted for as a cost, resulting in a reduction in GDP.

2.15 Because of its MPS data foundation, China's national accounts systematically understate real income flows in many areas of output measurement, such as the implied depreciation of capital, the imputations of income from home ownership, the value of own-account production by households, and the production of services. Even when such gaps are taken into account, the problem is not always satisfactorily resolved because of the prevailing price distortions which frequently fail to reflect relative scarcities in the economy. It appears that even a uniformly consistent "cost-plus" basis of pricing which might approximate average costs, even if it did not reflect relative marginal costs, does not function well in China.

2.16 Quite apart from the problem of determining the appropriate <u>level</u> of output and net income generated by enterprises, the data framework has corresponding difficulties in monitoring <u>changes</u> in prices and production. As described in more detail in the following sections and chapters, these arise for methodological as well as for practical measurement reasons. This is not least because of the different sets of prices that prevail for the same product in different markets. These different prices are frequently decreed by political/administrative fiat, rather than being determined by economic forces. In addition, for time series analysis, there are problems of coverage involving the incorporation of new products as well as new enterprises, especially at the township, village and below-village level. At the same time, the data need to take account of the cost of disposing of worthless goods. These are goods that nobody wants but whose values are nevertheless still reflected in current output series. In addition, the maintenance of consistent and continuous historical series poses problems. This will become progressively more an issue as the government succeeds in steering its economy through price reform and other economic reforms.

(d) <u>National Accounting Aggregates</u>

2.17 To understand how current-priced GDP is calculated in China, it is first necessary to know how the various aggregates are compiled, since the

traditional material balances still form the basis for its SNA aggregates. A description of how Hybrid System estimates are obtained will clarify deficiencies inherent in the basic data and implied inconsistencies in the resulting aggregates. Apart from a certain amount of self-selective distortion in the basic data, Chinese authorities explained that they are not entirely happy with the regular statistical returns coming up through the traditional route from the enterprises to the counties, municipalities and provinces. In compiling national accounts, SSB has encountered problems relating to the availability of statistics in the form needed (specifically with respect to service sector measurement in all areas of activity), difficulties over the absence of appropriate classification schemes that are internationally recognized, and growing gaps in the data provided by the provinces, ministries and, especially, TVEs. These issues are further explored in this and the next two chapters.

2.18 Responsibility for compiling national accounts aggregates lies with the SSB's Department of National Economic Balance Statistics (the Balance Bureau). The Balance Bureau gathers statistics from all the other bureaus in SSB and from elsewhere in the government system (usually the Planning Bureaus in other Ministries). It uses these data to estimate, correct, and reconcile reported data, combining them into mutually consistent national aggregates and input-output table components. The Balance Bureau is therefore in a position to exercise considerable judgment in the process of deriving current-priced GDP and other national accounting aggregates. This process is summarized below.

Derivation of National Accounting Aggregates in Current Prices

2.19 China's currently published official GNP statistics begin in 1978, but the early figures are mostly estimates extrapolated backwards from baseline studies conducted some years later. The most recent GNP estimates are anchored on the 1987 input-output table as the main reference point. This table provides a framework for both consolidating and integrating data from diverse sources. It contains the most independent information and provides the clearest picture of the relationships between sectors. (See below paras. 2.35-2.39 for further discussion of China's I-O tables.)

2.20 Depending on the activity concerned, national accounting aggregates are compiled using a combination of three independent approaches: the production, distribution (income), and expenditure approaches. In all material production sectors of the economy, both the production and distribution method are combined to obtain estimates of value added. Before 1985, the income method--relying mostly on tax records and report forms--was used; but after 1985, following the Census of Industry, information in both formats was collected at the enterprise level which was responsible itself for calculating enterprise NMP components. Imbalances at the enterprise level were often reflected in adjustments to data on changes in stocks.

2.21 Combined Production and Income Approach. China's GNP statistics are compiled primarily on an industry of origin basis rather than on a final expenditure basis, although this differs by sectors. Given the MPS legacy, value added estimates for primary and secondary sectors are compiled initially with the production approach from calculations of the difference between each

sector's Gross Value of Output (GVO) and its cost of material inputs, with necessary adjustments made for depreciation and the treatment of nonmaterial service outlays and interest charges. In addition, and almost universally for services, income (distribution) figures from financial statements and tax returns are often used to compile detailed sector estimates of value added. In essence, therefore, current calculations of China's GNP essentially involve an adjustment to the system's traditional Net Material Product (NMP) value-added measure, since NMP is the summation of material-sector GVOs into Gross Social Output (GSO) for the nation, from which intermediate consumption estimates are then deducted. For the earlier years of China's current GNP time series, roughly 13 percent was simply added to corresponding NMP levels to account for the net output of the services sector. Presently, however, GNP aggregates include much more detailed estimates of (tertiary) service sector subtotals.

The Distribution (Income or Transfer) Approach

2.22 At the core of national aggregate estimates is the GSO (Gross Social Output) of enterprises which, from the perspective of the distribution (value added) viewpoint, is equal to the sum of wages, salaries and benefits, profit, taxes, etc., as described below. The main sources of income data are tax returns, household surveys, and the financial reports of enterprises. In principle, estimates of production and expenditure are also made, respectively, by sector in the case of output, and in terms of overall aggregates for final expenditure. This approach to net income measurement is used exclusively in determining the contribution of the tertiary sector to national output and is also adopted in those sectors where the estimation of intermediate consumption is problematic. Estimates of GSO at the enterprise level are derived from the following:

Wages and Salaries
+ Intermediate inputs of commodities related to production, including the commodities used in providing "nonproductive" services;
+ Benefits to employees (welfare charges, medical care, trade union activities, etc.)
+ Taxes paid to Government and other transfers, less subsidies;
+ Profit (including, implicitly, interest);
+ Other miscellaneous charges (such as consumption of nonmaterialso in record of production).
= Gross Social Output

When aggregated across enterprises by industrial sector, the result is GSO for the economy as a whole.

2.23 In general, profits and taxes are derived as a residual at the enterprise level, except in agriculture where profits and taxes are the sum of agricultural taxes and a comparatively small amount of profits in agricultural enterprises, and specifically state farms. The main residual is income from self-employment in agriculture.

2.24 Estimates of the current-priced gross product (output) of an enterprise are made on the basis of sales or using the so-called "first price" method. The "first price" method in much of agriculture and for Township and

Village Enterprises (TVEs), is the product's or crop's first recorded price in a calendar year, which is used for the remainder of that year as the "current price" and multiplied by regularly reported physical output statistics collected mostly through the traditional reporting network.

2.25 Indirect Taxes and New Products. In addition to the MPS data issues mentioned above, two methodological problems complicate the measurement of value added in current prices: the inclusion of indirect taxes in value added, and the pricing of new products.1/ As noted earlier, indirect taxes are treated as a factor payment in SSB's distribution approach. This procedure creates some difficulties in international comparison. First, it results in an estimate of value added larger than if it were measured in terms of true factor cost. Second, because implicit indirect taxes in China are levied mainly on industrial products rather than agricultural products, the SSB's valuation procedures overstate industry's share in GDP, compared to what it would be using factor cost standards. For growth rate analysis, industry's exaggerated share in GDP is equivalent to over-weighting industrial output growth, which has been much more rapid than for agriculture both over the last four decades and in the latter 1980s. This over-weighting results in a GDP growth rate higher than would have been the case if the price weights were net of China's implicit indirect taxes. The issue is complicated because implicit taxes and subsidies are often indistinguishable from a variety of artificial elements in China's price system.

2.26 Pricing for new products introduces a second set of complications, which became a significant concern very early in the reform era. New products are priced at the average cost of trial production plus 5 to 10 percent profit.2/ Because of diseconomies of scale and the lack of experience at the initial stage, costs are generally higher than at a subsequent stage when full production has commenced. Hence, the prices of new products are rather high. Over time, unit costs decline, but the prices of these products often remain at their high initial levels--for two reasons: the enterprise producing the new product is reluctant to lower the price because it would reduce overall profits; and, secondly, the tax authorities oppose a price decline because it would reduce state revenues.3/ This problem became more widespread as reforms deepened in the 1980s.

2.27 In principle, the use of high initial cost estimates to set prices coupled with declining costs results in a rapidly increasing value added per

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1/ There are also problems in the SSB's underestimating depreciation and the use of arbitrary price weights that favor the heavy industries. The former practice tends to underestimate, and the latter overestimate the value added in heavy industries relative to that in the light industries. To some extent these biases offset each other.

2/ Xu Yi, Chen Baosun, and Liang Wuxia, Problems of Prices Under Socialism (in Chinese), China Public Finance and Economic Publishing House, Beijing, 1982, p. 142.

3/ Hu Changlun, Study of Prices (in Chinese), People's University Press, Beijing, 1982, p. 48.

unit of output for new products. In physical terms, the growth of new products is generally rapid because of the start from a low base. Consequently, where it occurs, a high rate of growth of physical output and an increasingly large value added per unit of output combine to yield a rapidly growing net output in current prices. This particular phenomenon often leads to unwanted inventory build-ups, described above. Some so-called "new products" (of different color or size) experience slow sales, but stocks pile up and are reported as new output at full value.

2.28 Traditionally, most new products were found in the machine-building industry. In recent years, however, more new consumer goods have appeared in the marketplace. In particular, many products produced by rural industries have been classified as new by the local authorities to justify higher prices and to maximize profits. Growth rates for a number of such industries are therefore probably significantly overstated.

2.29 For the reasons discussed above, the estimates of the share of industry in both NMP and GNP are distorted. The total measures of NMP and GDP are therefore also affected. Estimates of growth of both aggregate measures and those of the industrial sector are influenced in the same way. It should also be noted that in the absence of "comparable" priced output, the current priced values are used in calculating constant price NMP and GDP.

2.30 Depreciation. Treatment of depreciation is another issue important for calculation of current-priced GNP. State enterprises are required to maintain very detailed accounts of depreciation by asset. Depreciation rates are clearly defined centrally. They are fixed by type of asset and no enterprise is allowed to alter the rate it is directed to apply. Enterprises are also not permitted to change the original value of an asset. This is determined by its historical purchase price and affected only by subsequent costs of repair (but not by regular maintenance charges). Information provided by enterprises is used to derive an average ratio of depreciation to output which is applied to other activities and units where output figures are available, but estimates of depreciation are not. In these situations, particularly in the case of TVE's, indirect methods for calculating depreciation on the basis of estimated value added and derived depreciation: value-added ratios have to be applied. Annual checks by SSB of enterprise coverage in the late 1980s revealed a growing problem of incomplete data, with missing information from returns submitted and missing firms for which such estimation procedures must be applied.

2.31 The issues of depreciation accounting in China involve both an element of stock adjustment, as well as the related adjustment of flow accounts. Part of this may simply be a reflection of applying too long a write-off period. First, the valuation of existing capital stock is problematic for a number of reasons: a substantial proportion of machinery and equipment would, by international standards, be considered obsolete and of zero or negligible value. However, they continue to be reported as part of China's productive assets and depreciation is recorded on the total. Second, to the degree that China's historical pricing system overpriced equipment and machinery, currently-used estimates of capital assets at original value are too high. Both overvaluation of capital assets and inadequate recognition of technical and

economic obsolescence lead to overestimated capital stock and exaggerated depreciation charges.

2.32 A second problem, which would work in the other direction, is that the rates used are far below economic rates of depreciation, resulting in inadequate deduction of depreciation. Using such low rates will also result in the overstatement of the value of the undepreciated asset base. This clearly ties in with the problem noted earlier, of assets which ought to have been fully depreciated but which are still recorded as having economic value.

2.33 Finally, the use of historical asset cost leads to an underestimation of the value of assets in an inflationary situation. In principle, assets should be valued at replacement cost or, alternatively, the undepreciated basis ought to be indexed for inflation. Using the historical cost basis leads to an underestimate both of the nominal value of capital stock as well as a lower-than-appropriate depreciation measure.

2.34 In sum, it is clear that the measurement of capital stock and the accounting of depreciation result in a complex of conflicting influences and distortions. In 1979, depreciation constituted only 5.7 percent of GDP in China, considerably lower than India's 9 percent for the same year.4/ In an inflationary period, such as China experienced in the 1980s, the net effect would have been for both stock and flow measures to be underestimated.

(e) Input-Output Tables

2.35 In recent years, the statistical authorities have prepared three input-output (I-O) tables for China, for 1981, 1982, and for 1987. The latest, published in late 1991, has been compiled by the Balance Bureau, which is also responsible for compiling NMP and GNP estimates, flow of funds, and estimates of different deflators. The Balance Bureau does not rely on the provincial level administrations for I-O information but gathers the data from other SSB bureaus and directly from primary sources. Among other objectives, the I-O interindustry coefficients and sectoral definitions are used to achieve consistency between published MPS and SNA aggregates. Since the detailed data needed to complete the I-O table cannot be obtained from existing annual series, additional surveys have to be mounted.

2.36 The 1987 I-O table is designed to provide a clear picture of the relationships between the 117 sectors identified (including "nonproductive services"), with industry accounting for 73 of these sectors.

2.37 It is important to note that the concept of Gross Value of Industrial Output (GVIO) defined in the I-O table is not the same as GVIO used to derive annually reported MPS and SNA aggregates. The main difference lies in the basis of valuation, because the "state" price does not necessarily mean a subsidized price. These relationships vary by type of enterprise and give rise to distortions in value both between sectors and within sectors, and lead to

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4/ For depreciation rates in state-owned enterprises in 1958-88, see State Statistical Bureau, 1990, p. 31. It is understood that since 1979 changes in depreciation have been substantial.

differences in derived I-O coefficients. Theoretically, the basis of I-O valuation should be in terms of meaningful producer prices, but SSB valuation methods in the 1987 I-O table confound implicit subsidies, implicit taxes, and prices, resulting in questionable values for many flows and coefficients. The enterprise whose "low" output prices "give" a subsidy to purchasing enterprises (e.g., a coal producer selling underpriced coal to an electric power plant) often loses money resulting in a negative net value added. This not only creates a statistical difficulty but also, more importantly, a real investment resource constraint for the enterprise concerned. Under the pre-1978 centrally-planned mechanism, investment in particular enterprises was often decided less by individual performance than by reference to overall policies for a specified product or function. Coal, for example, has been traditionally subsidized (partly through transfers and partly through very low costs of transport), because it is a key raw material. This practice has survived to an important degree in China's recent I-O work, giving rise to an exaggerated value added in the using industries and a distortion of I-O coefficients.

2.38 In other areas also, the structure of I-O coefficients may not reflect the changing structures in output. To the degree that the upper right-hand expenditure (demand) quadrant of the table is inconsistent with the upper left-hand output (supply) quadrant, differences generally result in "changes in stocks," or form part of the statistical discrepancy.

2.39 As can be seen from Table 2.1, many of the discrepancies between the 1987 I-O figures and the national accounts numbers published in the China Statistical Yearbook are relatively minor, and some may be due only to comparatively more recent estimates being included in the later I-O format. More to the point, however, because the basic data in both cases come from the same collection framework, neither approach provides any independent check on the accuracy and reliability of the other. It is likely, therefore, that neither the officially published national accounting aggregates nor the 1987 I-O estimates sufficiently address the many inherent distortions--both upward and downward--detailed in other parts of this chapter.

(f) Concerns About China's Present GNP Estimates

2.40 Several Chinese government agencies have described their concerns about using SSB's official GNP aggregates for some analytical purposes, concerns which parallel many topics presented in this report. These agencies wondered whether many new activities were sufficiently covered, and whether the activities in the service sector were reported in full scope. Among indicators these agencies regard with greatest concern were those relating to productivity, tax remittances, profit, and efficiency. These agencies reported that in many cases they felt their concerns stemmed from the influence of enterprise accounting systems on the way data were recorded and aggregated at the grassroots level.

2.41 China's State Planning Commission and the Development Research Center under the State Council, in particular, expressed reservations about certain aspects of current statistical reporting, especially with respect to the valuation of consumption, stocks, and depreciation, where the current data--even as they meet Hybrid System standards--are still "locked" into the grass-

Table 2.1: OUTPUT, VALUE-ADDED (GDP)

	1987 I-O (1)	1987 "Yearbook" method (2)	% (3) /a
GDP, Total	11,427.0	11,307.0	1.71
Primary, Total	3,202.0	3,204.0	0.19
Crops	3,202.0	3,204.0	0.19
Secondary, Total	5,421.4	5,251.6	1.77
Industry	4,726.0	4,585.8	1.42
Construction	695.4	665.8	0.35
Tertiary, Total	2,800.6	2,851.2	-0.25
Distribution, Subtotal	1,155.4		-1.04
Freight transport	385.2		
Passenger transport	93.9		0.12
Telecommunications	44.6		
Commerce, restaurant	631.7		-1.16
Production & Consumption-Related, Subtotal	1,402.9		1.06
Public utilities	73.3		-0.04
Finance and insurance	447.5		0.36
Real estate	145.5		0.24
Others	736.6		0.50
Government/social organizations	242.3		-0.26
Investment, Total	4,372.6		
Depreciation	3,802.6		
Net fixed investment			
Inventory change	570.0		
Consumption, Total	7,273.2		
Social consumption	1,329.9		
Private consumption	5,943.3		
Exports			
Imports			
Net exports			

/a (3) = $\left[\frac{(1) - \text{Preliminary Data of "Yearbook" Method}}{11,307}\right] \times 100\%$.

Source: SSB.

roots MPS data recording concepts. Overall, these agencies believe that GDP has been consistently understated because of underreporting of certain items. At the same time, official inquiries and supplementary surveys which exaggerate enterprise overvaluation have received disproportionate attention and publicity.

2.42 Many problems, however, are rooted more in methodological issues than in practical issues of measurement. The main problems discussed so far can be summarized as follows:

(a) Housing Services. Rents, especially of houses occupied by state and state enterprise employees, are heavily subsidized with most people paying less than one tenth of the actual cost (in terms of actual maintenance, repair and depreciation) of residential property upkeep. These payments therefore fall far short of the equivalent market rent needed to create a surplus to provide for increased housing investment. While homes in the rural areas and in towns are mostly privately built by owners and, therefore, privately occupied (and rarely rented), 80 percent of the housing space in the cities is owned by the state and let out to tenants at only a nominal charge. (See Chapter VI for a further discussion.)

(b) Administrative Services. The output of government administration and the cost of government employment is understated. This is because, respectively, the rate of depreciation applied to government buildings is too low, and because only the salaries of employees (and not their benefits) are included in the official wage bill.

(c) Other Services. Output is not fully measured and the parts measured are usually undervalued. Estimates of output are also complicated by the state enterprise practice of providing social welfare services at the point of output, and including these as intermediate consumption. (See Chapter III for more details.)

(d) Informal Sector. Activities in the parallel economy or "secondary tier" market, where transactions take place at different prices and often without government supervision, are probably underreported, because many are outside the direct administrative reporting network. Barter trade, which is especially important in the rural areas, is often weakly represented in statistical reports, and nonfarm activities of rural households suffer to some degree from the early development stages of relevant survey networks.

(e) Construction. Costs of building and irrigation works, etc., in the rural areas are underreported because although they include the purchase of materials, they underreport direct labor charges. This concern especially applies to own-account building and residential construction.

(f) Inventory Overvaluation. Stock values (and hence available profits) are inflated because slow-moving and unsalable items accumulate in the end-year balances and are not discarded or written down. Inventory overvaluation reflects the influence of state subsidies, which

often encourage output for which there is limited demand, resulting in unsold inventories which are eventually scrapped or removed at lower prices, even though they remain on the books at full initial value.

(g) Rural own-account consumption is undervalued because of the application of lower state prices for the bulk of crops and "periodical" market prices for only a part of farm output. Even though a large share of output may not be sold, especially in small farms, data on own-account production and consumption are obtained directly from account books kept regularly by households in the rural household survey. To obtain own-account production, sales and changes in stocks in quantity terms are deducted from reported physical output. This component is reported to represent as much as 70 percent of total production and consumption of the average rural household.

2.43 Apart from the problems identified above, it is clear that, in a society in which the data system has historically emphasized physical commodity flows and focused on quantity rather than value measurements, price differences in a period of reform and transition introduce potential distortions into any valuation assessments. Finding the right "weights" to apply to the array of relevant prices which coexist for the same product at any given time is difficult. This difficulty is further complicated by clearly observable differences in the quality of traded goods.

D. Sector Production and Income

(a) Agriculture

Agriculture: Concepts, Valuation, and Coverage

2.44 Data for calculation of value added in the agricultural sector are collected though a broad network of statistical workers at every level of the rural economy. The data-collection network, however, is still largely based on agricultural production as it was organized before the sweeping rural reforms begun in 1979, and there is considerable evidence that the system has not been able to keep up with the rapid reform-induced changes in farm production management and output mix. This lag in adjustment of methods compromises value added reporting in agriculture.

2.45 Net Value of Agricultural Output--whether for GDP or NMP--is based on a traditional system of complete enumeration reporting from village-level units according to reporting forms jointly designed by SSB and the Ministry of Agriculture. This system is called the "Village Complete Account of Rural Economics." Such reporting is supplemented by a variety of surveys, including a national sample survey of grain yields.

2.46 Value-added itself is in principle calculated through a straightforward "production method," which first obtains the Gross Value of Agricultural Output (GVAO) by multiplying physical output by unit prices. Input costs are then estimated by a variety of methods and subtracted from GVAO to obtain net output value. Such computations are done at the local level and, along with a

variety of physical indicators, are then reported to the county-level and provincial-level statistical offices.

2.47 Measurement of agricultural value added depends critically on the quality of data collection at the village level, and while there are a variety of quality checks for yields, verification is not as thorough for total cultivated area, multiple cropping, or planted area under various crops. As a result, and based on information about the historical origins of estimates for cultivated area, there is a high probability that Chinese crop output is underreported. Additionally, interviews with SSB officials confirmed that pricing of agricultural output does not take sufficient account of variations in product quality, especially for animal products and vegetables, with the result that output in these categories is also underreported. These problems will have to be addressed through more up-to-date sample surveys for measurement of areas under cultivation.

2.48 Agricultural output is divided into the following five major sectors and a variety of subsectors:5/

(a) Crops

- Foodgrains
- Beans
- Economic Crops (cotton, oilseeds, sugar, tobacco)
- Vegetables and Melons
- Special Crops (tea, silk cocoons, and fruits)
- Fodder Crops and green manure crops
- Other Crops

(b) Animal Husbandry Production

- Breeding Household Animals (pigs, cattle, etc.)
- Raising Small Household Animals (chickens, etc.)
- Output of Live Barnyard Animals (eggs, milk and honey)

(c) Aquatic Products

- Artificial Pond Products (fish, shrimp, scallops)
- Natural Ocean and Lake Products

(d) Forestry

- Afforestation (seedlings, tree planting etc.)
- Timber (logs, bamboo, etc.)
- Wood products produced at or below the village

(e) Household Sidelines

- Picking and Gathering (natural medicines etc.)

5/ From the SSB staff handbook: SSB, An Explanation of Important National Economic Indicators, 1986, Beijing: SSB, pp. 41-45.

- Hunting
- Household Handicrafts Produced for sale

2.49 With only a few exceptions, the gross output values for these categories are calculated by simply multiplying data on physical output by the appropriate unit price (see below). The exceptions to this quantity-times-price methodology are items 1.6,6/ 2.1,7/ and 4.1.8/

Physical Crop Output Measures

2.50 Crop output is the basis for estimating agricultural value added, but there are several indications that it may be increasingly underreported as rural economic reforms have diversified the crop output mix and decentralized the reporting system just when the commercial environment strengthens incentives for underreporting. China's rural crop production and marketing environment is one where government prices are kept at relatively low levels while farmers are required to plant and sell to the government relatively low-priced crops such as grain.

2.51 Statistical officials in Chongqing City explained that household contracts have a two-part impact on farmers. First, farm households must pay an in-kind tax based on their total cultivated land. Second, they must sell a significant share of their output to the state at the low state price. What is more, the delivery of obligatory crops and taxes is based on different contract arrangements. Deliveries at state prices are based on cultivated land, while the townships mandatory delivery of taxes and output to higher administrative levels are based on the township's reported total output. Thus, there is a two-stage incentive for underreporting, which is strengthened by the success of rural farm management and marketing reforms.

2.52 With the spread of rural production and marketing reforms, financial returns per hectare of land are much higher for commercial crops, vegetables and meat, especially vegetables and meat sold at higher prices in periodic markets. In discussions, both with SSB officials and with local provincial and county-level statistical workers, it was confirmed that no adequate methods exist for confirming planted areas for many crops, and hence there is little leverage for correcting underreported output. Under China's tax and marketing system, the burden of verification of planted area and yield data must rest with the government statistical system. This is a daunting burden, given the strong incentives for underreporting, the weak historical basis for

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6/ Calculated by multiplying the total area planted to these crops by an estimate of the per-hectare cost of production.

7/ Calculated by a heterodox method combining increased value on the hoof and value of animals sold; for pigs the measure is one half of the net increase in year-end pig numbers plus pigs slaughtered during the year plus net sales of pigs during the year; cattle, sheep and other animal breeding are valued the same way.

8/ Calculated [Adjusted] by multiplying afforested area by an estimate of the per hectare cost of afforestation activities.

many critical measurements, including cultivated area, multiple cropping, and planted area by crop. These concerns are important for all crops, whether low-priced grain or high-value vegetables.

2.53 The historical record on area measurement raises some concerns. In 1953, not long after the unification of China in 1949, district governments under county supervision carried out an exercise to "check land and set standards for output" (chatian dingchan), which produced basic data on cultivated land for each village. In the latter 1970s, there were a series of minor adjustments to the 1950s measurements, which resulted in little net change. There was no direct measurement or survey of cultivated land at that time. Finally, after abolition of communes and the distribution of land to households under the Household Responsibility System in the early 1980s, individual households reported their cultivated land for purposes of taxation, but these figures showed too little land when compared with earlier data.9/ When the aggregate discrepancies were discovered by county and provincial officials, village cultivated area data were adjusted to be consistent with the statistics from the late 1970s--that is, essentially the original 1953 figures.

2.54 It was further confirmed that, after the nationwide introduction of the Household Responsibility System in the early 1980s, farmer reporting of household output forced a major change in data collection methods. Before reforms, data were collected directly by commune statistical personnel. But the post-reform data collection changes did not provide SSB with any direct verification of cultivated area or planted area. The new system still relied on interviews with farmers for determining actual physical output of a wide variety of crops and other products. Beginning in 1982, statistical reporting shifted, from collection of very limited and inadequate data on required grain procurements and taxes, to use of a 10 percent sample of households. In large villages, 20 households are selected and in small villages, 15 households. The selected households are interviewed and requested to report output and yields.

2.55 Total output for the village is thus obtained by applying the sample household yields to village totals for planted area under each crop. In a system where there is significant government pressure to plant grain and sell to the government at low prices, this arrangement induces distortions in reports on planted area and output. Little attempt is made to actually measure the area planted, which is in many cases difficult because of the number of disparate and scattered plots contracted out to the control of a household. With little independent verification of planted area, even by local officials, much less by national agencies, the chance of significant underreporting is high.

2.56 SSB officials felt that, because of stiff penalties for underreporting and because there are also incentives to overreport (e.g., state allocations of fertilizer and diesel fuel), underreporting was minimal. But officials also confirmed that they do not have the resources to adequately check annual data on planted area for crops like grain, much less for planted area

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9/ This account of the history of land measurement is taken from interviews with county-level statistical officials, several of whom had participated in the original measurement exercise in 1953.

throughout the year for vegetables, which have the highest per hectare value of any crop.

2.57 Grain output, because of its strategic and political significance, is the most carefully monitored agricultural output category. Planted area, yields, and total output as reported are checked by a major nationwide survey directly administered by the SSB. SSB reported that national figures on grain output all use the survey yield results, and hence were not always consistent with provincial grain output data. SSB officials also said that they did a separate survey to check sample villages for the accuracy of their reported planted area in grain. The check reportedly takes the original village report of planted area, reviews the numbers to see if they are copied and summed accurately, and then makes an actual survey check of the reported planted area. Chongqing City and county officials reported that local checking was usually limited to paperwork and yield plots, rather than also including checks on planted area. In sum, official yield estimates may give reliable figures (or even overestimates) of grain yields, but planted area measurements are insufficiently reviewed to ensure the same degree of confidence in their accuracy.

2.58 Vegetable output measures raise concerns about underreporting, not just because of planted area considerations, but also because of valuation difficulties for such a very heterogeneous group of products. Quarterly surveys provide rough estimates of physical yields (but not planted area) for various vegetable crops. Officials commented that physical yields vary tremendously depending on when vegetables are harvested. Total planted area for vegetables is collected in surveys only once a year at the end of the year. Physical output for any individual farmer is checked against other data collected on the farmer's sales to the government, sales on local markets, and own-consumption within the household. Once again, there is little if any independent verification of planted area and hence output for the year as a whole.

2.59 Vegetable output value measures are obtained by multiplying physical output results by current prices and official comparable prices. For vegetables, the current price is usually the price at the time when the crop "is supposed to be sold," meaning the price at peak harvest time, when the vegetables are valued, as for other crops, at government-published standard "comparable" prices based on the year 1980. While there is some problem of pricing new crop varieties--in which case officials confirmed that they use the current price as the new comparable price--these cases are few because, even if a crop variety is new to a region, it has a constant price based on its production in other regions. As a result, comparable-price measures of output appear not to face the same problems as the output of TVE industry.

2.60 The evolution of measurement methods for vegetable output illustrates potentially serious underreporting, in addition to important issues of underreported planted area. Traditional methods of multiplying physical output figures by annual average unit values are frequently insufficient to capture the significant increase in real output resulting from a wider variety of fresh vegetables delivered promptly to markets. Such output commands value premiums because of inherently better quality and because market incentives increasingly stimulate production and sale in nonpeak production seasons.

Agricultural Output Prices

2.61 Gross value of agricultural output is measured with two different sets of prices: Current prices and so-called comparable or constant prices.10/ Current prices are meant to reflect farmgate prices actually paid and received for output, while constant prices are accounting or bookkeeping prices used only for purposes of reporting real output value to the government. While there is only very small uncertainty about the use of constant prices for agriculture, since the issue of pricing for new products hardly ever arises, there are issues concerning the current prices used.

2.62 SSB instructions require that current prices for any product in a given calendar year should be calculated by first recording the actual prices (farmgate price) received during various subperiods for every item in a given category. These prices are then combined, using physical output quantities per subperiod as weights. The current price is thus meant to approximate an average unit price, equal to the total annual value sold divided by total annual physical quantity sold. It appears, however, that actual reporting often uses shortcut methods, either a "first price" system for determining a calendar year's current price for any given crop or product, or the price in the first month for which there is output.

2.63 These shortcut methods weaken the accuracy of reported components in current-price gross value of agricultural production, since they introduce distortions for those crops and other products with strong seasonality. The "first price" would possibly be higher than the actual average price paid during the year, unless peak harvest time is early in the first month. Valuation at the "first-price" would thus overstate output value. On the other hand, in periods of high inflation, as in 1988, the "first price" would be lower than the average prevailing price for the rest of the year. The overall impact of first-price valuation is uncertain, both because of counterbalancing distortions and because some degree of inflationary mismeasurement would eventually be picked up by the following year's "first price" for any product. Similarly, there is a concern that peak-harvest pricing, which may be the more common procedure, understates current-priced output. This is because reform incentives have encouraged a larger proportion of a crop to be produced in the off-season, when it is normally scarce and when it can command a higher price. Ultimately, however, for measuring real output (corrected for inflation), it may not matter which price method is used, as long as it is used consistently to calculate both current-priced gross output and the deflator applied to current-priced net output (value added).

Agricultural Input Costs

2.64 Input costs are made up of three broad categories 11/: (a) cost of intermediate materials, (b) depreciation, and (c) other cash expenditures related to the production process. For calculation of net value added, these

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10/ See Chapter IV on value added in comparable prices in this chapter.

11/ The description of input cost categories is based on SSB, cited above, pp. 46-49.

general categories are broken into 13 input cost items: (a) seeds, (b) fodder, (c) animal breeding costs (especially artificial methods), (d) veterinary costs, (e) fertilizer, (f) fuel, (g) pesticides and other farm chemicals, (h) electric power used for production, (i) small farm implements (to use for less than two years), (j) depreciation of fixed assets used in production, (k) material inputs to sideline household handicrafts, (l) production support services (equipment repairs, etc.), and (m) other physical inputs.

2.65 Estimation of input costs is based on a variety of techniques. For example, the cost of seeds for many crops is based on per hectare application estimates and data on total planted area. For fodder costs, per animal consumption estimates are multiplied by the average herd size for the year in some cases, and in the case of pigs and chickens, by the number of head slaughtered. Similarly, breeding costs are based on average costs per insemination, while veterinary costs are based either on retail statistics on the sale of medicines or on survey data to determine the per head veterinary costs in a given location. Some costs, such as for electricity use, are obtained after deducting for nonproduction household use. Most of the other costs related to tools, equipment and household sidelines are based on data collected as part of the standard farm production reporting system.

2.66 Items are estimated in value terms at the time of filling out the annual reporting form, at the end of the year. To the degree that input cost estimates are based on current prices for the year as a whole, there may be a mismatch with "first-price" or peak-harvest prices used to value gross output--a mismatch which could result in distortions relating to the real current-priced net output value.

2.67 An additional concern relates to the estimated incidence of input costs for specific agricultural subsectors. In one rural county near Chongqing City, Sichuan Province, a total figure for all input costs for all agricultural activities based on sales was used to allocate material inputs to the five major agricultural subsectors, based on survey information and the judgment of farmers and cadres in the local statistical office. They acknowledged that "traditional wisdom" played an important role in their estimates. While these "traditional wisdom" methodologies may be the best information available in the absence of adequate sample surveys, traditional wisdom is unreliable when there are rapid changes in technology and farm management, as under reforms. Hence, reliance on traditional wisdom perpetuates the use of value-added shares in gross output which mask the nature of true shifts in value-added, both by sector and in the aggregate.

2.68 In deflating value-added in agriculture, SSB officials confirmed that they "double-deflate" agricultural value-added (deflating gross output measures and different inputs), but that they do not have separate input price indices for the various intermediate consumption items and subsectors in agriculture. Officials explained that, as a result, they often must rely on only a few general price indices to serve as deflators for all inputs into all subsectors.

(b) Industry

Industry: Concepts, Valuation and Coverage

2.69 Industrial production is defined by SSB to include the following activities 12/: (a) extraction of natural resources (including mining, quarrying, and lumber); (b) processing of agricultural products; (c) manufacture of industrial products; (d) repair of capital goods; and (e) electricity generation and supply, water purification and gas production.

2.70 Because of the exclusion of construction, it is narrower in scope than coverage for the "secondary" sector in SSB's classification of all economic activities into primary, secondary and tertiary industries. In terms of the coverage of industrial units, establishments of all sizes and types of ownership are generally included. Special mention must also be made of factories and workshops attached to nonindustrial organizations and rural industries. Examples of the former are factories owned and run by schools, research organizations, administrative units, the armed forces, construction units and state farms. Output of these factories and workshops is included in industrial production if they are production units with independent accounts, or if they do not have independent accounts but have fixed locations, a work force of more than ten persons, operate more than three months a year, and produce for the market.13/

2.71 Rural industries are those operating at or below township and village levels, including individual operators and specialized farm households in rural areas.14/ They are licensed by the local Bureau of Industrial Commercial Administration. However, subsidiary production activity in the home or family farm is usually not included in industrial production.15/

2.72 To the degree that industrial enterprises provide free services to employees as benefits, the data collection framework underreports value added

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12/ For the Chinese classification of industrial activities and their code numbers, see Department of Regulations and Systems, State Statistical Bureau, Explanations of Major Statistical Indicators of the National Economy (in Chinese), China Statistics Publishing House, Beijing, 1988, Vol. I, pp. 201-249.

13/ Department of Regulations and Systems, 1988, Vol. I, pp. 8-10.

14/ Until the early 1980s the output of village level units, previously designated "brigade industries," was included in agriculture.

15/ Gross Output Value of Rural Industry refers to the total output of products, expressed in value terms, produced by enterprises of township industry (previously commune industry), village industry (previously brigade industry) and industry below village level (previously production team industry, joint sponsored industry by farmers, and individual industry). It includes both the value of finished products and the value of industrial operation services provided to other enterprises. Also included is the value of semifinished products.

in industry. The calculation of value-added by industry in the SSB's Early Hybrid System SNA-oriented accounts differs from value-added in China's traditional MPS accounts in two respects. The Early Hybrid GDP estimates include, whereas MPS excluded, depreciation charges, reflecting the difference between gross and net measures of value added. In addition, the Early Hybrid GDP estimates exclude, whereas NMP included, the value of services purchased from other establishments in the nonmaterial sector, such as research and development, advertising, banking and insurance. These are fundamental adjustments to accommodate SNA standards. In its value-added estimates for the industrial sector, however, the SSB continues to include services which industrial enterprises provide free of charge to workers and employees, such as health care, job training and reimbursement for business travel. It should be noted that in a strict application of the SNA methodology, these elements would constitute intermediate inputs; they would be excluded from industrial value added and included in the relevant service-sector value-added accounts.

2.73 The method used to estimate industrial value added (gross of depreciation) in all branches of industry except electric power is the "distribution approach," i.e., estimates of the cost of capital used and payments to various factors of production (labor income, profit, indirect taxes, interest and miscellaneous charges) are summed to obtain gross value added. Gross value added in electricity generation is estimated by the "production method," i.e., gross value added is treated as a residual by deducting material inputs from gross value of output. SSB is now experimenting with both methods for all branches of industry. In the compilation of the input-output table for 1987, both methods were used.

2.74 Data used in calculating industrial value added (gross of depreciation) are collected through various channels. All industrial enterprises, except some rural industrial units, are required to regularly report their production and financial statistics to SSB and the Ministry of Finance on a monthly, quarterly and annual basis. The major problems with the statistics from these enterprises is not so much the completeness of coverage but the quality of the data. For example, defective products are often reported as output even though quality standards are not met. Such practices were reportedly quite prevalent in the early 1980s.16/ Although SSB has significantly improved reporting in recent years, many such practices continue. The effect is an overstatement of the gross value of output and gross value added.

2.75 By and large, both the quality and coverage of statistical data for industrial units at or below the village level are inferior to, and less complete than, those above the village level, mainly because their financial records are generally incomplete and because there is a large measure of change brought about by the coming into being of new enterprises. Rural industries below the county level, including collective and individually owned enterprises, are not usually part of the regular statistical reporting system directly managed by SSB. Their output and other statistics are usually collected by other departments, such as the Bureau of Industrial and Commercial Administration and the statistical stations in many towns. These data collec-

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16/ Sun Yeh-fang, "Strengthen Statistical Work and Reform the Statistical System," Jingji Guanli (Economic Management), No. 2, 1981, p. II-3.

tion shortcomings are important, because in terms of gross value of output, the township and village industries and those owned by rural individuals are the fastest-growing components of the industrial sector (with the exception of foreign-funded enterprises). By 1989, output of these units constituted 24 percent of total gross value of industrial output.17/ This 24-percent figure is probably high because of the use of current prices rather than constant prices. Nevertheless, even with a smaller weighting, distortions in output reporting for these township and village industries affect output estimates for the entire industrial sector.

(c) Construction, Transport and Commerce

Construction

2.76 Information on how SSB collects data for the construction sector is limited, but the process seems heavily dependent on China's traditional statistical network. Returns reporting gross output (equivalent to work done) are obtained from the construction companies, and these are cross-checked with information from investment (acquiring) enterprises. Value added data in construction for state enterprises and collectives, are largely based on old methods and are obtained by the income approach, using standard ratios of value added to gross investments by state enterprises. However, some state enterprise investment projects receive subsidized raw materials, so this measure is not always an accurate indicator. Furthermore, this method may not be appropriate for private-sector enterprises and collectives. Where the method is used for larger state enterprises with subsidized materials, it is likely that value added is inflated by comparison with other units.

Transport and Communications

2.77 SSB has extended traditional MPS statistical coverage to include passenger transport, but there are several important concerns about the data collection system on which estimates by the new sectoral definitions depend. In the prereform scheme of things, the transport sector covered only the carriage of freight. The main transport subcategories are for air, water and road transport. Even though passenger transport has been added, these two subaccounts are kept separate in both national accounts and the 1987 input-output table. This separation enables the SSB to continue reporting traditional MPS aggregates at the same time it also generates SNA transport totals. But there are complications. While gross output can be identified by sectors and separated between freight and passenger traffic, intermediate costs obviously cannot be so easily distinguished. Hence, the ratio of freight to passenger gross output is used to estimate net output of freight and passenger transport. Further, gross output is derived as "ton-kilometers" of goods carried times the relevant freight charge, and for the state sector, actual business records can be used to get the necessary financial data. However, for many rapidly growing private enterprises, only volume measures are available (tons instead of ton-kilometers). Estimates of output value are obtained,

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17/ State Statistical Bureau, Statistical Yearbook of China 1990, China Statistics Publishing House, Beijing, 1990, p. 412.

therefore, from key surveys 18/ and from tax returns (invariably available only for the larger operating concerns). Unfortunately, this procedure tends to underemphasize a significant and rapidly growing area of "informal" transport. SSB mainly depends on the income approach to derive net value added (and hence GNP), but it admits there are many problems in covering water and highway transport.

2.78 The communications sector in China is essentially still in the hands of state monopolies, so collection of post and telecommunications data is straightforward. Data are obtained directly from the accounts of the relevant government agencies concerned.

Commerce

2.79 Commerce is a traditional subsector in the MPS framework, by which it covered the "material supply system" of wholesale and retail trade (including the imports and exports of commodities), restaurants, and storage. Statistical reporting continues to be based on MPS concepts. Gross output data are based on the "margin" for commerce, which is the purchase value less the producer's value, minus all transport fees paid to outside operators. Once again, coverage for different ownership categories represents the SSB's greatest challenge. For the most part, the data sources used are the comprehensive reports filed by state enterprises. It should be noted that the activities of rapidly growing small-scale enterprises and vendors are not fully captured. Tax records are used to supplement what surveys exist, but there is some evidence of underreporting. Reporting challenges for commerce are typical for the range of service activities which are growing under the reform programs of the past decade. SSB needs to be more thorough in addressing these particular difficulties. Given the increasing importance of services in the Chinese economy, relevant statistical issues are discussed at length in Chapter III.

E. Final Expenditure Accounts

The Expenditure Approach

2.80 Expenditure measures of national income from the demand-utilization and disposition perspective are also compiled but the information is available only at a highly aggregated level. The expenditure aggregate is made up of consumption, accumulation, exports less imports of commodities, less wastage. Changes in stocks are included with accumulation of fixed assets. They are separated between private and commercial assets and include work in progress. There are a number of differences between the terms used in the Early Hybrid System and those understood in the SNA.

Consumption

2.81 The consumption component of final demand is divided between (a) private households (separately distinguishing urban and rural entities and, in the latter case, incorporating subsistence consumption), and (b) social (col-

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18/ These are strictly not sample surveys as probability sampling techniques are not used.

lective) consumption. In principle, private household consumption as a national accounting component in final demand should be actual consumption by private individuals. However, SSB often treats household expenditure as household consumption. But household consumption is not the same as household expenditure, for while the former refers only to goods and services for final private use, the latter also incorporates goods purchased by households for intermediate use on the farm or in the home-based enterprise.

2.82 According to the SSB, private household consumption estimates are based largely on retail sales and agricultural production data, although survey data are consulted and increasingly incorporated into the results. Given the insufficiency of reported data on actual expenditures on housing sector costs and profits, housing service components in final consumption are often based on depreciation estimates as a proxy for costs and profits. Depreciation estimates are in general very low. Because of the extremely low prices for most services consumed by households, and because many such services are provided free of charge, a large percentage of personal consumption expenditure as officially reported is spent on commodities.

2.83 Most of the data relating to social consumption are obtained from the financial reports of institutions providing services to households. These have two parts: (a) social consumption by the whole society (equivalent to "pure" collective goods like diplomatic services and defense), and (b) a much smaller range of goods provided within enterprises through such activities as staff canteens, clinics and kindergartens.

2.84 Social consumption includes institutional sales. Furthermore, services provided mostly in the workplace by enterprises to employees are included in social consumption, if they are collectively provided. If paid for by individuals, they are included in private household consumption. Some part of the material cost of these services is included in retail sales, e.g., food and medicine. The value of many service components of social consumption is approximated by reports for depreciation on buildings and equipment (for schools, government offices, etc.), and as a result, these components turn out to be relatively small. Some residential housing depreciation (e.g., relating to dormitories) is also classified as social consumption.

Accumulation

2.85 SSB has made changes and improvements to the traditional MPS methodologies for calculating the accumulation component of final expenditure, based on an MPS concept called "accumulation of fixed assets" (AFA). AFA includes housing, equipment, vehicles, buildings, as well as certain fees like those of architects, but it is not the same as the conventional SNA definition of "Gross Fixed Capital Formation" (GFCF). The principal difference, conceptually and in magnitude, between AFA and GFCF is the distinction between net and gross investment, i.e., depreciation.

2.86 There are other differences between AFA and GFCF. First, in practice, both aggregates include expenditure on uncompleted buildings and projects, including installed equipment, despite the fact that the MPS normally includes these under stocks. Circulating assets include building materials not yet used (like the bricks lying around on building sites) and equipment

not yet installed. This assumes that uncompleted projects cannot be transferred to alternative uses and, in this respect, China no longer follows the traditional MPS concepts in their entirety. The magnitude of these circulating assets in China is not only a statistical concern but also a major problem of economic management.

2.87 The traditional MPS definition of AFA included only outlays that directly gave rise to fixed assets and, hence, architects and legal fees, moving expenses of construction units, training expenses, and royalties were not included. Although relying heavily on the AFA, China's current national accounts have incorporated data from a variety of makeshift supplementary surveys and collection procedures to fill in these obvious gaps. The breakdown of capital construction by nature of work distinguishes between construction, installation, and "other." "Other" in this context is divided into expenditures that "do not increase the fixed assets" and those that do. A number of other categories increase fixed assets, such as management, survey and land costs but these are apparently excluded from the AFA, or at least are neglected. For "housing," and rural housing construction expenditure in particular, SSB uses data on purchased materials and adds an estimate for hired labor. The estimates do not include any value of own labor, supplied by household members themselves.

2.88 Three additional categories are included in AFA measures but not in the SNA's GFCF: simple community-level structures, civil defense works and equipment, and investment in trial products. Military investments such as for equipment and buildings were major expenditure items in the sixties and seventies, although less so in the eighties. Regrettably, it was not possible to discover even whether these investments are classified as creating productive or nonproductive capital.

2.89 The accumulation component in final demand accounts includes investment and changes in stocks. Total investment in fixed assets (also called investment in fixed assets for the whole society) includes investment made by all units irrespective of ownership status. For state-owned units, total investment is divided into three categories. The two major components are capital construction and technical updating and transformation. A third category, other investment in fixed assets, is used to refer to investment not covered by the first two categories. In principle, capital construction covers new construction and expansion projects, whereas technical updating and transformation covers renewing, replacing and rebuilding of existing fixed assets or major repairs as defined in the SNA.

2.90 The third subcategory, other investment in fixed assets, includes oil field development projects using special oil field development funds, development and expansion projects in mining and forestry using maintenance funds, road and bridge construction projects using road tolls, warehouse construction of commerce department using simple construction funds, and small miscellaneous construction projects and purchases of fixed assets, where "small" means valued in the range Y 20,000-50,000.

Changes in Stocks

2.91 As in the traditional MPS, changes in stocks form part of accumulation and are incorporated in a statistic called "accumulation of circulating funds." Information on changes in stocks is compiled from the financial reports of enterprises and collected by the SSB's Department of Industrial Statistics. Commerce data on stocks are similarly collected. For rural area activities, and for agriculture in particular, the SSB's Department of Agricultural Statistics is responsible for calculating changes in annual stocks which are covered in its regular report on "The Basic Economic Situation in the Rural Areas." This information is supplemented by data on rural enterprises compiled by the Township Enterprises Bureau in the Ministry of Agriculture.

2.92 Data on changes in stocks are apparently derived as differences between end-period book values. On a "first-in-first-out" (FIFO) basis of stock valuation in the financial accounts, this would normally give rise to an element of stock appreciation in those cases where an increase in the value of stocks is influenced by inflation. In China it appears that for many commodities, and especially for those of many state enterprises, the increase in end-period stock values became substantial in the late 1980s, reflecting both the unwillingness of customers to buy outdated, poor-quality products (which accumulate because they are unsalable) as well as the significant price increases that had occurred. There is apparently an unwillingness on the part of many enterprises to mark down or write off these stocks (because they represent part of the production target achievement) even though they have lost a great deal if not all of their usefulness and value. Many larger state enterprises apparently recognize the problems of both unwanted goods and stock appreciation and adjust their financial statements accordingly. Nevertheless, national accounting treatment of unsold stocks is a persistent problem in China in the early 1990s, a problem which is not systematically addressed in the Early Hybrid System.

Wastage and "Losses"

2.93 The calculation of final expenditure is based on the MPS concept of national income utilized, and hence it excludes certain losses which are not connected with current production. These are losses and wastage arising from accidents, fires, earthquakes, floods and similar events. Other losses connected with current production, such as the deterioration or loss of goods held in storage or while being transported, are considered material inputs (even though they may be final products) and so they are already excluded from the calculation of national income aggregates, such as NMP and GNP.

Exports and Imports

2.94 Since early in the post-1978 reform period, China's foreign trade estimates have been based on customs statistics, and in this respect the national accounts have adopted most of the methods and conventions developed in the early 1980s. The Total Value of Imports and Exports at Customs refers to the value of commodities imported into and exported from China. This includes the actual imports and exports, imported and exported commodities under the processing and assembling trades, and the imported and exported

commodities and office utilities for Sino-foreign joint venture enterprises, contractual joint ventures and wholly foreign-owned enterprises. Also included are materials, supplies and gifts as aid given gratis between governments and by international organizations and governments and contributions made by overseas Chinese, residents of Hong Kong and Macao and Chinese with foreign citizenship. Imports are calculated on a c.i.f. basis, while exports are on an f.o.b. basis. The SSB continues to use traditional MPS classifications; these cover only material goods and services. Supplementary data from the Bank of China and other sources are used to build aggregates. It should also be noted that an estimate is made for goods brought in by returning migrant workers, but SSB considers these valuations problematic.

2.95 In sum, in spite of significant improvements over the past decade, final expenditure accounts in the accounting framework are still insufficiently detailed and are often estimated from a variety of incompatible sources, which limit their usefulness as independent checks on similar national accounting statistics generated by production and income methods. Like so many parts of China's evolving national accounting system, however, final demand accounts are reaching the limits to improvement imposed by China's data recording and collection arrangements, which represent the most important challenges in the coming evolution of Chinese national accounting framework beyond the Hybrid System.

III. THE SERVICE SECTOR

A. Introduction

3.1 The rapid growth of the service sector, under the impetus of economic reforms since 1978, and the expectation of continued rapid service-sector growth in the years ahead, suggest that the next phase in the development of China's national accounting system requires a major reevaluation of the conceptual and procedural basis for measurement of the service sector.

B. Concepts and Methods

3.2 In the current MPS-based Hybrid System of national accounts being introduced in China, the economy is divided into three main sectors: the primary (agriculture, animal husbandry, and fisheries), the secondary (mining, manufacturing, water, gas, and electricity, and construction), and the tertiary (all others) industries.1/ Two different concepts of the tertiary sector have been adopted by the SSB.2/ The first concept, conforms to the MPS framework and excludes "nonmaterial production." It includes only those services which are considered "material" (see Chapter II for coverage). The output of these industries are included in the estimates of Net Material Product.

3.3 For purposes of estimating GNP as defined in the SNA, the SSB has added a second service concept which includes all "nonmaterial" services. Although the second concept is in principle comparable with the service sector in the SNA accounts, its scope in terms of data coverage is narrower, mainly because the statistics for certain industries are either underreported, or only roughly estimated from benchmark parameters and more aggregate statistics. For example, it underreports activity by individuals engaged in transportation services in the rural areas, private bath houses, and private laundry shops--especially those which do not belong to commercial departments or industrial enterprises. SSB has greatly improved its coverage of these ser-

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1/ The SSB formally adopted this system and began compiling statistics on tertiary industry in 1985. See Report by the State Statistical Bureau on Developing Statistics for the Tertiary Industry, document provided by the SSB. An edited version is published in Tongji (Statistics), No. 6, 1985, pp. 1-3. See also Regulations and Systems Bureau, State Statistical Bureau, Explanations of Major Statistical Indices for the National Economy (in Chinese), State Statistical Bureau, Beijing, 1988, Vol. II, pp. 355-356; Shaanxi Statistical Bureau, The Tertiary Industry, China Statistical Publishing House, Xian, 1988, pp. 141-153; Office of the Input-Output Statistics, State Statistical Bureau, Certain Technical Problems in Compiling the Chinese Input-Output Table, China Statistics Publishing House, Beijing, 1988, pp. 1-58. Chinese officials note that the standards in this and other technical materials represent early versions of the Hybrid System of national accounts. Improvements have continued through the present.

2/ SSB document cited in Footnote 1.

vice activities, especially in recent years, but their poor coverage through the basic MPS data network forces dependence on less reliable ad hoc estimates. Similarly, the earliest implementations of the Hybrid System underreported production of such services as childcare in centers not administrated by the public health department,3/ although subsequent improvements are addressing this issue. These formal irregularities imply that even if subsequent ad hoc surveys and interpolations provide corrections, they will be heavily influenced by data recording concepts and formats in the MPS-based collection system, and as a result, such corrections are at best only a temporary substitute for developing a data collection system which makes a fundamental break with grassroots MPS data recording formats and concepts.

3.4 One of the most vexing service-sector issues involves services supplied "in-house" by enterprises to their employee families. In principle, when services such as education and health are provided by subsidiary units of material-producing enterprises, they are considered part of the service sector.4/ In practice, however, the treatment of such services is rather complicated and sometimes, superficially, inconsistent. A distinction is first made between: (1) units with independent profit and loss accounts, and (2) those without. The latter are further segregated into (2a) those serving the general public and (2b) those servicing directly the enterprises and their workers and employees. Traditionally, statistics for service sector items included in NMP only items (1) and (2a).5/ It is not clear whether (2b), welfare services provided "in house" by an enterprise, are charged to intermediate consumption (and if so, what part?) or regarded as a transfer out of the "value added" surplus.

3.5 Gross value added in current prices for all branches of the service sector approximating SNA coverage is derived by the income approach, i.e., by adding depreciation, labor income, fringe benefits in cash and kind, profits, taxes and miscellaneous charges. For the purpose of compiling input-output tables, gross value of output for each branch of the service sector is also estimated independently. Intermediate inputs are then derived as residuals by deducting gross value added from gross value of output.

3.6 Estimates of depreciation are based on the stock of fixed assets valued at original prices and at depreciation rates set by the state. Capital stock information is only available for enterprises with independent accounts. Calculations of depreciation for enterprises without such accounts and those for nonbusiness units such as schools and government units are estimated by SSB. Major repairs are generally not treated as part of depreciation.6/

3/ Office of Input-Output Statistics, 1988a, pp. 3, 17, 19.

4/ Regulations and Systems Bureau, 1988, p. 361.

5/ Ibid, p. 362.

6/ Regulations and Systems Bureau, 1988, p. 359.

The exception is for real estate, where depreciation is defined to include major repairs.7/

3.7 Labor income includes wages and salaries of workers and employees and the incomes of peasants and other individuals providing services. The basic source of data for the incomes of workers and employees are regular reports on wages and employment collected by the SSB. Incomes of the individual businessmen are essentially based on tax information compiled by the Ministry of Finance. Fringe benefits of workers and employees are calculated at a stipulated proportion of the total wage bill fixed by the state. Benefits funded from an enterprise's operating profits are excluded to avoid double counting.

3.8 Profits refer to the operating surplus of enterprises after indirect taxes but before direct taxes such as income taxes, adjustment taxes and tax on bonuses.8/ Correspondingly, taxes as a component of value added include only indirect taxes. Information on profits and taxes of such enterprises as banks, insurance companies and state-owned transport and trading enterprises is based on their financial reports. For many other units, including many individual businesses, data are drawn from the tax bureau or the Bureau of Administration of Industry and Commerce.

3.9 Interest payments by an enterprise are not considered a factor payment and hence a transfer out of profits. They are treated as intermediate inputs. For the financial sector as a whole, total revenue consists of interest payments received by the financial institutions and interest payments received by individual savers.

3.10 Miscellaneous charges include payments to individuals (such as per diem expenses on business trips and subsidies for commuting to work), payments to service units within the enterprise (such as trade union expenses, expenses for workers' training), expenditures in the nature of indirect taxes but which have not been included in taxes or operating surplus (such as surcharges on electricity, special tax on use of fuel oil), and net revenues of the administrative units' subsidiaries providing services.

Statistical and Methodological Problems

3.11 As for other sectors, inherent in SSB's accounting for the service sector are irregularities originating in grassroots recording concepts, statistical coverage, and data collection methods. These irregularities distort the estimates of the size of the service sector, the structure of GDP, and the rates of growth of the service sector.

3.12 In spite of attempts to measure both material and nonmaterial services consistent with MPS and SNA needs, data collection for nonmaterial services is compromised by inherent conceptual problems. Adjustments and extensions have only partly remedied these problems. The conceptual problems stem

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7/ Office of Input-Output Statistics, 1988a p. 12

8/ Regulations and Systems Bureau, 1988, p. 358

from the original MPS definition of services, which excluded government services and omitted many common market economic activities which were virtually nonexistent in China in the two decades prior to 1978, such as many domestic services and certain business services. Furthermore, as for some services provided directly to employees by subsidiaries of material producing enterprises, although the makeshift MPS adjustments in the middle 1980s reported these to some extent, they treated them as part of the material output of the parent enterprise. Many of these conventions persist in the grassroots data reports and even when there is sufficient information, SSB must convert the information's MPS recording concepts to data with meaning for the SNA. As a result, reporting at different levels and from different authorities reflects different interpretations of the data. In general, the data reported in the statistical yearbooks approach the SNA definition, while those published elsewhere sometimes conform to the MPS definition.

3.13 In 1989, the SSB estimated gross value added in the service sector in current prices of Y 418 billion; its share in GDP was 26.5 percent, and total employment in the service sector was 99 million (see Table 3.1). Estimates of gross value added in 1987 by major components of the service sector suggest that 50 percent is in production- and consumption-related services and 41 percent is in distribution (see Table 3.2). Service data for selected years prior to 1987 as percentages of GDP are also shown in Table 3.3. The data in the three tables are not strictly comparable, mainly because of changing statistical coverage.

3.14 It is difficult to determine the scale of the portion of GNP which is understated due to the exclusion or inadequate reporting of domestic services and some business services. Fragmentary information suggests that it may not be negligible. For example, in Beijing alone, there were about 80,000 persons employed in domestic service in 1988, or about 11 workers per thousand population, and the demand for such services had been increasing.9/ Given the large total urban Chinese population of 287 million in 1988,10/ total employment in domestic service could be considerable, even if one allows for a lower worker-population ratio in the smaller cities and towns.

3.15 As noted earlier, China's pre-Hybrid MPS-based accounts did not consider services provided directly to the enterprises by their subsidiaries as output of the service sector. Unlike omissions and underreporting for such items as domestic service, which biases downward the size of GDP, misreporting in-house services only distorts the composition of GNP and its sector shares. In-house services include mess halls, childcare centers, medical stations, security guards, fire stations, and residential housing for workers and employees. SSB efforts to compensate with makeshift ad hoc surveys and col-

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9/ Ta Kung Pao (Ta Kung Daily), English edition, May 3, 1984, p. 14; State Statistical Bureau, Statistical Yearbook of China 1985, (English edition), Economic Information Agency, Hong Kong, 1985, p. 53.

10/ This urban population figure reflects major revisions in SSB's population data which first appeared in the China Statistical yearbook 1991 (page 79, Chinese edition) and which reflect new information from the 1990 census and new definitions of urban and non-urban areas.

Table 3.1: CHINA: OUTPUT AND EMPLOYMENT IN THE SERVICE SECTOR, 1952-89, SELECTED YEARS

	Total (Y billion)	Gross percentage of GDP (%)	Value added Index (%)	Value added Employment (million)
1952	19.2	28.4	-	18.8
1957	31.7	30.0	-	23.2
1978	82.4	23.0	100.0	47.1
1979	82.6	20.6	107.8	49.9
1980	91.9	20.6	114.3	53.4
1981	97.4	20.4	122.2	57.6
1982	103.8	20.0	135.2	59.0
1983	118.0	20.3	152.3	64.1
1984	152.7	21.9	178.3	75.4
1985	211.9	24.8	207.9	81.6
1986	243.1	25.1	231.0	86.1
1987	285.1	25.2	260.8	91.1
1988	357.2	25.5	292.4	97.3
1989	418.4	26.5	301.0	99.3

"-": Not available.

Sources: State Statistical Bureau, Zhonggou tongji nainjian 1990, China Statistics Publishing House, 1990, pp. 33, 117; State Statistical Bureau, "The Relationship between GNP, Gross Value of Industrial and Agricultural Output and National Income as Reflected in Actual Statistics," Tongji (Statistics), No. 6, 1985, p. 4. Employment refers to year-end totals.

lections have been hampered by limited resources, resulting in inadequate correction and coverage.

Estimates for Housing and Real Estate

3.16 Another set of problems with estimates of the service-sector relates to the underlying assumptions and methods used to estimate income originating in certain distinct components of the service sector. One specific problem of some significance is residential housing. Residential housing in China falls into three categories: those owned and managed by the urban housing administration department, those owned and managed by enterprises and administrative units, and owner-occupied houses in the urban and rural areas. The first two categories account for 8 percent of the total housing space, and owner-occupied dwellings in urban and rural areas account for 3.8 and 88.2 percent respectively. SSB's treatment of the second and third categories of housing results in underreporting, as described below.

Table 3.2: GROSS VALUE ADDED, THE SERVICE SECTOR, 1987

	Total (Y billion)	Percentage (%)
Total	280.06	100.0
Distribution	115.54	41.3
Freight transport	38.52	13.7
Passenger transport	9.39	3.4
Telecommunications	4.46	1.6
Commerce	55.39	19.8
Restaurants	7.78	2.8
Production and consumption-related	140.29	50.1
Public utilities	7.33	2.6
Finance and insurance	44.75	16.0
Real estate	14.55	5.2
Education, culture, and health services	54.24	19.4
Personal services	19.42	6.9
Government and social organizations	24.23	8.6

Source: State Statistical Bureau.

3.17 Housing rent and real estate value increases are calculated as follows: first, housing administrative authorities directly rent houses to residents and collect rents from them. This is what China's statisticians often refer to as the current "market price" for housing. This part of housing rent is set at a low level as a matter of policy. Revenue is insufficient to cover the fixed housing deterioration and repair costs. Value added for this component of housing is calculated according to the wages of housing management employees, estimated depreciation, and the repair costs of the houses in relation to their original construction costs. These components are added to the increases in real estate values. Second, a shadow rent is calculated for urban and rural private houses according to their assumed depreciation in relation to their estimated total construction costs. Third, values for housing provided by enterprises, institutions and government are calculated according to the value of depreciation in relation to their (historical) total construction costs. It is difficult in this case to separate the relevant part of private housing from the fixed assets used for production and administrative purposes. Housing depreciation is included therefore, in the value increases of fixed assets belonging to enterprises, institutions and government. Although the value of real estate increases are not omitted from the GDP accounts, they are by their nature very low or incorporated elsewhere. As China deepens its reforms of housing and prices, the calculation of housing and home ownership will undergo further readjustment, thus gradually resolving the problem of price skewing and distorted sector allocations.

3.18 In the past, SSB did not estimate rental incomes from houses owned by enterprises or administrative units (such as governments, hospitals, and universities),11/ because it felt that the depreciation on which these charges would be based are already accounted for in the parent enterprises, and because it is too difficult and requires too many resources to separate them out. SSB considers this a problem of GNP sectoral allocation rather than a problem of absolute GNP level. Imputed rent of owner-occupied houses includes only depreciation of these houses. For some housing categories, SSB assumes that net rental income of owner-occupied houses is zero for purposes of calculating housing service GNP components. The estimate of depreciation of rural houses is also understated because it is based on the depreciation per square meter of state-owned houses in the cities.12/ Since the service life of houses in the cities is generally much longer than those in the rural areas, the use of the same depreciation rate tends to underestimate the depreciation of rural houses. The biases due to the assumption of no net rent in owner-occupied houses and the use of too low a depreciation rate for rural houses are likely to be sizable, because 92 percent of housing space is owner-occupied, of which houses in the rural areas are predominant. Rural housing construction has expanded enormously since reforms began in 1978. If the estimates of housing services are properly adjusted to eliminate these biases, residential housing would constitute 8-10 percent of GDP, instead of the 1.3 percent recorded in 1987. The higher rate would approximate a share of GDP observed in other countries at a similar level of development.

3.19 Housing valuation is the clearest example of how MPS valuation conventions continue to distort GNP measurements, even under the modified system of accounts. SSB feels that the very low implied housing values should not be adjusted in GNP estimates because these are the actual cost payments in those housing transactions where money actually changes hands, and that they therefore represent the contribution of housing to China's national accounts. But this interpretation confuses a nonmarket transaction's actual payment with that transaction's market value (or useful value), which could be very different. The SNA seeks to measure the value of economic activity, and it therefore is interested in what transaction terms would be if they were more heavily influenced by market forces. The MPS largely ignored value as a measure of useful activity, because it was designed to monitor a centrally managed economy. In other words, SNA standards seek to measure economic activity in ways that reflect what its value would be. As China's price reform moves forward, these standards need to be introduced into China's statistical transition as much as possible.

C. Coverage Issues

3.20 Apart from formal differences in scope between the SNA and SSB's procedures, there is the issue of how complete the statistical coverage for the service sector actually is. This question arises because there are no controlling totals for some components of the sector where output statistics are likely to be incomplete. Transport services in the rural areas is a case

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11/ Office of Input-Output Statistics, 1988, p. 11.

12/ Ibid.

in point. As recently as 1981, no statistics had been compiled on the freight turnover carried by traditional means of transport in rural areas.13/ In constructing the input-output table for 1987, the SSB specifically included passenger transport services provided by individuals in rural areas, but only as interpolated estimates based on ancillary information.14/ Under these circumstances there is some uncertainty whether rural transport services have been fully covered, and if not, how large the omission might be. The problem is serious because rural transport has been growing rapidly since 1978. Total employment in this field increased from 0.8 million in 1978 to 6.1 million in 1989, constituting 43 percent of total employment in the entire transport and telecommunications sector in 1989.15/ And, of the 6.1 million rural workers, 5.6 million were individual workers for which statistics are particularly weak.16/

3.21 Incomplete statistical coverage in areas other than transport is also suggested by reports of millions of farmers working in the urban areas as cobblers, housekeepers, and snack vendors.17/ If the services of some rural workers have been omitted altogether, output estimates for the service sector would be on the low side. If they have been included elsewhere, the output structures of the service sector in both NMP and GDP would be distorted. At present, SSB relies primarily on data from the tax bureau to estimate the incomes of the individuals. But tax evasion is quite rampant, and surveillance in the rural areas is weak to an unknown extent. As a result, income is underreported.18/ It should also be stressed that the omission of agricultural workers in urban areas ("own grain workers") from the coverage of various surveys contributes to the overall under-coverage. (See Chapter V for further details.)

13/ Cao Zhicai, "On Changing the Statistical Coverage for Highway Freight Transport," Tongji (Statistics), No. 3, 1981, p. 29

14/ Office on Input-Output Statistics, 1988a, pp. 2, 5; this source apparently has a misprint which limits coverage to "city and towns," when it should have said "cities and countryside." (See the typewritten Comments on the Statistical System Report, by SSB officials, September 1991.)

15/ State Statistical Bureau, Materials on Labor and Wage Statistics (in Chinese), China Statistics Publishing House, Beijing, 1987, p. 103; State Statistical Bureau, 1990, p. 115.

16/ Department of Rural Social and Economic Statistics, Rural Statistical Yearbook of China 1990, China Statistics Publishing House, Beijing, 1990, p. 35.

17/ China Daily, June 11, 1988, p. 3; Beijing Xinhua, June 15, 1988, reported in Foreign Broadcast Information Service, China, JPRS-CHI-88-116 (June 16, 1988), p. 47.

18/ See, for example, reports of tax evasion in Shandong and Liaoning in Ming Pao, Hong Kong, August 30, 1983, p. 5.

3.22 Understandably, complete coverage of such a heterogeneous sector as services is extremely difficult to achieve for any developing country. The problem in China is compounded by two additional factors. The first is that, as compiling statistics for services by the SSB is only a recent undertaking, the data available are rather weak, both in terms of quality and range. The other factor is that, under the transitional circumstances of the Chinese economy, a large number of individuals not only hold several jobs but also operate as highly mobile business units in the service sector, so that their activities are difficult to capture and hence fully record. Thus far, SSB has made a great effort to develop and improve the statistics for services in recent years. Data from the statistical yearbooks for 1988-90 show repeated revisions, mostly upwards, presumably because of better statistical coverage as the reporting system develops.

D. Valuation Issues

3.23 A more general systemic rather than a national accounting problem is that all services in China have been priced too low relative not only to "market prices" but also to prices of most products in the primary and secondary sectors. (See the extensive comment under Housing and Real Estate, above.) Under both the fixed-price system and the dual-track pricing system, where both fixed prices and market prices coexist, if the fixed price is set above the price that would have cleared the market, involuntary inventory accumulation would ensue; and if it is set below the market price, acute shortages would appear. Judging by some simple and available rough indicators, it can be concluded that the prices of most services are probably too low. The urban housing shortage is a striking example. About 30 percent of the total number of households in the nation are in need of new housing. Yet rental levels have been set so low that they accounted for less than 1 percent of total consumption expenditures of the urban population in 1987.19/ This seems far too low in comparison to other countries. For example, rent accounted for 7 percent of total private consumption in India.20/ Not only housing, but virtually all services--especially urban services--are priced below market prices as a deliberate policy to subsidize consumers. The result is that the unduly small price weights impart a downward bias in the estimates of output in China's service sector and GDP when compared with those of other countries. The small price weights relative to those of other sectors have also the effect of overstating GDP growth in the pre-1978 period when the service sector had hardly expanded at all since the 1950s, and understating GDP growth in the post-1978 period when the service sector grew faster than all other sectors.

3.24 It is in the services sector in particular that the role of subsidies is disguised and yet important. A clear and unambiguous treatment of these implicit subsidies, however, is difficult because they take different forms and are often nested in different branches of industry and types of enterprises. The evidence of inappropriately low prices is not sufficient to

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19/ Shaanxi Statistical Bureau, 1988, pp. 97-98, 125.

20/ World Bank, China: Socialist Economic Development, World Bank, Washington, DC, 1981, Annex A, p. 32; United Nations, 1990, p. 681.

draw attention to the presence of subsidies. The declining value of commerce as a share of GDP when the economy is expanding fast, both visibly and according to official account, reflects the peculiar treatment of subsidies for urban food products as negative value added. In reality, food output has increased and the delivery of food to a growing urban population has improved and risen in importance. Subtracting subsidies from the net value added in the commerce sector is misleading and, by SNA conventions, inappropriate. An alternative cost or full supply price needs to be imputed to the subsidized service (or item) in question and the difference between the enhanced (equivalent true "exchange") value and the actual transaction value, or revenues received, treated as an official transfer (paid for out of tax receipts) or an addition (in kind) to income balanced by an equivalent expenditure outlay. SSB recognizes the problem and is now introducing different valuation procedures in its accounts to reflect more explicitly some of the major subsidies that exist. Nevertheless, the accounting framework is deeply rooted in China's traditional low-price subsidy system, and its results--especially in the service sector--continue distortions from the past. The data on subsidies provided in 1984 indicate the approximate size of the losses in the past (Table 3.3).

Table 3.3: SUBSIDIES AND LOSSES (1984)

	Total in Y billion
Housing	21.50
Transport	0.04
Education and Cultural Services	0.08
Medical Services	1.50
Total	23.12

IV. CHINA'S PRICE SYSTEM AND NATIONAL ACCOUNTS AT CONSTANT PRICES

4.1 The previous two chapters have reviewed China's present national accounting practices for calculating national product at current prices. This chapter introduces China's price system and the calculation of national income aggregates at constant prices. Its objective is to identify the sources of distortion in the estimation of China's constant-price aggregates and their real growth rates, and to suggest appropriate improvements.

4.2 As a result of the growing importance of prices and the widespread success of many price reforms, SSB has strengthened its traditional reporting of price indices and reformed its system for collecting price data. The SSB now collects a wide variety of farmgate, wholesale, and retail prices for most transactions, and it is beginning to collect and process ex-factory prices and prices for intermediate inputs. Nevertheless, there are a number of concerns about China's price data and the price and other surveys used to generate them. Chapter V treats these issues in some detail. Most importantly, the SSB price collection network has only a partial coverage of service prices and continues to use posted government prices when these often differ from transaction prices. In addition, the calculation of price deflators for the national accounts raise many concerns absent for the basic system of price indices, concerns which SSB staff agree, bias calculations of real growth.

4.3 The shortcomings in China's price surveys and indices are the result of the continued partial reliance on a system of data collection and surveys originally designed for China's pre-1978 centrally planned economy. Before reforms, the orientation of China's economic policy, and hence its price statistics, emphasized urban industrialization and the development of a model socialist standard of living in urban areas. Before 1978, rural and other nonstate economic activities were largely considered supportive of and complementary to the urban socialist development program. As a result, under the prereform system the most significant transactions were those within the urban state system and between the state urban sector and the complementary nonstate rural economy. Pre-1978 price data therefore emphasized these critical areas of socialist interest; they documented state prices and prices needed to buy and sell from the farm economy.

4.4 The pre-1978 state-system price statistics and data collection methods were poorly suited for capturing the newer kinds of transactions introduced by reforms after 1978, especially transactions in urban areas by nontraditional nonstate-system households and transactions in rural areas between different rural entities. A careful examination of China's price surveys and the calculation of price indices indicates that, in spite of the progress made in the 1980s, by 1990 this fundamental orientation of the price data system continued to result in biased indicators which, in particular, underestimate the degree of inflation.

4.5 Economic and political forces necessarily conflict when setting the pace of reform in prices; but, once accepted and underway, prices do change--relatively and absolutely--and such changes require corresponding reforms in the collection of price data. Until recently, many of China's basic indicators were measured in quantity rather than value terms and, while such physi-

cal series are useful for output analysis for sector-by-sector study, they suffer from being noncomparable, and usually nonaggregatable. Consequently, critical changes in economic structure could not be observed. Now that an increasing amount of information is being made available in value terms, it is important to compile appropriate price indices to deflate, or otherwise adjust, existing current value measures in terms of comparable values expressed in constant or base reference prices. How this is best done, and what prices are most relevant, is quite an involved question given China's detailed item level price system and the closely related complex structure of subsidies and indirect taxes. The latter are sometimes variable and difficult to monitor satisfactorily because they are people or situation related rather than item specific. There is, furthermore, a problem related to the underlying categorization of goods and services that is linked less to their inherent nature than to the actual process of data collection. The existing method of information gathering in China focuses heavily on state-owned enterprises and this imparts a bias in both the selection and the coverage of output related price series when determining current deflators.

A. Prices in China

4.6 In China, the government directly sets prices through its own agencies and, in addition, monitors and disciplines prices in other transactions. As a result, there are many different kinds of prices, even for the same good, which greatly complicate the job of conducting price surveys and compiling price indices.

4.7 China's pricing categories and definitions have become less precise as a result of price reform initiatives and adjustments, but because planning is still important in China, official price classifications remain useful guides to China's national pricing system and its influence on valuation and measures of inflation. In the Chinese price lexicography, there are two major transaction price categories: plan prices (jihua jiage) and nonplan prices (fei jihua jiage). Plan prices are all prices associated with transactions which are part of the economic plan for a region or the nation. For plan prices, there are two major subcategories: "state-set" prices (guojia ding jia) and "state-guided" prices (guojia zhidao jia). State-set prices are fixed at one value, while state-guided prices are allowed to be set by local enterprises and departments within certain ranges set by the state. Nonplan prices are the opposite of plan prices, and have three subcategories: consultative prices (xieshang ding jia), negotiated prices (yi jia), and periodic market prices (jishi maoyi jia). These are in general decided by the parties to the transaction, but are subject to government guidelines, and monitoring.

4.8 The lexicography also has names for price types which roughly overlap with the broad plan/nonplan distinction. In particular, the term "parity" or "par" price (ping jia) is used to indicate the state price. The term "list" price (pai jia) has a very similar usage. In most cases the par or list price is the "low" price for a commodity when there is more than one price. In contrast to the par or list price, the generally higher price is called the "negotiated" price (yi jia), which, when used in this context, has a broader meaning than its more formal definition as only one of several types of nonplan prices. When Chinese analysts speak of a two-tiered market for a good, or of two-tiered pricing for that good, they are almost always referring

to the official segmentation of many markets, allowing use of a product's list price in some transactions and its negotiated price in others. For many products and transactions, this terminology is more accurate than the common practice among foreign observers of referring to the two prices as "state prices" and "market prices," because in spite of official supply-demand sensitivities and the heavy influence of market forces, a subset, albeit a declining one of so-called market prices are still subject to significant government influence. To summarize, there are basically three different types of prices:

(a) Statutory Official Administered Prices. These are list prices (often referred to as "Plan Prices") which are determined by Government agencies.

(b) Negotiated Prices. These can be adjusted within limits (usually "upper" limits set by government agencies) by the controlling state- or collective-owned unit.

(c) Periodic Market Prices. These are influenced most by market forces (demand and supply), although government agencies often try to set "upper" limits in the interest of social goals such as equity and price stability.

4.9 Through reforms, forces of supply and demand increasingly influence all prices in China, but shifts in the significance of some official price categories have not been so uniform. For example, "negotiated" prices in China have rarely been what Western economic theory would call market prices, and Chinese analysts point out that with reforms, ironically, they have become even less so. China's price lexicography notes that with the mid-1980s abolition of mandatory purchasing quotas for most goods and hence the disappearance of their related state-set prices, negotiated prices are really no longer just a "nonplan" category. At times when local conditions have necessitated renewed official price intervention, negotiated prices have become the major prices for transactions within the plan as well. As a result of this change, and in spite of their traditional status, certain negotiated prices are now considered to be a kind of state-guided price, illustrating how price categories have changed their meaning and significance as the ebb and flow of reforms have changed the degree to which state authorities directly influence them or limit their market fluctuations. Most negotiated prices do, however, now clearly follow broad movements in market supply and demand.

4.10 While SSB collects the basic price information and produces price indices, the State Price Bureau (SPB) is also responsible for compiling and monitoring actual prices. SPB combines data from the urban and rural price indices prepared by SSB with a price index of agricultural products. It also collects data in the markets. In addition, SPB compiles data on wholesale price changes, prices reported to or through government departments, and specific topic studies (like those relating to the oil sector and transportation charges). Its main function is to analyze price change at the provincial and municipality level where weekly and monthly data are collected. This function, however, is related closely to price surveillance and regulation and to the determination of whether any reported price increase is "excessive." In principle, therefore, within the present institutional structure, although

decreasing less so in practice, even "free" market prices may be subject to control.

4.11 The SPB indicated that there were various means for controlling prices. In some cases, they are set high to stimulate production, as in the case of cabbages and other vegetables. In other cases, ration coupons are used to distribute goods at a low monetary price, such as for pork and eggs in some urban areas. For other goods, authorities set maximum ceiling prices during certain festival periods and then monitor transactions with teams of inspectors. For example, this was done for watermelons during the peak summer season in 1990. Vendors who were found selling watermelons at a price higher than the ceiling price were fined. For many other products, even though their prices were "liberated" in the mid-1980s, periods of high inflation such as those in 1985 and 1988/89 have induced temporarily stricter requirements for reporting price changes to the SPB. During periods when reporting requirements are more strictly enforced, the SPB reviews unacceptably high price changes, but if there is no response from the SPB after a price change is reported, that means the change has been approved. This requirement to report all price changes was greatly extended in 1988, following that year's high inflation.

4.12 In measuring changes in such prices over time, and in assessing price differentials, the SSB, in principle, also takes account of quality differences. Although, in practice, quality adjustments may often be made at the time of collection, such adjustments depend heavily on the subjective judgment of local statistical personnel, and where more careful reporting would note an effective price decline associated with quality improvement, such practices are irregular, because there are no clear measurement guidelines or standards to apply. This difficulty is statistically important to note, however, in order to obtain a fuller understanding of the elements responsible for actual price changes.

4.13 In any event, given the complex interaction between price reforms and official price intervention in China, it is difficult to assess the degree to which China has converted to market pricing. The market most closely influences what one called "periodic market prices." A "periodic market" is a particular kind of market occurring in both rural and urban settings at regular intervals: in isolated locations once a month, once a week, or once every three days; and in towns and cities usually every day, but not always all day long. The official term "periodic market" also refers to road-side vendors and independent vegetable stand merchants.

B. Official Constant Prices, Comparable Prices, and Deflators

4.14 Not all prices in China are used for transactions. Official "constant" prices are accounting prices published in a large set of price books and used by enterprises and agencies to calculate and report the "value" of their output by the same prices from year to year. Since the founding of the People's Republic in 1949, there have been four sets of constant prices, and the SSB has just completed preparation of a fifth set based on average list prices in 1990. "Comparable prices" have a meaning closely related to that for "constant prices" and represent a generalization, because real output based on "comparable prices" rely on some combination of "constant prices"

linked over long historical periods. In this sense, "comparable" price data are designed to span any combination of all four "constant" price time periods, although, technically, a shorter data series can also be described as based on "comparable" prices, even if it does not span more than one period. To put it another way, data series based on "comparable" prices are pieced together from one or more shorter series based on "constant" prices.

4.15 Official constant prices are fixed by the state and are based on actual prices in benchmark years. The benchmark prices for a certain year, while representative, are not a perfect average of all prices for each good for that year. As a result, "official constant prices" contain an arbitrary element, and output valued in 1980 constant prices, for example, is slightly different from the same output valued in 1980 current prices. Nevertheless, because the official constant prices for any benchmark year are agreed on and published as value standards in books distributed to each relevant factory or other producing agency, they make possible a convenient measure of output which is comparable both over time and between regions.

4.16 The comparable-price system was imported from the Soviet Union, and, in addition to measuring national gross output, is an important plan fulfillment measurement tool for ministries and departments. For example, the 1980 constant price for a particular size of bolt was used by every bolt factory in every province and town in the country. The official constant-price value of output for that bolt type was combined with the official constant-priced value for all other bolts and similar objects to record and report output in that factory for detailed categories. By aggregating these statistics, output of bolts could be compared across different regions and over time.

4.17 Constant prices are especially useful for measuring gross factory output, but much less useful for reporting net output, mainly because prices for the great diversity of inputs used cannot be identified. As a result, national totals for real gross output are more dependable than net output indicators, such as GDP and NMP. But problems of pricing new products cause even constant-priced gross output to accumulate inaccuracies. With the rapid growth of the township and village enterprise (TVE) sector in the recent past, a great variety of new products have been valued. In many instances, these are being valued in current prices in the absence of "official constant" prices in the base year. When estimates of total gross values in constant prices are presented, there is an inevitable mixture of subaggregates that are not so valued. This has the direct effect of (a) raising output levels for a given year, and (b) introducing an upward bias in year-to-year growth rates. This practice is not confined to the TVE sector, as new products sold by state enterprises are similarly valued. The biases are most severe in industries in which innovation is greatest, e.g., electronics.

4.18 A further potential source of upward bias in measures of industrial growth results from the process of new business formation. For newly established enterprises within the collective sector, comparable prices of products are not known when production begins. In these circumstances, the price prevailing at the date the enterprise began production is used in lieu of a comparable price.

4.19 Even though "official constant prices" are not used in any transactions, they are important for some measures of inflation, such as output deflators, because such deflators in China are calculated by comparing output in current prices with output calculated using "constant prices." In other words, Chinese procedures often reverse the more normal order of calculation, and rather than using a price deflator to calculate real output from current price data, current price data and constant price data are used to calculate an implied deflator. As a result, the accuracy of GDP and other deflators, and indeed of real output growth, depends on the consistent application of constant prices. It is evident upon study that the misuse or corrupted use of constant prices has introduced serious inaccuracies in the measurement of China's real output growth. Some of these issues are discussed further in paras. 4.23-4.30.

4.20 Comparable prices are also used to carry out the comparative studies necessary in economic planning work. The authorities use them to observe and analyze differences in economic structures as well as changes in sectors, over different time horizons, where each period has a different relative price system. The accuracy with which results reflect real changes depends on the scientific comparative methods applied and on the basis on which the comparisons are made.

4.21 In theory, comparisons of real aggregate values can best be achieved by correcting for price changes in individual subaggregates and then combining these parts to calculate the total. In this way, the composite price index and trends in development of both total values and component commodities are unified. In practice, however, owing to the complexities of economic activity, the great variety of products available, and the continual emergence of new products, it is often extremely difficult to work out such detailed statistics. It usually proves impossible, therefore, to monitor changes in constant prices on the basis of such a complete segregation. As a consequence, alternative and less satisfactory methods prevail. Currently in China, computation of long time series based on "comparable" prices are really chainlinked constant price indices with different bases, and the estimation of corresponding aggregate values is affected by changing structures and shifting relative prices. The practice is equivalent to chainlinking detailed price indices with different base years and rescaling the result to an early base period when the implicit weights were different. In technical terms, such Paasche chainlinking of sequential Laspeyres-base weighted price indices generally leads to a lower rate of measured inflation than would be the case if the price changes had been measured solely against the same base reference period.

C. Measurement at Constant Prices

4.22 Chapters II and III discussed how the national accounts in current prices are compiled and focused specifically on the systemic differences between the MPS and SNA concepts and their respective structure of aggregates. In converting these series into constant prices, other problems have been encountered, even though SSB has compiled an extensive set of comparable prices for specific base years. While a variety of techniques are applied to specific situations, Table 4.1 describes the specific methods used for the three major sectors.

Table 4.1: PRICE DEFLATION METHODS BY SECTOR

	Agriculture	Industry	Services
Price Adjustment Method	Double deflation	Single deflation	Physical indicators (including employment, and derived price measures)
Sectors Applicable	Main crops (grain) Nongrain crops Animals Forestry Fishing	Industry (Manufacturing and Mining) Construction Transport	Services (for profit) Services (nonprofit)
Technique	Gross output at KP (Physical output x base reference price) LESS inputs at KP (currently only material inputs	a) NVA at CP + GVO at CP over GVO at KP time b) NVA (base year) x GVO at KP over time Note: Double deflation methods, similar to those used in agriculture, are also used	a) Physical output index x estimated NVA in base year b) Employment index x estimated NVA in base year c) NVA at CP (i.e., Revenue less costs) + Increase in prices of applicable services

CP = current prices
KP = constant prices
NVA = Net value added
GVO = Gross value of output

4.23 A significant reporting problem has at times arisen in the treatment of gross value added by rural (TVE) industries. As discussed in Chapter II, the TVE sector has grown rapidly and any measurement errors would have considerable impact on industrial output and GDP measurement. The problem has resulted from the practice on the part of some enterprises of reporting current-price values in the place of "constant-price" values. Because of their limited statistical experience, this has usually been true for many industries at or below village level, where output series in current prices are often not deflated and are included without change in aggregates supposed to be at comparable or constant prices. Another significant issue is the degree to which Gross Value of Industrial Output (GVIO) deflators from the slower changing state sector are used to deflate output of the TVE sector. Since the products of TVE industries are mostly sold on free ("periodic") markets, and because prices on these markets rose more rapidly during 1981-89 than state-product

prices, the unevenness of the deflation procedure has overstated the real growth rate of TVE output through much of the 1980s.1/

4.24 More generally, an important issue for industrial value-added statistics is the distortion introduced through the uses of the index of net output in comparable prices. Value-added in constant prices for subperiods (1952-57, 1957-70, 1970-80, and 1980-89) is first derived by deflating the series in current prices by a single deflator for each subperiod. The resulting individual series in constant prices are then linked together to form a chain index in comparable prices for the entire period 1952-89. At each step of the calculation, the methods used introduce distortions in an upward direction, but the approach can be analyzed as the combination of two principal phenomena.

4.25 The first phenomenon has already been mentioned. It is China's use of a single gross output deflator to correct for price changes in a wide range of disparate sectors, resulting in underestimating (or overestimating) net value added (NVA) in constant prices when input prices rise faster (or slower) than output prices. This is because using an excessively low-valued output deflator to deflate inputs exaggerates the amount of input in constant prices, yielding a smaller residual NVA. Ideally, if price deflators for input costs are available and sufficiently accurate, net output in constant prices can be obtained by the double deflation method, with both outputs and inputs deflated separately by appropriate deflators, which are often different (and, more often than not, divergent). Unfortunately, the limited information on changes in these prices in the industrial sector does not permit a full assessment of the net effect of such phenomena on growth measurements. Recent research studies (Jefferson, Rawski, and Zheng) have shown that when price indices for material inputs to state and collective industry are estimated and when double deflation techniques are applied, they have a downward influence on constant price estimates of NVA and on growth rate estimates for recent years. Such results reflect the situation in many sectors where raw material prices have risen faster than output prices and hence faster than allowed for by implicit deflators embedded in calculations used to generate national accounts. An additional factor that causes material input prices to rise more quickly than product output prices is that, in the pre-reform period, ex-factory material prices were the relevant prices. Currently, since many materials pass through periodic and negotiated markets, a markup has been added, so that the ex-factory prices are no longer the relevant prices.

4.26 The second phenomenon influencing the official comparable-price estimate of NVA relates to the upward distortion that exists in measures of gross value of industrial output (GVIO) itself. This distortion results from using statistical weights which depend on early initial-period prices rather than final end-period prices. One example is the use of 1980 prices to calculate weights for 1990 transactions. If Paasche indices of GVIO were computed for the subperiods (using the prices of the final year as the valuation basis), the indices would yield growth rates considerably lower than the cor-

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1/ For example, prices of consumer goods in the free markets rose at the rate of 10 percent per year during 1980-89. They declined during 1990/91. State Statistical Bureau, 1990, p. 268.

responding Laspeyres indices calculated by the SSB. This is because the prices of the faster-growing components of industry (e.g., machinery) relative to those of the slower-growing components (e.g., textiles) were higher in the earlier year than in the later year. To use the prices of the earlier year as the valuation basis assigns a larger weight to a faster-growing component and therefore results in a higher growth rate than if the prices in the later year are used. This phenomenon is the familiar Gerschenkron effect. Since all the GVIO indices in constant prices for the subperiods 1952-57, 1958-70, 1971-80 and 1980 to date are based on early-year weights, they are all biased upwards. When the constant-price indices for the subperiods are linked together to form a comparable price series for longer periods, as has been done by the SSB, the upward biases are compounded and built into the series for the longer periods.

4.27 The upward bias in the constant-price GVIO output index inevitably introduces a corresponding upward bias in constant-price measures of NVA. This is because the too-high constant-price GVIO output index results in a too-low GVIO price deflator, which is then used to derive NVA in comparable prices. The GVIO price deflator is calculated by dividing the GVIO index in current prices for a given year by the (too-high) GVIO index in comparable prices, resulting in a deflator that understates industrial price movements. Applying an understated GVIO price deflator to a current-priced NVA series results in an overstated constant-priced NVA series.

4.28 In general, the biggest problems arise in the services sector. For consumer services, SSB uses a price index for services combining both the service component of the retail price index and the cost of living price indices for services for, respectively, the urban and rural areas. In the case of government, the estimated current NVA of public administration and defense (dominantly wages and salaries) is divided by the "social consumption index" where this is made up of: (a) household purchases of commodities; (b) purchases by social organizations; and (c) production materials for agricultural production purchased by farmers. This "social consumption index" (which excludes any component of wages or salaries) is also used to deflate the value of service output of nonprofit organizations.

4.29 For financial services, the retail price index combined with an indicator of industrial change is applied (the relative weighting of which is unclear), and for production-related services (and specifically "commerce"), relevant physical volume measures are compiled. An attempt was made to incorporate an index of changes in interest levels for use in monitoring real financial sector operations, but this proved too difficult.

4.30 Additional special difficulties arise in trying to track real structural changes, i.e., changes in net output values in constant prices, because of the complications introduced by subsidies. An example can be given by coal. Coal makes a loss so the government provides a subsidy to output. When a coal seller or user buys coal directly from the mine, the mine calculates the value of its net output (GDP value added) before the receipt of the subsidy (to the enterprise). Therefore, value added for coal is negative for the mine. For the industrial producer, who buys coal at a lower cost because it is subsidized, however, value added is higher by the amount of the subsidy. The subsidy to the <u>mine</u> will not be reflected in the enterprises output report, but it will be included in the flow of funds. This is clearly mis-

leading and represents a confusion of statistical concepts (what should be done--to reflect reality) with statistical practice (what is actually done--for data collection convenience).

4.31 In sum, the estimation of constant-price aggregates in China involves an additional layer of measurement problems over that encountered in estimating the current-price values. These result from the practice of single-deflation using a gross output deflator, from the greater weight given to faster-growing industries, and, more generally, from the use of "comparable" prices, which cause inflation to be underestimated. Correcting these systemic anomalies is critical to understanding the real, as opposed to nominal, significance of sectoral and macroeconomic developments.

V. PRICE INDICES

5.1 The previous chapter reviewed China's price system and the calculation of constant-price national accounts. This chapter builds on the previous chapter's description of multi-tier prices and introduces China's system of price indices and their methods of calculation. China's system of price surveys and price indices is part of China's rapidly evolving data collection and compilation system. While many of its techniques are well developed, as part of the current Early Hybrid statistical system they continue to be applied in an irregular transitional framework still heavily influenced by earlier MPS standards and requirements. This chapter's objective is to analyze price indices and deflators in order to understand both their usefulness and their weaknesses as measures of inflation and relative price changes. The chapter concludes that there is significant room for improvement and expansion both in the generation of price indices and in their fuller use in national income calculations.

A. Introduction

5.2 By their very nature, China's market economic reforms have given prices a place of importance they never had in the centrally-planned economy, and, as a result, prices and price indices suddenly became important and controversial in the 1980s. As inflation spread through different sectors and regions, measures of inflation became important for evaluating past reforms and designing new policies. Furthermore, while prices once could be gathered through administrative channels from various state commercial units and purchasing agencies, reforms introduced a wide variety of transactions and prices which only sample price surveys could cover. However, in spite of the proliferation of transaction varieties and the frequent reference to "market" transactions, certain prices in China do not fully reflect true market values, and as described in the previous chapter, some of the so-called "market" prices are subject to State Price Bureau (SPB) monitoring when inflationary pressures are evident.

B. China's Price Surveys

5.3 China's price survey and index compilation work in the 1980s took a set of minimally functioning price reporting procedures and converted them into a well developed system of surveys tailored to meet many of China's traditional statistical needs and a few of its ad hoc needs as a transitional economy undergoing economic reforms. By 1990, however, in spite of significant progress, a number of improvements were still envisioned to strengthen the system, especially its extension to cover a wider variety of price categories, to improve information on index weights by considering nontraditional (so-called "Own-Grain") urban households, and to capture more service and other transactions outside the traditional Chinese statistical system's scope. Overall, the major shortcomings of China's price indices are the irregularities introduced by weights which overemphasize commodities and overemphasize items covered by list prices and which underemphasize prices in transactions using negotiated and periodic market prices (see Chapter IV for a description of various price categories).

5.4 China's modern price surveys originated in the early and middle 1950s, as the Ministry of Commerce gradually combined various ad hoc regional wholesale price surveys.1/ In 1956 China transferred authority for all price survey and index work to the central SSB. During the Great Leap Forward (1958-62) and the Cultural Revolution (1966-76), development of the price-reporting system regressed and struggled to survive. Although restoration of price survey work had begun as early as 1973, progress greatly accelerated with the introduction of economic reforms in the late 1970s.

5.5 In 1979, the SSB price survey system consisted of data collected from state commercial establishments on prices and transaction volumes. At that time coverage was extended to include three kinds of prices (list prices, negotiated prices, and periodic market prices), which were then used in calculations of the nationwide retail price index (RPI) and cost-of-living indices for urban and rural households. It should be observed that the weights used to calculate the retail price index were originally based on transactions in state-owned and cooperative stores, but as reforms proceeded the weights gradually began also to reflect transactions in other shops and in periodic markets.

5.6 In 1981, in response to the growing complexity of economic reforms and the spread of multiple prices for the same good, the SSB created its urban and rural household survey teams to strengthen price survey work.2/ This formed the basis of new improvements to the expenditure-based Consumer Price Indices (CPI) for both urban and rural areas. It also simplified and unified its nationwide price data collection methods. In 1982/83, the SSB increased price survey manpower and other resources and began to rely even more on direct survey data for its price information, rather than depending so heavily on administratively reported prices through the state commercial system information network. By that time the SSB had realized that government list prices were less and less representative of nationwide transaction prices, which were increasingly conducted at negotiated and periodic market prices.

5.7 Improvements in urban price data collection continued in the second half of the decade. In 1985-87, the SSB simplified its price reporting forms from 12 types of forms to 8. It increased emphasis on price information in its urban worker's urban household survey, and it standardized the actual commodities used in the price collection data nationwide even though most

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1/ Most information presented here on the history of China's price surveys and index compilation is from Wang, Jianzhen, "China's Price Statistics," in China State Statistical Bureau, Statistical Science Research Institute, The Establishment and Development of China's Socialist Statistical Work (in Chinese), 1985, Beijing: State Statistical Publishing House, pp. 158-166.

2/ This report focuses its examination on price survey work in urban areas and is unable to verify details of price data collection in rural areas. Chinese officials commented that the national retail price index includes price changes in rural periodic markets as well as government-managed prices in rural state-run shops. Other than this, very little is known about price data collection in rural periodic markets.

areas could not price all items. By 1991 the national urban survey network had 1,500 full-time price investigators and 12,000 part-time assistants employed in the shops and markets surveyed (some of whom also collected rural periodic market prices). In the 1985-87 period, the sample of commercial establishments in the price survey was also expanded and greater stratification introduced. At that time, 183 "representative" large, middle, and small cities and rural towns were chosen for regular sampling, an increase from only 54 cities and towns before 1985. The total number of commercial establishments and local markets sampled expanded to 9,382, and if the supplementary sample sites added by local governments are included, the total by 1987 was 14,571. Measures of price change evolved as well. While most localities traditionally report monthly price changes as an increase over comparable prices in the same month one year earlier, many large cities in 1987 began reporting individual price levels relative to comparable prices in December of the previous year, and beginning in 1991 they reported monthly prices relative to one month earlier.

5.8 One difficulty for urban price surveys is the rapid expansion of the economy, with many new enterprises, especially individually-owned and small collective enterprises. SSB officials at the central and provincial level feel that this is not a serious problem, however, because all new undertakings no matter how modest--including individual peddlers--are required to register with their city, town, or county. In the process of registering, the enterprise or individual must provide a minimal set of statistics. Apparently, all registered establishments and individuals are included in the stratified random survey sample selection process. No information was available about sample rotation or renewal for price surveys. However, SSB officials were quite sure that undercoverage was not a problem, and that lapses in registering or reporting were remedied by sending someone to gather the information personally.

5.9 These elaborate procedures are largely geared to obtaining information on retail turnover and must be commended as providing a perspective on changing sales and overall outlays (including purchases for business purposes) mostly by households acting as consumers and, occasionally, producers. However, the use in the past of the retail trade turnover values to calculate weights for a "proxy" CPI was increasingly only an approximation of overall retail price changes. The use of such turnover data for calculation of weights for the CPI is inappropriate as the weights make no allowances for consumption patterns at the household level and are biased towards items with a high turnover value. Nor do these aggregates cover services which enter into the household consumption basket. To the extent that services are increasingly purchased and are assuming importance in the overall patterns of consumption, another bias is introduced.

5.10 Price Collection. In terms of product coverage, the SSB has five criteria or guidelines for selecting products for any particular price index survey:

(a) goods meeting the special needs of the price index, according to scientific classification and selected specifications representing commodities suitable for the index in question;

(b) goods termed "large-expenditure goods," that is, goods considered representative because of their large sales or purchase volume;

(c) goods "representative" of their commodity groups, which is to say, goods whose price changes represent the commodity group and other items in the same group;

(d) goods whose price changes are "typical," so their price changes not only represent the group but also the general trend; and

(e) goods with a relatively stable production to ensure the stability of representative specifications in the price index.

For the retail price survey data, there is a list of 403 goods representing more than 80 percent of all retail commodity sales in the country. Fifty more goods are added to the list by local survey offices to cover differences in regional tastes and product availability.

5.11 In general, each establishment is visited every five days. At least three price quotations are taken in any locality for a single product, and some goods are sampled at as many as eight different establishments. For all relevant products, prices from as many as three different price categories are collected for the same good: a list price, a negotiated price, and a periodic market price. Multiple prices for the same product are especially important for foods. List prices are collected only once a month, because they do not vary frequently, and their changes are officially published. Other prices are collected more frequently.

5.12 The SSB's current price survey methodology still contains significant product coverage variation from region to region, which is considered desirable to a certain degree, because many brands and important product types are not found in all regions. The SSB mandates a core set of products and brands, and then it allows localities choice over supplemental products of a specific type or from specific categories. Although the SSB does not require it, considerations of sales volume, stable supply and representative pricing often lead local statistical offices to select locally produced products as supplemental products. A good example is beer. There are many brands of beer, but many cities tend to report only the price of the locally produced beer. This is true even in Beijing. Many kinds of beer are sold in Beijing, but its beer price data only report prices for the brand "Beijing Beer." In the case of Beijing Beer, it is not clear if this brand is chosen because survey information indicates it is most representative or because price data can be collected easily through administrative channels. If the latter reason determines local selection of commodities and brands, the result might be to bias the overall price survey in the direction of stability, since listed prices for locally produced goods would tend to vary less than negotiated prices and periodic market prices for out-of-town and out-of-province products.

5.13 With regard to local discretion in price surveys, according to officials in the Chongqing Statistical Bureau, although SSB prescribed 300 standard commodities, Chongqing could price only roughly 200. For the others, it found substitutes as close as possible to corresponding products on the SSB

list. SSB officials added that China's CPI compilation procedures stipulate that 404 commodity groups must be reported, while allowing local regions to add another 50. Furthermore, the cost-of-living price index includes 30 service items. The sales covered by these groups account for 80 percent of retail sales, and the groups are further broken down into numerous subcategories and representative commodities, so that a small city would select for investigation as many as 1,000 specific items, representing tens of thousands of individual price measurements.

5.14 Price differences by quality are difficult to account for, according to SSB officials. For foods, one methodology is to specify a "standard" specimen and collect its price. A good example of this method is the specification of a standard egg. For services, qualitative differences are even more difficult, and SSB guidelines are not ideal. For example, the SSB requires that there be a fixed price for housing, regardless of where the housing is located. It is not clear what the SSB intends to do with these and other service prices as reforms continue. Commercial housing reform has continued to be a reform priority, both for ownership of homes and for rentals at scarcity prices. These reform trends are especially strong for rural housing and housing for nontraditional ("own-grain") urban households. While the State Council has mandated these improvements, SSB officials indicated in November 1990 that insufficient resources prevented them from doing much in this regard. Clearly, a higher priority for these improvements in price data collection would be highly desirable.

C. Role of the State Price Bureau

5.15 It is useful to note that price data are also collected by the SPB, which is largely responsible for setting state prices and monitoring all prices, including negotiated and periodic market prices. SPB representatives stressed that they are primarily a management bureau, not a data collection bureau. The SPB compiles its own price series but also uses SSB data. SPB concentrates its work on analyzing changes in prices and their impact on citizens' lives. For these purposes, it collects some price data in its own specialized surveys and combines them with SSB data for internal reports used for policy making. For example, it collects detailed data on wholesale prices for production materials which are either not collected by the SSB or not available at the central-government level. Another example is the SPB's collection of meat, vegetable, and grain prices in villages if it is looking at a specific problem or policy option. Its price data are not generally published or otherwise made available to the public.

5.16 SPB officials indicated that an important part of future price survey work must strengthen survey coverage of services and standardize further the general coverage from region to region. The coverage of services sold to households, for example, is reportedly most complete for urban households and less so for rural households. SPB officials said that even in cities, the scope of service coverage is much smaller than in other countries. This specific problem is related to the more general problem of adjusting the statistical system to meet the new needs introduced by economic reforms. Most of the change under reforms has been in rural areas and in nontraditional urban households not covered by the regular urban household survey.

D. China's Price Indices

5.17 The SSB compiles price indices based on its price surveys, most of which are holdovers from the prereform era. When the SSB lists its traditional price indices, it lists eight different indices and a ninth which is the "scissors" ratio of two others. These eight price indices are presented in Table 5.1, which also gives some indication of when the statistics became available.

Retail Price Index for the Whole Society

5.18 The national retail price index (quan shehui lingshou wujia zhishu) reflects price changes for some goods, but not services, sold retail in urban and rural areas. It is composed of the State Store Retail Price Index (guoying shangye lingshou wujia zhishu) and subcomponents of the Periodic Market Trade Price Index (jishi maoyi jiage zhishu), in particular the sale of rural goods to urban residents in periodic markets. Its urban component is based on consumption by registered urban households and apparently includes retail sales to organizations as well.

5.19 SSB technical handbooks describe calculation of price indices for the whole society as combining list, negotiated, and periodic market prices with weights made up of the "volume" shares of consumption for the various goods sold at the three prices. It is not clear what prices the "volume" shares themselves are calculated in, but the presumption is that they are current prices. In other words, for the same good with different prices, its list price weight in the total index is the value of sales of that good at its list price, and so on for other prices and other goods.

5.20 There are various stages to calculating a typical price index, whether it is a retail price index, a cost-of-living index, or some other index. First, an average price for each specific good is calculated from prices obtained in price surveys. The average price for a good is a weighted average of its three prices, if it has that many, and its unit is the Chinese yuan. These prices are calculated monthly, and the annual average is a simple arithmetic average of the monthly prices, except in some cases where the annual price is sampled at a specific time in the year, such as for agricultural prices during the peak harvest season.

5.21 Second, an index is calculated for each price, comparing it to the price in the same month in the previous year for monthly prices and to the previous year's price for the annual index. In other words, the previous year's corresponding price is set to 100. One SSB technical handbook 3/ notes that in 1987 there were exceptions for provincial-level cities like Beijing and Shanghai, provincial capitals, and Chongqing, which calculated monthly indices by setting December in the previous year to 100. It is not certain that this was still the case at the end of 1990.

5.22 Finally, indices for individual goods are combined in weighted averages to obtain indices for broader categories and for the whole society. SSB

3/ SSB, op. cit., p. 25.

Table 5.1: CHINA'S 1988 PRICE INDICES

	1950=100	1978=100	1987=100
Retail Price Index for the Whole Society			
National Average	234.6	172.7	118.5
Urban	310.2	191.7	121.3
Rural	196.0	161.2	117.1
By Type of Good			
Consumer Goods		175.4	119.0
Urban		191.7	121.3
Rural		163.2	117.4
Farm Inputs			
Rural	155.6	155.5	116.2
State Store Retail Price Index			
National Average	214.2	166.1	117.3
Urban	236.9	176.2	117.7
Rural	202.0	161.2	117.1
Periodic Market Price Index			
National Average	521.7	212.1	131.9
Urban /a	516.1	208.6	128.9
Household Cost-of-Living Index For Whole Society			
Overall Price Index			118.8
Services			116.2
Urban Household Cost of Living /b			
Overall Price Index	273.1	188.5	120.7
Services			113.8
Rural Household Cost of Living			
Overall Price Index			117.5
Services			118.2
Farm and Sideline Product Procurement			
Overall Price Index	531.9	244.5	123.0
Industrial Goods Sold in Rural Areas			
Overall Price Index	152.3	138.5	115.2

/a The original source notes that periodic market prices are only for rural consumer goods sold to "urban residents." See the text for a discussion of how this restriction may result in an understatement of price changes in periodic markets nationwide.

/b "Workers" household cost of living is a holdover from the earlier Workers' Household Survey, which the SSB now calls the Urban Household Survey; the old name indicates that weights used in calculating the index are based only on survey data from the subsidized portion of the urban population which has access to ration coupons and ration prices.

Source: Beijing Price Publishing House, China Price Yearbook 1989 (in Chinese), 1989, p. 352; National Periodic Market Index from SSB China Statistical Yearbook 1989 (in English), 1990, Beijing, p. 604.

officials explained that the weights used are mostly from household expenditure surveys, but also are based on retail sales information from state stores, other state-owned commercial establishments, and marketing and supply cooperatives. It is not clear, even after discussions with SSB officials, how the information from both household surveys and retail establishments is combined into overall weights for the index.

State Store Retail Price Index

5.23 The state store retail index (guoying shangye lingshou wujia zhishu) reflects only those goods sold in state stores in both rural and urban areas. It is used as a basis for comparison with the periodic market prices to see the degree to which two-tier pricing is affecting a certain good or category of goods. It is often presented as a subcategory under the retail price index for the whole society.

Periodic Market Trading Price Index

5.24 The periodic market index (jishi maoyi jiage zhishu) reflects price changes in both urban and rural periodic markets. These markets sell final farm products, means of production, animals, and locally produced articles for daily use. Periodic markets and China's index of periodic market prices have existed since the earliest years of statistical reporting in the early 1950s. The periodic market index is divided into two subcategories, urban and rural. Coverage in the rural or "village" index (nongcun jishi maoyi jiage zhishu) has two "large" subcategories for consumer goods and farm means of production. Consumer goods include grain, edible oil, fresh vegetables, dry vegetables, eggs, aquatic products, fresh and dry fruit, and daily use articles. Farm means of production include animal feed, small farm tools, live poultry, large animals, and bamboo and other wood. The urban periodic market index (chengshi jishi maoyi jiage zhishu) only includes consumer goods. It does not include any farm means of production.

5.25 This summary explains why many references to the nationwide periodic market refer to it as the "farm periodic market." Its orientation is toward farm production, either output or input. As such, it suffers from insufficient coverage of nonfarm household transactions. Such insufficiencies may not have been significant before reforms, but with more than one third of China's industrial labor force in the rural labor force by 1990, not to mention large segments of the transport, construction and other labor force components, periodic market price coverage is lagging behind changes in the economy. Future improvements in SSB's rural price surveys and indices should focus on expanding coverage and accuracy to include the many new rural prices important for reforms, combining them with appropriate weights into a rural price index adequate for reflecting all rural transactions. Analytically, this index would best be described as a general price index incorporating consumer, producer, and intermediate goods.

5.26 As for the urban periodic market, its coverage underreports a variety of transactions, especially those between urban entities not related to farm products. SSB technical manuals report that urban periodic market price coverage is generally limited to the consumer portion of periodic markets in cities and towns. Periodic market components of the urban retail price index

also overemphasize goods sold to urban residents by farmers. That is, nonfarm urban transactions are given insufficient coverage. In these ways, the prereform focus of periodic market surveys still dominates their implementation under statistical reforms and the Early Hybrid System.

Household Cost-of-Living Index for the Whole Society

5.27 The traditional name for this countrywide price index is the "Residents' Cost-of-Living Index" (jumin shenghuo feiyong jiage zhishu), and it is meant to reflect all changes in prices of consumption goods and services by households in urban and rural areas. In general, it is a combination of its two major subcomponents, the Urban and Rural Household Cost-of-Living Indices, and so is subject to the same concerns affecting those indices. For each of these categories, consumption is split into a commodity expenditure category and a service expenditure category. In the earlier urban cost of living index, services were included at state established prices but, because their resulting weight was statistically insignificant, little official attention was paid to them in published documents.

Urban Household Cost-of-Living Index

5.28 The Urban Household Cost-of-Living Index is still called the "Workers' Cost-of-Living Index" (zhigong shenghuo feiyong jiage zhishu) which reflects both its origins and its current content. It originally was based on the spending patterns of the households of state, urban collective, and urban government employees, since before economic reforms virtually all urban households were in these categories. With reforms, however, migration to the urban areas has accelerated.

5.29 The calculation of the urban household index is the same as for the retail price indices, in that it combines list, negotiated, and periodic market prices according to the value of transactions for a good at each price. The prices are measured by the urban price survey, and transaction value weights are from the urban household survey. It was confirmed that this survey does not cover households for an important and growing segment of the urban population, namely the "own grain" households (see Chapter VI on household surveys). As a result, the transactions used to weight urban prices reflect spending patterns by traditional urban households only, the so-called "nonagricultural households." These households have a subsidized standard of living (although price reforms are reducing the scale of the subsidy), with the subsidy taking the form of rationed goods sold at low state list prices. As a result, traditional urban households do not need to purchase as many goods at periodic markets as nontraditional households (the "own-grain" households). By only considering spending for traditional households, the urban cost of living survey overemphasizes list prices and underemphasizes periodic market prices, which in general are higher and fluctuate more frequently.

5.30 This underreporting and insufficient consideration of own-grain household transactions introduce significant distortions in China's price indices which future phases of China's statistical reforms should seek to reduce. Although SSB officials indicated that they did not survey own-grain households, they have not escaped the notice of other agencies such as the Ministry of Internal Security, which, as of the mid-1980s, has been register-

ing own-grain households as a separate category of urban residents (see para. 6.37). Whether or not the results of such a survey are made public, their expenditure weights should be made available to the SSB so it may initiate the calculation and publication of a second more comprehensive urban consumer price index.

Rural Household Cost-of-Living Index

5.31 The rural cost-of-living index is called the "Farmers' Cost-of-Living Index" (nongmin shenghuo feiyong jiage zhishu), reflecting traditional concepts in China dating from before reforms, when all rural households were essentially farm households. It combines prices for consumer goods and services using rural household consumption weights. SSB officials, however, said that the collection of rural service price data was poor, and it appears that the prices used for the index are those collected for the rural periodic market prices, which are virtually all commodity prices.

Farm and Sideline Output Procurement Price Index

5.32 The rural procurement index (nongfu chanpin shougou jiage zhishu) combines changes in prices of all kinds paid for rural farm products, whether by state enterprises, at periodic markets, by individuals, or through other organizations. It is essentially a farmgate price index which includes farmer handicrafts and other sidelines. While information is not available on exactly how the prices for this survey are collected, it appears that they are a combination of rural list prices paid by state agencies collected through administrative channels, and rural periodic market prices collected as part of the traditional periodic market price survey.

Retail Price Index for Industrial Goods Sold in Rural Areas

5.33 The rural industrial goods index (nongcun gongyepin lingshou jiage zhishu) includes both means of production and consumer goods, including durables. It is calculated by making adjustments to the rural retail price index component of the retail price index for the whole society.4/ This means that it only includes goods sold in state stores. This introduces an element of downward bias in the index because, with reforms, more retail sales in rural areas are made by individuals and private enterprises rather than by state-run stores. It is not clear what share of urban industrial goods sold in rural areas are sold outside state stores, but as reforms continue, its share will surely grow.

Other Price Indices

5.34 In addition to these traditional price indices, the SSB is currently working on several new price indices on which compilation results are still preliminary. The three major new price indices are:

(a) Industrial Producers Price Index;

4/ SSB, op. cit., p. 28.

(b) Purchased Raw Materials Price Index; and

(c) Construction Price Index.

5.35 The SSB indicated that these price indices are in an early stage of development and were too crude at present to publish. It was not possible to find out if these indices cover all productive establishments in the economy, urban and rural, or whether they are merely an extension of the traditional state-dominated production system, underemphasizing the growing importance of nonstate economic sectors.

E. Conclusion

5.36 The present range of price indices has several shortcomings related to the choice of weights, the coverage of items, and the range of prices used in the computations. In light of the far-reaching changes taking place in the economy, SSB should, as an urgent priority, review all of the indices, eliminate those that are no longer relevant, modify those that remain and introduce additional indices that would better capture the main price trends in the economy. In this context, SSB is urged to rapidly develop the Industrial Producers Price Index, the Purchased Raw Material Price and the Construction Price Indices. It should be noted that the Ministry of Foreign Trade (MOFERT) has produced some import and export price indices which, because they relate to goods passing through state trading enterprises, do not cover comprehensively all traded items. In addition, in compiling such indices there are complex problems of valuing traded goods at domestic versus world prices, and at implicit prices received (and paid) for the goods in question, which need to be resolved and for which it is understood SSB is seeking technical assistance from the IMF.

VI. HOUSEHOLD SURVEYS

A. Introduction

6.1 China's household surveys are just one example of a channel for data collection which will become increasingly important in many sectors as economic reforms progress. More specifically, data requirements for national accounts under China's Hybrid Statistical System will need to rely increasingly on sample surveys using economic concepts based on SNA principles. Sample surveys will eventually reduce China's heavy reliance on its network of data collection based on complete enumeration of results from all enterprises in a given ministry, sector, and ownership category. Interestingly, eventual deemphasis of complete enumeration based on administrative reporting and its replacement with random sample surveys will increase the accuracy of data and will result in improvements in national accounts. This is true because the omissions and biases in administrative reporting are systematic and persistent, compared to the results from a well-designed and implemented random sample survey. In addition to accuracy, sample surveys enjoy lower costs, especially as statistical requirements increase in complexity. As the pace of China's reforms increases, the inevitable growth in the number of enterprises outside administrative reporting channels will need to be covered by surveys. China's social and economic surveys have improved enormously since reforms began in 1978, and their techniques continue to increase in sophistication. There is still significant room for further improvement however, especially since, in at least one case, a rapidly growing section of the urban population may still not be sampled at all (the so-called "own-grain" population; see below). This review of China's survey practices is aimed at assisting SSB in strengthening its overall survey programs.

6.2 Household surveys are already well-established in China. While many data are collected through administrative reporting, a critical and growing segment of primary data comes from a variety of household surveys. For administrative purposes, the surveys are divided into two major categories: rural surveys ("Rural Village Household Socioeconomic Surveys") and urban surveys ("Urban Household Socioeconomic Surveys"). Unlike most other statistics, which are passed on to the SSB in aggregated form from their originating agencies and units, many of these two categories of surveys are conducted by the SSB itself under the direction of two of its 26 department-level units: the Rural Bureau and the Urban Survey Teams. The two most important surveys are the regular monthly urban and rural household surveys, but these two are not by any means China's only household surveys. The Ministry of Agriculture, for example, conducts extensive household surveys of production and output conditions. Nevertheless, the two SSB-managed regular surveys are by far the principal surveys for compiling national accounts components and calculating household incomes and expenditures, and they are also used in the calculation of retail price indices. The surveys provide the necessary information for establishing household consumption, savings, transfers, and other elements important for generating the expenditure side of the national accounts. SSB is also increasingly turning to the use of sample surveys for gathering data on the activities of businesses in the service sector.

B. Rural Household Survey History

6.3 Both the rural and urban surveys have their origins in the 1950s, during the first decade of China's economic program. Both surveys were interrupted by the great political and economic upheavals during the Cultural Revolution, but at the same time skills and methodologies gradually accumulated. These surveys did not initially use probability sampling techniques but were "model" surveys.

6.4 The rural household survey began as a one-time survey in 1955 covering 16,486 households and collecting information for the year 1954. Ten thousand households were then chosen for resurvey in 1956, and by the first half of 1958, just before the Great Leap Forward, the sample was 18,000 households in 770 counties. The selection of households was not based on sampling practices. The rural survey was suspended twice: first in the years 1958-62 during the Great Leap Forward, and second in the years 1966-78 during the Great Proletarian Cultural Revolution. The survey's restoration in 1962 allowed the survey to grow from 4,958 households that year to 12,095 in 1964. With the Cultural Revolution's start in 1966, the SSB stopped all survey activity, and indeed the State Statistical Bureau itself ceased to exist.1/

6.5 Beginning with coverage of 1978, the rural surveys have continued through the 1980s and early 1990s without a break. The actual survey work began in 1979 with a household sample size of 10,282 and a questionnaire covering both years 1978 and 1979. The sample size was expanded quickly to 16,000 households in 1980, 23,000 in 1982, and 30,500 in 1984. By 1990 the sample was just under 70,000 households.

6.6 During more than twelve years of economic reforms, as China's economic system has largely abandoned its heavily state-administered economic management apparatus, China's household surveys have grown in importance. In rural areas, where communes once administered virtually all farm life, economic reforms have brought about changes that affect data collection. While central authorities could once rely on commune-reported statistics, they now must collect most information with survey techniques, although villages as administrative reporting units do keep records on all households which are also used for statistical purposes. In urban areas, where state enterprises and other centrally administered units once employed virtually all workers, commercialization of the economy through reforms and inmigration of numerous rural workers and private entrepreneurs has spread the economy well beyond the gates of state-controlled enterprises, which have themselves gone through tax

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1/ Much of this and subsequent information was obtained from the two articles: Wu, Hui, "China's Statistical Survey Methods," (in Chinese) and "China's Farm Household Survey," (in Chinese) by He, Huanyan and Pan, Yanjin in SSB (State Statistical Bureau), Research Institute of Statistical Science, ed., The Establishment and Development of China's Socialist Statistical Work (in Chinese), 1985, Beijing: China Statistical Publishing House, pp. 31-41, 207-215, and from interviews with members of the SSB Rural Household Survey Team: Xu Lesheng, Tang Ping, Han Tong and Sun Hai'an, in Beijing, November 1990.

and management reforms separating them from direct management by Ministries and their local bureaus.

6.7 Given these rapid system changes and the demands they make on survey data sources, it is encouraging that the scope and collection methods of China's household surveys have improved significantly during the 1980s, and that many of the concerns expressed by early visiting foreign specialists have been addressed and corrected. During the 1980s, sample sizes have increased, sampling techniques have improved, and the scope of statistical coverage has expanded. As a result, the two surveys together provide a wide variety of such economic information as employment, cash holdings, cash and in-kind income, expenditure, consumption, ownership of durables, land and housing space, and detailed cash purchases organized by the category of price that was paid.

6.8 As survey improvements have matured and improved, however, other concerns persist, and at least one major new concern--that of coverage of these surveys--deserves special attention. Traditional concerns which persist are mostly related to nonsampling error. That is, the actual collection of data at the grassroots level appears to suffer from numerous lacunae which have worsened as economic reforms have complicated the overall structure of the economy.

6.9 The most serious concern, already mentioned above, is the omission of "Own-Grain" households from coverage in both surveys, since neither urban nor rural surveys seem to cover this new category of urban households--households recently moved to the city from rural areas and ineligible for standard urban subsidies. This lapse in coverage may not have been important in the mid-1980s when the new population category first developed, but it grew in importance through the end of the decade, and will certainly become increasingly important as reforms and market relations proliferate in the 1990s.

C. Urban Household Survey History

6.10 The history of the urban household survey also goes back to 1955, and can be divided into four periods: 1955-60, 1961-66, 1980-84, and 1984-present. The survey began as the "Industrial Workers' Household Survey," first limited to 6,000 worker households in 27 cities, to make the job manageable.2/ The households were selected by enterprises themselves based on income range. An immediate difficulty with the early sampling technique, in addition to its limit to industrial households, was that while it was designed to give a representative sample for the country as a whole it did not give a representative picture of each individual city or region, which made it unpopular among local officials and hurt its development.

2/ This account of the earlier development of the Urban Household Survey is largely taken from mission interviews and two essays: Wu, Hui, "China's Statistical Survey Methods," (in Chinese) and Shao, Zongming, "China's Worker Household Survey," (in Chinese), both published in SSB, The Establishment and Development of China's Socialist Statistical Work (in Chinese), cited above, pp. 31-41, 198-206.

6.11 Beginning in 1957, this preliminary defect was corrected and the number of households was expanded to 7,000 in 32 cities, with households drawn not just from industry but from four sectors: Industry, Commerce, Education, and Government Administration. Beginning in the second half of 1958, because of the Great Leap Forward's slogan, "Emphasize Production, Downplay Living," the number of households in the survey declined sharply, and in the second quarter of 1960 the formal compilation of the survey results stopped throughout the country.

6.12 Urban surveys began again in 1961 because of the need to understand the plight of urban households during the difficult years of starvation and financial disorder which followed the Great Leap. From roughly 1,000 households in 28 cities in 1961, the survey expanded to nearly 4,000 households in 40 cities in 1966. However, the samples were neither random nor representative and there were no uniform rules for sample size. Before the work of correcting these defects could be completed, the Cultural Revolution began in 1966, and the survey was suspended until 1980.

6.13 Urban worker household surveys actually began anew with a one-time survey of "Urban Household Conditions" in 1978 covering more than 88,000 households in 67 cities and 93 county towns. Costs prevented beginning a regular survey that year, but in 1980 the State Council decided to reestablish the Urban Workers' Household Survey, with an expanded nationwide staff paid, for the first time, by administrative outlays from provincial and local budgets. In that year, a one-time survey of basic conditions in worker households involved 47 cities directly sampled by the State Statistical Bureau and an additional 79 cities and 26 counties sampled by provincial and local government. Altogether 200,000 households were in the 1980 one-time survey, out of which 15,000 were made regular survey households, of which in turn 8,000 were selected for direct sampling by the SSB as the new Urban Workers' Household Survey.

6.14 In the early 1980s, the urban survey's major shortcoming was that it only included families of workers in state enterprises and collectives. It did not include those urban households in which no one was a worker or no one was employed in a state-owned or collective enterprise. It did not include single-person households or households of foreigners, and it was limited to major cities only, leaving out workers in county towns.

6.15 In order to correct some of these shortcomings, and in general in order to make the urban survey conform more to the needs of economic reforms, the urban survey was revised in 1984, when the State Statistical Bureau created its new Urban Socioeconomic Survey Team. The name of the national survey was changed from "Urban Workers' Household Survey" to "Urban Household Survey," because the basis of sample selection was gradually shifted from stratification based on the enterprise and worker rolls, to one based on city section, street, neighborhood, and household. The national survey was extended to include towns as well as cities, and by 1990, when the shift to streets and neighborhoods was complete, the total sample was 30,000 households in 500 cities and towns.

D. General Survey Administration

6.16 Both the rural and urban household surveys are administered directly by SSB through the network of provincial and local government statistical offices. At the national level, two of the SSB's 26 departments have direct responsibility: the Rural Survey Team (or Nongcu· Shehui Jingji Diaocha Dui, "Farm Village Social Economic Survey Team") and Urban Survey Team (Chengshi Shehui J'ngji Diaochadui, "Urban Soc conomic Survey Team"). Both were establi.hed in 1984 by order of the State ncil.

6.17 In August 1990, the Rural Survey Team's central office had an authorized staff of 85, with a countrywide staff of 8,250 at provincial and local offices, where they functioned as part of local SSB branch offices. In addition, there were 27,000 "assistants" nationwide to help with data collection and the day-to-day management of household record keeping. Not all of the central staff, however, were directly associated with the regular household survey. In all, the Rural Survey Team in mid-1990 had these different sections:

Rural Survey Team 3/

- Leadership Section
- Overall Administrative Section
- Localities Section
- Forestry, Livestock, and Fisheries Section
- Farm Village Household Survey Section
- Crop Section
- Special Survey Section
- Secretariat

6.18 The Urban Survey Team at the same time in mid-August 1990 had a permanent central staff of 78, with a nationwide staff of 4,550 in 146 large, medium, and small cities. By November 1990, the SSB had amended its urban classification scheme to separate out "especially large cities." The Urban Team in mid-1990 also had a number of sections, not all of which were directly involved in the regular urban household surveys:

Urban Survey Team 4/

- Leadership Section
- Urban Socioeconomic Section
- Urban Residence Survey Section
- Production and Investment Prices Section
- Circulating Goods Prices Section
- Consumer Price Section
- Computer Management Section

3/ SSB, "A Simple Introduction to China's Statistical Work" (in Chinese), August 1990, Beijing: SSB (mimeographed essay presented to Mission, November 1990), p. 13.

4/ op. cit., p. 14.

- Sample Survey Design Section
- Secretariat

6.19 Although household survey results for both teams are analyzed at central SSB headquarters, the collection work and initial compilation into summary statistics are done at the provincial and local branch offices. These offices not only collect and pass along national survey data, they also conduct additional surveys of their own and even, for their own local purposes, expand the national surveys with additional households and survey items. Funding for the national surveys comes from the state budget, but if the local branch office adds questions or households to the national survey, then it adds its own funds to cover the additional costs.

6.20 As for detailed implementation of the urban and rural household surveys, provincial statistical authorities confirmed that instructions sent from the central office are extremely detailed for sample selection and related issues. In some other areas, however, there is local discretion, especially for the selection of commodities used to gather expenditures by price category, because of the large variation in tastes and product brand from locality to locality (see para. 5.13).

6.21 In terms of the range of surveys conducted by provincial and local offices, data collection varies depending on the nature of the survey. For the regular household surveys, relatively detailed central instructions guide regular monthly, quarterly, and annual collections and compilations through specialized networks. For irregular "special" surveys, instructions to provinces and localities are much more flexible, and in Chongqing City, two basic methods were used for special surveys. First, where the subject matter is limited to state-sector organizations, survey data are commissioned from ministries and their local bureaus. Second, for administratively decentralized topics, counties and townships are charged with conducting the surveys, often in conjunction with the registries developed for the regular urban and rural household surveys. Special government surveys and increasingly frequent surveys conducted for private Chinese clients form a major and interesting component of the SSB's survey activity; they are, however, beyond the scope of this report.

6.22 In regard to all survey activity, it is important nevertheless to note that at provincial and local levels, one of the major ongoing initiatives to improve the quality of data collection is the establishment of statistical "stations" at the county level as an extension of the SSB's nationwide network. Such stations already exist in many parts of the country, and as resources become available the SSB plans to introduce them in all rural counties. In November 1990, Chongqing Municipality had such stations in only half of its rural counties, but planned to establish them in all counties by the end of 1991. Each center is nominally headed by a township official, with a full-time statistician as vice-director and other statistical staff heading specialized subunits. In addition to managing the collection and processing of data, these stations are also statistical information centers for their counties. At the same time, in late 1990, similar organs for cities and townships, called "neighborhood statistical centers," were being planned, organized by city blocks.

6.23 One of the difficulties facing the present administration is its lack of resources to standardize survey criteria sufficiently in all of China's provinces and localities. This constraint is especially serious for coverage of service activities and prices, which were not adequately treated in the Soviet statistical system China adopted in the 1950s.

6.24 SSB has made considerable progress in developing the capacity for conducting surveys of households. This is in part in response to the need for additional data that administrative records do not generate. Secondly, it is a reflection of the need to develop independent sources of data for socioeconomic analysis. It can also be surmised that these survey initiatives are designed to overcome some of the inherent biases present in data sets culled from administrative records managed and controlled by local officials. The great strides that SSB has made in organizing the statistical infrastructure for conducting household surveys are impressive. China has now in place a capacity for conducting household surveys which measures well against the capacity of other countries at a comparable stage of development.

E. Sampling: Rural Household Survey

6.25 The sampling design for both the urban and rural surveys had, by the latter 1980s, incorporated suggestions of foreign specialists in the early 1980s and developed a stratified selection system based on location, rather than employment rolls or other listings. In both cases the SSB has also begun a system of sample rotation, replacing a share of the total sample each year. Within the stratified target population, households are ranked by income, based on administrative and one-time survey data, and then selected using systematic sampling techniques.

6.26 For the rural survey, multistage stratification is employed. Two different approaches, depending on the population density and administrative makeup of the region are used. In general, the stratification is:

Province-->County-->Village-->Household

but in densely populated counties where there are well-enough developed townships (which are larger than villages and have a better statistical office), the village administration (between township and household) is skipped and the stratification is:

Province-->County-->Township-->Household

6.27 In the 1990 procedure, the survey selected roughly 35 percent of the more than 2,000 counties in the entire country. Every province is sampled, but for large provinces a lower share of its counties is used, sometimes as low as 20 percent, while in smaller provinces the share of counties selected is much larger, sometimes as much as 50-60 percent. Counties are by definition rural, and in 1990 there were more than 9,000 villages or townships in the counties selected for the survey. For these villages and townships the rural survey uses data from administrative sources on: (a) average per capita income for each village, and (b) total population per village. Within a province, village-level sampling intervals are determined by population and ranked according to per capita income, and then the number of households to be sam-

pled per village is determined by a regular sampling interval across the prov ince, selecting households by population interval without village replacement. Within villages there is household selection, also based on administrative measures of household per capita income, using a double systematic symmetrical-centered sampling procedure, which SSB officials said they introduced in 1985.

6.28 Households that fall within the survey maintain a daily diary (the Zhangben) and two transactions books, one for cash transactions and one for transactions in kind. Households receive a maximum payment of Y 6 per month for participating in the survey, and the households also receive goods and other benefits from time to time. These incentive payments are designed to encourage participation. There are no penalties for nonperformance, and if there are difficulties, the assistant enumerator responsible makes extra efforts to improve personal relations with the household. For each five households there is an assistant enumerator who visits the households and helps those who are illiterate or who have other difficulties. Each household is visited roughly once a week. If a particular household needs more help, it is visited more frequently. The assistant is paid Y 10-15 per month and is someone living in the same village. The assistant enumerator fills out a form each month summarizing the two transaction books, which is delivered to the county or township statistical office. The county/township summarizes the monthly reports and sends its results to the provincial statistical office. There are insufficient resources at the provincial level to process the individual monthly data records, so these remain at the county/township level.

6.29 The rural survey has gradually introduced systematic rotation of the sample. In 1980, 1982, and 1984, the survey replaced only those households which were not reporting well. At the same time it was expanding the sample. In 1985, the entire sample was replaced, and then in 1987 there were some slight sample cleaning. In 1989, the SSB rotated out one fifth of the entire sample, and beginning at the end of 1990 it will start rotating out one fourth of the sample each year. Explaining their work in a different way, SSB officials said that, by 1991, all of the original 1985 sample will have been rotated out, because at end-1989 they rotated the entire sample in six provinces as a learning exercise, and at the end of 1990 (for the 1991 survey) they planned to rotate out all of the rest of the 1985 sample. Beginning at the end of 1991, they were to start rotating out one fourth of the sample each year. Throughout the 1980s, as some of these changes took place, the share of poorly-reporting households was less than 1 percent.

F. Sampling: Urban Household Survey

6.30 As with the rural survey, sampling techniques for the urban survey have matured in the 1980s. By 1991, the sampling methods in use were satisfactory and the organizational arrangements in place were impressive. Prior to 1985, the urban survey used worker rolls from all the eligible cities in each of China's six official regions, or districts for sample selection of households. The pre-1985 survey used these urban worker rolls and ranked households by per capita income and proceeded to sample households on a systematic basis. Beginning in 1985, however, the sample selection process has gradually shifted to neighborhoods, streets and roads (based on the advice of

an advisor sent by the United Nations in 1981), and by 1990 this shift was complete.

6.31 In the current sample design, China's cities are divided into four categories: especially large, large, medium, and small cities. Target household sample sizes for each city are based on sampling ratios for each category (for example, 8 per 1,000 for large cities, 10 per 1,000 for medium cities, and 15 per 1,000 for small cities). Based on a first-stage survey of roughly 150,000 households, the SSB has information on household size, household employment, and household income. With this information, cities are ranked by population and average income and sampling intervals are used to pick the cities chosen for detailed survey. Because of the desire to include all provincial capitals, if any of these is missed by the initial city selection process, it is added into the sample, resulting in oversampling.

6.32 Each city is stratified by city section, then by street, then by neighborhood committee, and then by household. Within a neighborhood, there is a systematic selection by interval, with the first household selected at the midpoint of the first interval. The SSB acknowledges that it has been advised to randomize the first household's location within the first interval, but this has not yet been done.

6.33 In the first phase of the process, when only size, employment, and income are asked, the sample includes one-person households, but these are excluded when the SSB selects the smaller sample for daily record keeping. Furthermore, SSB officials confirmed that the sample only includes the so-called "nonagricultural" population (see below in the section on "own-grain" households). Interestingly, even if a household has one "nonagricultural" person, who is married to a so-called "agricultural" person, that household is excluded from the survey.

6.34 Each household participating in the urban survey receives an incentive payment of Y 5 per month. Some households have offered to pay the SSB Y 5 per month if it would excuse the household from participating in the survey. SSB officials responsible for the urban survey stressed that, in their many years of experience, the most serious problem in the survey was nonsample error. Survey interviewers must spend considerable energy to win the cooperation of the households. For example, the interviewer will help the household with its laundry, or take a basket of fruit, or help the family solve an administrative or personal problem, even visiting them in the hospital when they are sick. To avoid disputes within a household, each member is encouraged to keep a separate transactions diary.

6.35 Most of the data are processed at the provincial level, although SSB does receive data for a third of the sample to use for its own purposes. All data are sent to the SSB central office on computer diskettes. Overall, the urban survey is well conducted both operationally and in terms of the methodology.

G. Urban Survey Coverage

6.36 With respect to the coverage and scope of the two household surveys, it should be noted that these surveys do not cover the entire population. By

way of background it is necessary to offer an explanation about China's population registration system. Beginning in the early 1960s, China formalized a system of separate household registration for rural and urban households--called the "agricultural" and "nonagricultural" populations, respectively. It is important to realize that the term "agricultural" in this usage does not necessarily imply that a household is primarily engaged in agricultural pursuits. That was in general the case when the registration system was first introduced, but as reforms proceeded in the 1980s, many rural households migrated to the towns and cities or had their homes incorporated in new towns. Many more so-called "agricultural" households came to be employed or engaged in industry, construction, transport, commerce, and other service sectors. By the latter 1980s, more than 40 percent of China's total industrial labor force was registered as "rural labor" drawn from the so-called "agricultural population."

6.37 As a consequence of these migratory movements, in part the result of the disbanding of the communes and the subsequent growth of Town and Village Enterprises (TVEs) linked to the major economic reforms, the population is now categorized into three distinct groups and so registered. Since 1986, by order of the State Council, the Ministry of Internal Security has introduced a new third registration category for recently arrived or incorporated urban residents who do not receive the subsidies and benefits of more traditional urban households. Because they cannot rely on the state for a basic household grain allocation at subsidized prices, they are given official names which are perhaps best translated as "Urban Residents Responsible for their Own Grain' (Dai Kouliang Jin Chengde) or "Population with Self-Managed Grain" (Zili Kouliang Renkou), shortened here and referred to as the "Own-Grain" population. There is great sensitivity on the issue of this new category. During preparations for the mid-year 1990 census, the issue of the Own Grain category was discussed, but in the published reports all Own Grain households were included together with "agricultural" households.

6.33 Household registry is important in China for a wide variety of reasons, including employment, taxation, vital reporting, birth control monitoring, education, welfare services, and distribution of ration coupons. The major distinction between "agricultural" and "nonagricultural" populations has always been that a household officially registered as "nonagricultural" is automatically entitled to a whole range of ration coupons, subsidized services, and income supplements not available to the "agricultural" population. Before economic reforms spread the use of markets in China, household registry was part of an effective system limiting rural-urban migration because, unless a household was registered in the city, its members could not get a job, find housing, or purchase food. With the advent of reforms, however, these restrictions were relaxed and markets removed the need for ration coupons if a migrant was able to pay the higher nonsubsidized prices.

6.39 As a result of rural-urban migration during the 1980s, and the creation of new cities and towns in what had been rural areas, the close correspondence between urban population numbers and the so-called "nonagricultural population" began to weaken. The divergence for Chongqing Municipality in Sichuan Province can be seen in Table 6.1 which shows that in the late 1970s and early 1980s, there was close correspondence between the urban population in Chongqing and its registered "nonagricultural" population. As reforms

Table 6.1: CHONGQING URBAN AND "NONAGRICULTURAL" POPULATIONS

	Urban population (thousand)	Subsidized "nonagricultural" population	
		Thousands	Share (%)
1978	2,875	2,686	93.4
1979	2,989	2,829	94.6
1980	3,060	2,887	94.3
1981	3,126	2,964	94.8
1982	3,246	3,043	93.7
1983	3,346	3,137	93.8
1984	3,556	3,200	90.0
1985 /a	4,258	3,357	78.8
1986	4,638	3,452	74.4
1987	4,804	3,535	73.6
1988	4,940	3,601	72.9
1989	5,198	3,652	70.3

/a Urban boundaries were redefined in 1985.

progressed, especially after the onset of urban management and rural commercial reforms in 1984, the urban population grew much faster than the "nonagricultural" population, until the "nonagricultural" share of the urban population had dropped from 95 percent in 1981 to 70 percent in 1989 can (an extension of urban boundaries also served to enlarge the share of the urban population).

6.40 The difference between the "urban" population and the "nonagricultural" population is not the same as the own grain portion of the urban population since the criteria for determining if households are "rural" or "urban" is not the same as the criteria for determining if they are registered "agricultural" or "nonagricultural." The rural-urban population category is based on dwelling location and is determined according to city and town boundaries by local officials responsible for administrative population measurements. The "agricultural"-"nonagricultural" registration category is based on a household's inherited registration status and is maintained by the local office of the Ministry of Internal Security. The major complication is that with the spread of town and city boundaries in the 1980s, many farmers found themselves, their dwellings and even their fields within town and city boundaries. Thus, the urban population includes own-grain households as well as urban agricultural households.

6.41 The complexity of trying to match population and registration categories is best illustrated with an example. Even though Chongqing is a municipality, it has a large number of rural counties under its administration. Even in 1989, its rural and farm village population was nearly double its "urban" population, which is officially called the "city and town" population

and includes the population of towns in farming counties. Many of Chongqing's all-urban "sections" and all of its farm-county towns apparently include significant numbers of farmers and farm dwellings. Since the rural survey covers all households engaged in agriculture, wherever they live, it also covers a good portion of those urban residents who are not at the same time registered "nonagricultural"--because even though they live within urban boundaries, they are in fact farmers. It was explained to the mission that to be an "agricultural" household, the household had to be primarily engaged in agriculture, but many of its members might also be engaged in other sectors. Other interviews gave a somewhat different standard, which was that the household had to have its own land or animals--that is, land or animals officially contracted to it and under its production "responsibility."

H. Own-Grain Population Size Estimates and Implications for Analysis

6.42 These definitional complications for population counting and registration are important because ignoring them introduces distortions into national survey results and calculations of price indexes. For example, inclusion of own-grain household data in national survey results might result in significantly different summary statistics for urban household income, household size, household living space, and household asset ownership. With respect to price indices, excluding own-grain transactions generally results in indices which understate actual price changes. It is therefore significant that there is no available measure of even the size of the own-grain population "missed" by both surveys, and indirect estimates such as those presented below yield only a wide range of possibilities.

6.43 One method of estimating the own-grain population size uses labor force data. China's labor force data are classified by both sector of employment and by rural and nonrural (urban) status. The most obvious labor-force proxy for the own-grain population is "urban individual" workers ("Individual Laborers in Cities and Towns"), which is distinguished from two other major categories: "State and Urban Collective Employees," who are probably mostly registered "nonagricultural," and "rural and village laborers," who are almost certainly all registered "agricultural." If "State and Collective Employees" and "Urban Individuals" together are taken as the urban labor force, then for Chongqing Municipality, "Urban Individuals" have only grown from 0.13 percent of the urban labor force in 1978 to 3.3 percent in 1989.5/ For all of China, the shift in the "Urban Individual" share of the urban labor force during the same 1978-89 period was from 0.16 percent to 4.5 percent.6/

6.44 There are several potential sources of error in using labor force data to estimate the scale of the own-grain portion of China's urban population. In the first place, labor force data refer to individuals, and many persons working for nonstate-system enterprises are individuals temporarily living and working in urban areas. They would not be considered households, and if they were sending money back to a home village, that income would be

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5/ Calculated from Chongqing Statistical Yearbook 1990, p. 33.

6/ Calculated from SSB, China Statistical Yearbook 1990 (in Chinese), p. 113.

included in rural survey coverage there. This factor points to labor force data overstating the importance of own-grain households. At the same time, there are incentives for state-system enterprises (especially collectives) to hire workers who are not part of the state-system labor force (that is, not part of the officially registered "nonagricultural" labor force). This is because they are less expensive and do not need the many benefits traditionally guaranteed to state-system workers. This factor points to more own-grain households than labor data indicate. In general, labor force data probably understate the scale of own-grain households, so that 4.5 percent is a safe lower-bound on the extent to which the urban survey of "nonagricultural" household sample is apparently deficient.

6.45 A second approach to estimating the size of China's urban own-grain population is to use results from China's 1990 census, which apparently had a narrower definition of "urban" households than the city and town border criterion used by administrative population measures. Preliminary census data report that China's urban ("city and town," or shi-zhen) population in mid-1990 was 296.5 million persons. The next step would be to compare this figure with the urban "nonagricultural" population at the same time, but this statistic is not yet available. The most recent data are for end-1988, when the "city and town" "nonagricultural" population was 204.1 million persons. Using the recent historical growth rate of 5.0 percent for this population category generates an estimate for mid-1990 of 219.6 million "city and town nonagricultural" persons.7/

6.46 Comparing the census urban population with this mid-1990 "nonagricultural" estimate results in a mid-1990 estimate for China's own-grain population of roughly 77 million persons, or 26 percent of China's total urban population. This is clearly a high outer bound on such estimates, because SSB population specialists told the mission that census urban population figures still include "town" populations from many parts of the country where there are large numbers of new towns which contain mostly farmers. This is especially true in the south, in provinces such as Guangdong. In addition, the census figure for China's urban population captures a large number of workers and families temporarily in urban areas but not settled there who remit part of their income to a rural household where they are at least partially covered by the rural household survey.

6.47 Whether the own-grain portion of China's urban population is 5 percent or 25 percent, it is clear that a problem exists. SSB officials in both Chongqing and Beijing confirmed that they recognize that the rural survey does not cover the own-grain part of "nonagricultural" households, because they are

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7/ These statistics are from SSB, China Population Statistics Yearbook 1989, p. 152. It is interesting to note that the city and town nonagricultural population grew much faster than total population after 1978, averaging 5.0 percent per year, while during the period 1965-77 it averaged only 1.4 percent growth. For this reason, 5.0 percent growth is used to project the end-1988 city and town nonagricultural figure to mid-1990. Similarly, it is relevant that not all of China's "nonagricultural" population lives in cities and towns; roughly 10 percent lives in rural counties outside cities and towns. See ibid, pp. 3-7.

not farmers. At the same time, they were very matter-of-fact about their understanding that since the urban survey only samples those urban households which are officially "nonagricultural," it also misses own-grain households because they do not have that status. Although SSB officials did not quantify the size, they were of the view that these own-grain household numbers were not significant.

6.48 The reason Chinese officials gave for this own-grain gap in survey coverage was that SSB lacked resources to cover these households. There are also apparently technical problems, since some of the own-grain population is the so-called "floating population" of temporary or migrant workers. Furthermore, it was explained that, given tight SSB manpower constraints, other surveys had higher priority such as surveys to help compile new types of urban price deflators.

6.49 The omission of the own-grain segment of the population from household surveys has important implications for the national accounts. For example, price indices rely on household surveys for expenditure weights with which to average individual price movements. If urban expenditure weights are based only on state-system "nonagricultural" household spending patterns, price indices will weigh low state prices too heavily and higher market prices too lightly, resulting in an understatement of the seriousness of inflation. Continued exclusion of own-grain households imposes a heavy cost as a number of statistical series will continue to incorporate distortions and biases. Significant improvements in national accounting are unlikely to proceed until this segment of the population is included in the coverage of surveys.

I. Survey Content and Usage

6.50 Both the rural and urban household surveys collect a broad and impressive range of information. While their basic thrusts are similar, the detailed questionnaires and reports are organized very differently. It should also be noted that, although a large and rich volume of data are gathered, the tabulations, at least those published, do not maximize data use. The information gathered is largely aggregated across the questionnaires resulting in simple one-way or at best two-way tables. Given the enhanced computing capacity now available to it, SSB should attempt to develop cross-tabulations with multiple variables depicted. This would greatly enrich the data and lead to further use of the information in policy formulation and in monitoring socio-economic trends in a rapidly changing environment.

6.51 Although SSB uses the information gathered in estimating subaggregates of the national accounts, e.g., household consumption, household savings and for computing weights for price indices, the potential exists for greater use. The calculation of income/expenditure elasticities, estimation of other coefficients, changes in patterns of income distribution over time, assessing regional differences represent several other potential uses of the data which do not appear to have been tapped. We recognize that SSB may lack the means for embarking upon these undertakings, and therefore recommend that collaborative arrangements be developed with research and policy institutes within China. It is further recommended that SSB begin a long-term (possibly ten-year) process of merging and consolidating the two surveys. This could begin by introducing piecemeal a few items at a time which are defined exactly the

same in both surveys and broadening the scope of such items as time goes on. This kind of gradual conciliation between the two surveys anticipates the time when commercialization of all sectors of the economy will have effectively reduced the purely rural-urban distinctions between households.

VII. QUANTITATIVE ISSUES RELATED TO SSB's GDP AND GROWTH MEASURES

A. Introduction

7.1 China's statistical system, its national accounting estimates, and their identified weaknesses is discussed in Chapters II through VI. This chapter reviews how quantitative adjustments can be made to existing measures of GDP and output growth. For the most part, the task can be undertaken through separate subsectoral exercises. For example, the undervaluation of housing services can be separately explored from that for vegetable output. In each subcategory, Chinese statisticians have already begun supplementing information from traditional sources to improve GNP coverage; separate investigations for each category would determine the degree to which these supplementary statistics are adequate. Such separate investigations comprise much of the discussion below. Separate elements, however, also have secondary influences on each other, as when revaluation of housing costs requires revaluation of government employee costs-of-living and hence revaluation of government services output. These influences can be important for overall valuation of economic activity and open the door to conceptual and policy issues especially important for China.

7.2 At the outset, it is useful to distinguish between major GDP corrections needed in China's case to arrive at a consistent set of accounts, and computations useful for international comparisons between countries. For the latter purpose calculations using purchasing power parities are needed. China has not participated in the International Comparison (ICP) Project to date, but has signaled that it shall in the next phase. The discussion in this chapter will not address the issue of detailed international comparisons. Rather, it will focus on issues of how the national accounts can be improved in the short term. In China's case, major corrections are justified in some instances, because the values placed on certain useful goods and services are either zero or so low that no conceptual value system--either Marxist or market--justifies them. In other words, particular components of China's GDP are not valued at "market" prices but at artificial "transaction" prices which do not serve as adequate measures of actual economic activity. This is especially clear, for example, where China places no value on services such as enterprise-supplied education, health care, and housing. These services clearly have significant value and belong in aggregate GDP. Still, once the need for such major crude corrections is recognized, it is not easy to say just what the new valuation should be. The second set of corrections concern the application of appropriate statistical methods to reduce biases introduced by measurement techniques and coverage currently practiced. Thus, some adjustments are necessary for underrecording, undervaluing, or nonpricing of economic services, while others are required, for example, in the area of enterprise supplied welfare services, to ensure that outlays, value added and macroeconomic aggregates are properly allocated to their appropriate sectors.

7.3 Treating GDP corrections and movements toward an internally consistent valuation system has some practical implications. For the domestic economy, it helps guide economic reforms in the process of adjusting actual prices. In China, for example, recently publicized steps in housing reform are meant ultimately to end direct enterprise provision of housing for employ-

ees by raising rents to "meaningful" levels and allowing urban residents to own their own homes paying "meaningful" prices for them. This is one of several necessary steps to sever the barter dependence between worker and firm which has so far prevented urban labor reform and ultimately prevented economy-wide enterprise reform. This process needs guidance, because in the medium term it requires compensation through higher cash incomes, which in turn must come from profits, the state budget, or some gain in labor productivity. These in turn may imply new pricing and tax systems, new transfers, investments, and layoffs. In this example, by estimating a value for housing services consistent with other economic dimensions, China can better see the scale of additional practical policy steps needed to complement housing reform.

7.4 Considering GDP corrections as movement toward a different system of values or prices has implications for international comparisons as well, even when comparisons are made by conversions at an official exchange rate, which in turn is expected to have some meaningful relationship to prices for a country's internationally traded goods. If corrections to measures of China's GDP significantly alter effective relative prices between China's traded and nontraded sectors, as would be the case with a major revaluation of services, the standard international measure of China's per capita GDP would also be affected. The critical issue here is not a sector's new output value in absolute terms, but its value in relation to traded goods. Price reforms which either raised prices for nontraded goods or lowered prices for traded goods would result in a higher international valuation for total GDP. For example, industrial pretax profit-rate comparisons indicate that, for the purpose of enhancing tax revenues, China may significantly overvalue the output of some manufacturing subsectors, many of which are important for exports. After price reform, lower prices for these manufacturing subsectors would be compatible with a revaluation of the exchange rate, which would mean that in international terms all other sectors of the economy would be worth more.

7.5 Finally, recognizing measurement corrections for China's GDP as adjustments in a system of relative values will permit a look at the impact that revaluations in one sector have on the value of output in other sectors. For example, significant nonzero new values for housing services raise full measurement labor costs for all sectors. To the degree that nontrade sectors in China are more labor-cost-intensive than traded sectors, the international equivalent of China's GDP will be larger. In other words, major corrections to GDP measures for a few large and critical sectors could result in substantial further corrections in a wide range of other sectors and hence in total GDP. The importance of this phenomenon is amplified by strong evidence that the services sector in general has developed particularly fast since China embarked on its reforms in 1978. Even though SSB has redesigned its approach to measurement of the service sector, it is difficult to capture satisfactorily the many rapid structural changes occurring--both between services and industry and between urban and rural areas.

7.6 It is important to stress that reworking China's GDP by subsector as described below is not recalculating China's GDP according to some ideal price system. However, some elements of the present valuation system reflect conceptual biases and distortions which must be adjusted in estimating GDP. For

example, prior to the introduction of reforms, prices of so-called necessities were all set at low or negligible levels to reduce nominal labor costs. But prices of so-called luxuries were set artificially high, to capture excess purchasing power. In a sense, these prices are misleading measures of China's actual economic activity levels and give an inaccurate description of economic life in China. Corrections to these and other distortions are the purpose of GDP component revaluations discussed below.

7.7 The case-by-case treatment of subsectors below is divided into two separate parts. Section B presents possibilities for correcting China's GDP measure in a single year--such as in 1987, when the new input-output table was compiled. Section C addresses growth rate measures for GDP in the 1980s, again by suggesting separate subsectors as sources of bias or methodological inconsistency. Before turning to these issues, it is perhaps useful to point out that some provincial governments and municipalities, such as in Chongqing, prepare additional statistical calculations which, in certain instances, are more complete than those of the central government. Several carry out separate input-output exercises and price and production studies, for example, in construction and agriculture, respectively.

B. Issues Important for Single-Year GDP Measurement Corrections

7.8 Most of the issues listed here as important for correcting the measurement of some GDP components relate to a specific economic subsector or set of subsectors. Ideally, each should be examined by specialists familiar with the subsector and with valuation problems in general. In this way, work on GDP valuation can be broken into separate modules to economize on time and enhance accuracy.

Housing Services

7.9 Improving accuracy in both the scope and valuation of housing services is possibly the most significant single task facing Chinese statisticians. Most of Chinese housing services are either excluded from real estate GDP measurements or are included at very low values. While there are theoretical and conceptual explanations for the evolution of extremely low housing services valuation during the 1949-78 period, the real reasons are probably more practical and operational. Housing services were either absorbed into enterprise accounts as nonproductive costs, provided virtually free to other urban residents as a way to reduce labor costs, or significantly underestimated as part of the rural household own consumption economy (because rural housing services constructed with household labor or bartered village labor are often not valued at all).

7.10 Urban and rural housing services represent different measurement challenges, but in both cases the existence of adequate information on housing area provides a good statistical basis for the work. In each case, the major difficulty is not agreeing on whether to raise estimates for housing services, but how much to raise them. As mentioned in the introduction, there is no "correct" answer to this question, so an adjustment of the correct order of magnitude is the goal.

7.11 There are two basic issues related to setting a value for housing services: (i) the cost of provision, and (ii) a premium for central place scarcity. Cost of provision includes depreciation, maintenance of public spaces in multi-unit dwellings, administration, interest costs for invested funds, some normal rental income, and routine upkeep (but not major repairs). Of these, depreciation represents the separate challenge of valuing original housing construction, which tends to be at low historical values rather than replacement values, and setting realistic lifetimes, which are shorter in rural areas than in cities. In China's case, current GDP measurement practices reflect either actual rents paid, which are often below depreciation values or imputed rents estimated to be (very low) depreciation costs.

7.12 Valuation of housing service components should also include an item for imputed taxes or rents corresponding to the central place scarcity value of the housing location. In other words, housing services at the center of large cities should have a much higher value per square meter than rural housing. This is important both as a transitional measure for Chinese housing valuation after housing reforms and as an aid to international comparisons. In this regard, central place scarcity in China could be estimated by applying central place rental patterns from other poor countries to China's housing service estimates. Valuation of central place scarcity has a role in "early-stage" socialist economies for a number of practical reasons, but there is also theoretical justification from the source of all socialist value in so-called "use-value."

Commercial Rents

7.13 Commercial rents are not usually considered for the revaluation of GDP components because they are in general intermediate inputs and costs and not part of final demand. Hence, they are not usually thought of as part of GDP. While this perspective is valid when treating sectors one-by-one in isolation, when China's economy is viewed as a system of interrelated values, commercial real estate rents have a differential impact on the value of traded and nontraded goods. In general, more realistic higher commercial rents would raise the costs and prices of urban production and hence of nontraded goods, because of the large service component in center-city GDP. More realistic valuation of commercial rents would also assist in preparations for commercial real estate reforms, which are already in their early stages. Given these considerations, the impact of commercial rents on China's GDP needs adjustment just as that for housing services does.

Government Services

7.14 Government services in GDP are currently estimated from wage and salary data, but these do not include realistic cost-of-living items for the many subsidized or gratis benefits enjoyed by public employees. Housing is only one of these benefits, but possibly the most significant. Price subsidies for food and other benefits should also be included more fully in the wages and salaries used to estimate the value of government services. With these adjustments, government services will be significantly higher than currently estimated for China's GDP. The implications for government policy, especially financial policy as housing and other price reforms proceed, are

significant, and given the nontraded nature of government services, international comparisons would be affected as well.

Urban Enterprise Subsidies and Unusually High Profits

7.15 Many of China's urban commercial and industrial activities are subsidized, but the subsidies are treated for GDP purposes as negative value-added. That is, for any given subsector, if revenues fall short of costs, the sector is considered to be making a negative contribution to value-added, and state budget allocations or loans on generous terms from state banks are used to make up the difference. This is not only unsatisfactory from a practical standpoint--negative output over the longer term--but is not an accurate representation of supply and demand in the Chinese economy. What is really happening is the provision of goods and services to households and other enterprises at some "full value," with part of the bill paid by the state, either out of the budget or with borrowed money. In other words, chronic subsidies should in fact be treated as part of enterprise revenues, because the state is in fact paying these enterprises to provide goods and services to third parties.

7.16 Conceptually, this amounts to a redefinition of the nature of government subsidy transfers, from producer cost subsidies to user income supplements. To the degree that user income supplements refer to private households, they should be treated as enhanced labor income. To the degree that government subsidies are reinterpreted as payments for intermediate inputs, they would be seen as supplemental subsidies to the purchasing sector, which in turn would be reinterpreted as government demand channeled through the next round of purchasers, until ultimately they appear as higher revenues from sales to final users. In other words, for intermediate inputs the subsidized losses from one sector are merely being transferred to another. But such adjustments do more than shuffle funding around, because they imply fuller estimates for value-added in many sectors and ultimately for the economy as a whole.

7.17 Corrections in the treatment of urban subsidies of this nature run into the practical question of how much to adjust the value-added in these subsectors. What is normal profit for China's urban enterprises? Calculation of rates of profit (and taxes) relative to physical and working capital needs for even major sectoral aggregates results in wildly disparate profit rates, some close to zero if not negative (as for coal, for example). As for output prices, there is no "correct" level for profits or profit rates.

7.18 The issue of unusually high urban enterprise profits for some sectors is part of the same adjustment process applied to subsidies. Many sectors, especially in light manufacturing, have very high profit rates compared to fixed and working capital which tend to overvalue the GDP component for those sectors. Although it is not easy to say how much output should be corrected, some rough adjustment is called for. Again, it might be remarked that such corrections would just shuffle funds around and have no significant effect on GDP measurement. But such adjustments, besides generating more accurate sectoral GDP data, are worthwhile to the degree that they provide guidance to future price reforms and complementary government policies. Furthermore, since many light manufacturing sectors are active exporters, downward

valuation adjustments have the effect of raising overall GDP in international comparisons, because such downward domestic valuations correspond in some measures to a revaluation of the Renminbi.

Enterprise-Supplied Nonhousing Services

7.19 In addition to housing, Chinese enterprises provide an array of services to employees and their families, usually for free or for insignificantly nominal fees. Examples are education, health care, nursery care, social welfare administration, and entertainment. Costs of these services are part of overall enterprise finance, but since they are usually treated neither as an enterprise output nor as a cost of production, their value is underreported as part of national service sector output. Statistics on the scale and quality of these services are either physical--in the form of relevant labor force or other data--or financial but difficult to disentangle from other enterprise finances. Cooperation of the Ministry of Finance is needed to find an administrative solution to the problem, using the SSB's experimental surveys as a guide.

7.20 The major issue is that this extensive range of urban services is provided almost free of charge. While it may be difficult to agree on an exact revaluation figure, some crude but substantial upward adjustment is called for. As with revaluation of other services consumed by households, revaluation of enterprise-supplied services increases the valuation of the real cost of living for urban workers which in turn has a complex influence on value-added for enterprises. If profits and taxes are calculated net of the cost of such services, then value-added for the enterprises is increased by revaluation, because revaluation represents adding additional worker income to pay for services which also represent an additional enterprise output. If the enterprise traditionally pays for such services out of its profits and taxes, then enterprise value-added would remain unchanged, as value-added represented by profits would be replaced by an equivalent amount in labor income. In discussions with officials it was learned that enterprise profits and taxes are net of such service costs, which are nevertheless not treated as costs of production. This is a complex problem and one that is especially important in China's context, since the services provided constitute an important element of household welfare. At the time of the mission, it was difficult to confirm how these activities were treated and whether practices actually differed from one enterprise or industry to another. Within a national accounting framework, however, it would be highly desirable to have all these enterprise-supplied social welfare services for employees and their families shown separately according to their category, and to have them valued appropriately. At the very least, this value should represent their imputed labor cost.

7.21 The mission was encouraged to learn that SSB is taking action along these lines. The total number of people working in nonindependent accounting service facilities established by enterprises and institutions is recorded separately (by the enterprises and agencies), and value changes in this service subsector are calculated according to the total wages of the employees concerned. For a fully comprehensive SNA treatment, however, the statistical separation should treat these "units" as independent accounting entities, paying out costs for such things as administrative overheads, rent, utilities, telecommunications, and other inputs, to allow more accurate production cost

calculations (and hence value added) for both service establishments and their nonservice parent enterprises.

Domestic Servants

7.22 National accounting estimates prepared by SSB appear to continue significant underreporting of income earned by domestic servants. Domestic servants themselves are often excluded from urban household surveys, because they are not considered household members. For purposes of grain rationing, they are counted as miscellaneous persons outside the household to whom the household supplies grain. These grain payments and other payments for domestic help, however, are a significant GDP component and add to the real cost-of-living for urban state-system workers and staff. It does not matter that urban household in-kind payments to domestic servants come from incomes already reported as urban wages, because household costs-of-living are not considered intermediate inputs for national accounting purposes. While rural workers temporarily employed in cities as domestic servants are included to some degree in surveys of their home villages--especially income remitted home--those rural surveys significantly underreport income and consumption by the domestic servants themselves while they live in cities. Consequently, some rough estimate of the degree to which value added by domestic servants is underreported should be part of the adjustment of urban GDP.

Nondomestic Casual and Itinerant Services

7.23 Statistics on private workers need to cover all people in society, including not only domestic servants (see above) but also the migrant population. With the spread of reforms in China, especially since 1984, rural-urban migration has been significant, and a sizable number of new households have settled in cities. But only a few migrant households have been allowed to register as official "nonagricultural population" urban workers (those who receive subsidies and are covered in traditional urban household surveys). Others--for example most construction workers--maintain their rural or "agricultural population" registration status, while still other urban migrants have been given a special status which excludes them from the subsidized benefits of traditional state-system urban residents (see the section on "Own-Grain Households" in Chapter VI). It is likely that most of these persons are employed in units which report value-added through normal channels, and hence no adjustment is needed purely on account of their migrant or "own-grain" registration status. Large numbers of others, however, are self-employed as stall peddlers, repair shop attendants, carters, and a variety of other casual or itinerant service workers.

7.24 The GDP contribution of these services is currently estimated from business registration rolls and average income from surveys, but there is insufficient corroboration of the registration numbers, because the SSB confirmed that it does not do sample surveys covering many of the households from which these workers come. While some underreporting of income for such casual labor is normal for all countries, in China's case the scale of omission from GDP accounts is larger than usual because of rapid urban immigration since 1984 and the lag in development of the statistical infrastructure needed to measure its significance. Coverage of these so-called "floating population" temporary urban workers by rural surveys in their home villages is incomplete,

especially for income not remitted back to the home village. GDP adjustments can be estimated from labor force and urban population data, but without better urban household survey data, there may be no fully satisfactory basis for adjustment.

Other Urban Services

7.25 Certain urban services in addition to housing are provided outside the enterprises, but their representation in GDP measures is either incomplete or significantly undervalued. Any listing of these services at this point is likely to be incomplete, but they include financial, accounting, real estate, and legal services, as well as independent laundries, independent bath houses, independent child care centers. Most if not all of these GDP components are significantly underreported because they are outside the scope of traditional service-sector data collection.

7.26 For other urban service subsectors, such as financial institutions, SSB is in the process of shifting from reliance on traditional arrangements to more use of SNA concepts and sample surveys. For example, China's traditional national accounting methodologies did not use interest earnings to measure revenues, but SSB did take account of interest earnings when compiling the 1987 input-output table. Traditionally, value-added in banking services was calculated from labor-force data as if banks were government agencies. It is not clear to what degree the new input-output methodology has influenced recent GDP calculations. Furthermore, since 1987, a large number of nonbank and nonstate financial institutions have appeared operating in a more business-like manner for fees and in some cases by making profits on the margin between funds borrowed and lent. It is not clear what account is taken of these "second-tier" financial services in total value-added.

7.27 The collection of services in this "other" urban category is heterogeneous, and corrections will have to rely on a variety of information. Nevertheless, the GDP contribution could be significant, and adjustments should be made accordingly.

7.28 Outside housing services, probably the largest category in need of major upward adjustment is rural services not related to agricultural production. Rural surveys, designed in earlier decades to serve the economic linkage between city and farm, still provide only partial coverage of services which the rural labor force provides to rural households. SSB officials acknowledge that there is serious undervaluation of such important sectors as rural transportation, personal services such as haircuts, repairs of consumer durables such as bicycles, and independent rural financial companies or "clubs." Although new rural surveys collect some income information in these categories, without more complete coverage, estimation of the GDP contribution of these subsectors is difficult, but some estimates based on existing rural household survey data should be made.

Township and Village Enterprise Nonservice Output

7.29 Since 1984, private and cooperative enterprises have multiplied rapidly in rural townships and villages, supervised by a specialized office in the Ministry of Agriculture. While they are registered by local governments

and in many ways encouraged to expand and hire local labor, the adequacy of statistical coverage is difficult to gauge. Their very large number and the volatility of their activity, however, influence the accuracy of statistics of value-added. Some upward adjustment is probably warranted. At the same, the valuation of output at current prices, when aggregated with constant priced components, inflates value-added in comparable prices, and an adjustment is needed (see Chapters II and IV).

Physical Grain Output

7.30 Grain output is the single largest component in China's crop output and perhaps in all rural output, but the accuracy of cultivated area and planted area data needs to be verified. Only access to and use of currently ongoing nationwide land utilization surveys can determine the degree of under-reporting from this source. Given the history of China's measurement of cultivated area, it is possibe that the undercount is not insignificant. Some correction should be considered (see Chapter II).

Grain Output Valuation

7.31 A potentially more important adjustment than even area planted to grain is the valuation of grain output, but it is difficult to know how much of an adjustment is appropriate. China's grain output and pricing are subject to substantial direct control by central and local government authorities. More grain is planted than farmers would be willing to plant if not forced to do so, and the price paid for much marketed grain output--probably all of it, since essentially all prices are disciplined--is generally low compared to what it would be without administrative controls.

7.32 The real economic background to this situation is China's national policy of limiting grain imports when it at the same time faces a critical shortage of arable land by world standards. Under these conditions, where arable land is extremely scarce, its output should be relatively valuable. If farmers were allowed to plant whatever they wanted, many would satisfy their own grain needs on a small part of their land and then plant much higher value crops, such as vegetables and fruits. They are prevented from doing this, but the fact remains that the appropriation of a significant portion of the grain crop at low prices undervalues the crop. If higher grain imports were permitted, much of China's farmland would be planted not to grain, but to vegetables, which has a per hectare value-yield of from four to five times that of grain.

7.33 Although this is perhaps one of the most important cases in China of official nonmarket pricing which distorts the measure of GDP, valuation adjustment is not as compelling as for housing services, because housing services are often reported at zero or near-zero levels while grain output appears to have a significant unit value. Nevertheless, given the importance of grain, corrections for the systematic and significant bias in grain pricing should be a priority in the adjustment of GDP. Not only would this exercise be useful for purposes of international comparisons, it would give the SSB and Chinese policymakers an indication of the impact of price reform. Even if this type of adjustment is not made for state procured grain, an adjustment is

necessary to value own account consumption of grain by farm households at an average of all grain prices rather than at state prices.

Nongrain Crop Output

7.34 The independence and diversity of rural nongrain crop output since land tenure reform in the early 1980s (the so-called Household Responsibility System) accelerated through the decade, especially with the increasing use of plastic greenhousing and the more careful private use of miscellaneous parcels of land. In addition, commercial reforms enabled farmers to sell produce directly to town and city residents at prices substantially higher than traditional state list prices. As a result of all these technical and market factors, vegetable and other nongrain crop production has risen rapidly, while the statistical system designed to measure it has only slowly expanded its sophistication. Medium and large cities submit half-year crop reports, and in rural areas, output data are obtained by calculating the average unit yield and multiplying it by area planted. Sources are also verified with survey information on annual rural household consumption of vegetables and other nongrain crops. The SSB considers these output data to be quite accurate, and official data show a rapid increase in the output of such crops, but the description of data collection methods by rural statistical officers raises the possibility of significant underreporting of planted area, especially for vegetables and other crops with short growing cycles and a high degree of multiple cropping. Given the very high value-yield per hectare for some crops--especially vegetables--even a modest adjustment in estimates of area planted, improved yields and varieties, and improved quality and seasonality would result in significant upward adjustments to GDP. Some adjustments of this nature should be made.

Animal Husbandry Output

7.35 Some animal husbandry output is difficult to capture satisfactorily in existing surveys because of insufficient rigor in rural data collection based on personal interviews at a time of rapid growth in small animal populations. For large animals, the practice continues of counting growth in animals on the hoof as output, rather than counting output only as offtake of meat, wool, milk, hides and other actual products. The traditional method encourages the maintenance of uneconomical herds in many of China's pasture regions, where output may in fact be much lower than animal-number carryover would indicate. For this reason, a downward adjustment of gross output data for animal husbandry is called for, but the scale is likely to be slight, depending on how widespread the practice is for pigs.

7.36 For actual offtake, measures of pork output in particular probably need to be adjusted upward significantly because of shortcomings in measuring quality of pork when slaughtered, and because even disregarding quality, measurement of meat tonnage is usually calculated according to rules of thumb for meat per category of animal at a time when much if not most pork is now sold on periodic markets where product quality, especially leanness, commands a premium. China's current practice values hogs at different prices according to different classes of pork, so there is a degree of sensitivity to meat quality, but a systematic investigation of the adequacy of this coverage would probably result in a significant increase in reported output.

Depreciation

7.37 The weaknesses in the measurement of depreciation and the tendency to underestimate it have been noted earlier. Whether this affects SSB's estimate of GDP remains to be addressed. Since the MPS measure of depreciation is added to NMP to derive GDP, and since the same measure has been previously subtracted from gross output to derive NMP, the two adjustments cancel each other and the measurement of GDP would not have been affected by this bias. However, estimates of NMP would be overstated.

Value Readjustment Multiplier Effect

7.38 As mentioned in the introduction, valuation corrections to individual subsectors are important in their own right but also have indirect influence on the value of other sectors. These secondary influences are important for a number of domestic policy purposes anticipating price reform, but they are also significant for international comparisons to the degree that the ultimate revaluations change the value relationship between traded and non-traded goods.

7.39 Quantitative measures of the importance of these secondary effects require input-output calculations in which labor and household consumption vectors in the input-output table are considered part of the intermediate-input quadrant. In other words, the solution to the problem includes treating the economy as a value system, which would also require considering a variety of hypothetical transfer payments, rents, profit distributions, and taxes which are currently hidden by the unadjusted valuation system. There is thus a need for imputations for several of these flows. While such an exercise might seem involved, it could be carried out with a more aggregate version of China's 1987 input-output table, leaving more detailed calculations for Chinese agencies helping prepare for price reform later in the decade.

C. Adjustments to Historical Growth Trends

7.40 As officially reported, China's GDP and NMP growth rates since 1978 have been high. For the 1986-90 Five-Year Plan period, China's official GDP growth measure averaged 7.8 percent per year, while over the 1978-85 period it had averaged 9.4 percent. Sustained real growth rates in this range are very high by world standards, but not unprecedented. There is no doubt that since 1978 economic progress and output growth have been extremely rapid. At the same time, however, there are several statistical indications that official growth rates in some sectors and in some localities were higher than they should have been, either because of limited experience and outdated practices at grassroots reporting levels, or because of incompatibilities between the traditional statistical system and the more sophisticated demands of China's complex economy under economic reforms.

7.41 Chinese statistical officials are well aware of growth rate overestimation issues in a number of dimensions, but retroactive correction poses several challenges. First is the issue of how much to adjust growth rates in various subsectors. While there may be general agreement on which sectors have the most serious overestimation, introducing corrections requires quantitative parameters in an analytical framework. Second is the practical ques-

tion of how to introduce corrected growth rates in China's statistical reporting. Should all numbers be revised in some dramatic announcement which might undermine the credibility of China's statistical system? Or should revisions be introduced piecemeal as the years go by? Or is there a third solution? The issues merit close attention and choices will need to be exercised after taking account of resource and data implications.

7.42 The first challenge--how much to adjust--is briefly addressed in the paragraphs below, which discusses a few subsectors where growth-rate adjustments seem particularly important. The second challenge--how to report the adjustments--finds a propitious opportunity for quick announcement in the very recent Chinese decision to introduce a new "constant price" growth standard within the existing system of accounts. For most of the reform period, China has based its real growth rates on a set of 1980 benchmark accounting prices called "1980 constant prices." Beginning with 1991, however, China is introducing "1990 constant prices," and henceforth all growth rates will be reported by the new standard. Revisions in past growth rates can conveniently be combined with introduction of the new standards.

7.43 In the past, when China has changed its "constant-price" benchmark--this occurred in 1957, 1970, and 1980--it has not used the new set of prices to go back and recalculate growth rates for previous periods. Instead, it has merely "linked" constant-priced output in the previous period to the new higher-priced standard by calculating the new-to-old value ratio at the switch year, whether 1970, 1980, or in this case 1990. The long-term growth rates which result are called "comparable growth rates," and for major aggregates have the same historical growth rates in various subperiods as those for data using the subperiod's "constant" prices (see Chapter IV). For example, "comparable-price" growth rates in the 1970s are the same as the growth rates based on "1970 constant prices." This practice, while computationally convenient, has numerous drawbacks which have been addressed in scholarly and other commentary on China's statistics. It has the added drawback of perpetuating overstated growth measurements of the kind that appeared in the 1980s.

7.44 The use of 1990 constant prices starting in 1991 provides an opportunity to replace "linked" or "comparable" growth rates for the 1980s with growth rates from recalculated data. The recalculated data would be based on the application of 1990 constant prices to highly disaggregated GDP components for the 1980s. In the process, SSB could also correct for a variety of real growth rate measurement distortions of the type discussed below. Revised growth rates for the past ten years, based on application of 1990 prices to highly disaggregated data, could help add to world respect for China's remarkable growth achievements under economic reforms.

7.45 As with adjustments to GDP for a single year, a variety of quite different circumstances lead to the need for adjustments to growth rates, and each circumstance can be examined separately by a specialized study group. Four examples of separate circumstances suggesting needed adjustment are described briefly below.

Numerator-Denominator Gross Output Deflator Mismatch

7.46 One of the most serious sources of growth-rate overstatement is the use of proxy deflators which are understated in their own right, and hence insufficiently deflate the current-priced series to which they are applied. The clearest example occurs when a deflator calculated from current-priced and constant-priced gross output is applied to net output.

7.47 The gross output deflator itself may significantly understate inflation because apparently in some enterprises it is calculated as a ratio in which the numerator and denominator represent different statistics. The numerator in the ratio is usually current-priced gross output, which is measured by all marketable output for the period in question, say, a year. The denominator, however, is apparently constant-priced output produced within the enterprise, but not necessarily considered marketable, and includes output kept on the enterprise premises for a variety of uses. Hence, under these circumstances, the deflator is calculated as the ratio of a current-priced flow of limited scope divided by a constant-priced flow of larger scope, resulting in a deflator which is lower than warranted by the actual price differences. As explained earlier, using an unduly low gross-output deflator to correct for net output inflation, results in overstated estimates for real net output growth.

7.48 Questioning the quality of gross output deflators themselves leads to questioning the suitability of applying such deflators--even if corrected--to net output measures. As explained earlier, a widely used procedure is "double-deflation" by which total output for a sector is deflated by an output deflator and intermediate input items are deflated by cost deflators. Where the necessary data are available, double deflation should be the appropriate method for use in China. In the case of alternative methods, such as single deflation, the output deflator is applied directly to current-priced value-added, and this method may actually be preferred if input cost deflators are of poor quality. For national accounting purposes, however, single deflation is in principle a second-best solution. An economy's actual output is the combination of net products available for final use, and to the degree that a sector's share in total GDP as measured by final use is different from its share in total GDP as measured by value-added (income-approach) methods, single-deflation techniques will result in unpredictable inaccuracies. It is worth repeating, however, that the double deflator method may not be the best method in all circumstances, since its usefulness depends heavily on the quality of price indices for intermediate goods. While double deflation is to be preferred, it is recommended that a small group of specialists should investigate the respective biases, which in any case are likely to be small compared to those introduced by faulty deflators.

Substituting Gross Output Growth Rates for Net Output Growth Rates

7.49 SSB officials indicated that in a few cases in years of slow growth in the state sector, gross output growth rates, as measured directly with China's "constant-price" valuation system, were used instead of growth rates from deflated value-added data. This was apparently done in 1989-90 because inflation in the price of inputs was so much higher than price increases in output that the SSB considered current-priced output estimates to be too low.

In this way one inappropriate growth measure was introduced to correct for what seemed to be even more serious failings of another growth measure.

7.50 The overall difficulty of this issue relates directly to the conceptual danger of taking value added for a single sector (as measured by the income or production methods) and treating it as that sector's contribution to total GDP, suitable for deflation to some base-year price. In other words, in input-output or Social Accounting Matrix terms, value added for an individual sector is taken from column calculations in the matrix, while a sector's true contribution to output can only be seen by examining its output based on its row in the matrix. The distinction is irrelevant for aggregation in current year prices, but can become important if the value-added, column data are deflated by separate deflators.

7.51 The growth rate distortion discussed here, substituting gross output growth rates for deflated net output growth rates, raises a serious issue. It is likely that the assumed insufficiency of the net output growth rate results from an increase in subsidies, which are treated--perhaps mistakenly--as negative value-added (see above). But it is also possible that in periods of very slow growth, real value-added growth can be negative in a sector which still shows positive growth in gross output. In any event, gross output growth rates are usually high because of changes in "double counting" which are an integral part of using the statistic for any national accounting purposes. The issue deserves careful attention and is almost certainly a source of overstated growth.

New Product Pricing in a "Constant-Price" Reporting System

7.52 One of the most obvious sources of overstated growth rates in recent years has been the use of current prices to report the "constant-price" value of new products or improved products. The problem was first noticed in the mid-1980s because output measures for some industrial categories were the same in both current- and constant-priced data, when in fact inflation had been relatively high throughout the economy. This was most obvious for output of the new and rapidly growing TVE sector, which began to proliferate after the nationwide introduction of industrial management reforms in 1984. Something was clearly wrong, and SSB and other officials concur that the problem had been serious. Such enterprises and the local statistical offices reporting on them either had insufficient resources to recalculate output in 1980 prices or could not find satisfactory equivalent products in the 1980-price lists. This particular problem for TVEs became serious again during the 1988 economic boom. Current prices of new innovations are often used as proxies for constant prices, in the state as well as in COE/TVE sectors. For those TVEs that do not keep a record of constant value GVIO but instead report current price GVIO, the fact that these would be the same is not surprising. But it is not necessarily evidence of substituting current prices for constant price pursuant to new product innovations.

7.53 The problem of using current prices in place of 1980 constant ones apparently also appeared in larger state-owned enterprises, because earnest managers seeking to meet constant-price-denominated output targets sought, often successfully, to get permission to report improved products at a higher "constant price." When there was no equivalent for the improved product in

the original 1980 constant-price standards, current prices were often substituted to estimate constant-price output values. It is not clear how serious this problem is on a nationwide basis, and some Chinese officials cite survey data reports that yearly output value of new products in the mid-1980s accounted for only 2-3 percent of total industrial output. As reforms and new products spread in the latter part of the decade, however, the problem almost certainly became more serious.

7.54 Corrections to this problem are amenable to a systematic approach by industrial ownership and output categories. TVEs are a rapidly growing part of the economy and represent a significant portion of total GVIO in China.1/ While it is not clear how much of an influence these corrections will have on aggregate growth, the need for the corrections should be obvious.

"First-Year" or Peak-Season Pricing in Agriculture

7.55 Discussions with both SSB and local county statistical officials revealed that "current-priced" data for agricultural products were based on short-cut calculations which still based value output on annual estimates for physical product, multiplying physical data by a "current" price selected at a single time in the year. While some methodological guidelines stressed the need to use peak-season pricing for grain, for vegetables and other crops as a proxy for the current price, the more convenient route of using the "first price" for the product in that year, often the price in January or February, is in practice used.

7.56 These practices may an be important source of overestimated growth in agriculture. While the "first-price" or peak-season price is used to calculate a locality's crop price deflator, value output for many crops, such as for vegetables, is based on year-round reporting. Year-round prices are not only affected by inflation as the year proceeds further from January and February, but they are also higher in the off season, when farmers operating for their own profit have been finding ways to use vinyl greenhousing and other methods to stretch the growing season into profitable market periods. It is true that most of China's crop output is reported in physical terms, valued in 1980 constant prices and recorded directly as an inflation-free statistic. But to the degree that farmers sell heterogeneous products which vary in quality and hence in price, and to the degree they report output in current-priced value terms, a deflator based on peak-season or "first-price" measures would result in insufficient correction for inflation and an overstatement of real growth. Again, this particular problem requires addressing.

D. A Proposal for Quantitative Estimates for Apparent Biases

7.57 For both kinds of biases introduced above, GDP undervaluation and growth rate overstatement, the issues are serious enough to justify continued

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1/ The 1990 Statistical Yearbook suggests that 35.7 percent of China's GVIO was produced by collective-owned units in 1989. but Chinese officials maintain that township-run enterprises account for just over 10% of all industrial output. In any event, the extent of the problem is significant and warrants quantitative investigation.

study. The acknowledged presence of these many unresolved questions affects the overall credibility of China's national accounts and their relevance for guiding Chinese economic policy. With this in mind, this report recommends that as China and the World Bank continue their investigations such as at the seminar proposed in Chapter IX, they also explore ways to resolve these and other issues of appropriate valuation, coverage and methodology. It is further recommended that participants on the China side include representatives of major users of Chinese statistics outside the State Statistical Bureau, such as the State Planning Commission and the Development Research Center under the State Council.

VIII. ASSESSMENT OF CHINA'S FULL HYBRID SYSTEM OF ACCOUNTS

A. Introduction

8.1 When fully implemented, China's Hybrid System (the Full Hybrid System) for collecting and reporting national accounting statistics will provide China with a practical transitional national accounting arrangement. Chapters II through VII have concentrated their description and analysis on current early implementation of the Hybrid System (the Early Hybrid). This chapter presents a more focused assessment of the Full Hybrid System of national accounts. The Full Hybrid System will represent a major step in the gradual shift from China's earlier Material Product System (MPS) to a more modern and policy-relevant System of National Accounts (SNA) based on world standards endorsed by the United Nations. Indeed, China's future national accounting system--the ultimate goal of statistical system reform--might best be called an "SNA with Chinese characteristics." Such an "SNA with Chinese characteristics" would be significantly different from the Hybrid System reviewed in this report, largely because SNA methods and standards for data collection are much more accurate, cost-effective, and policy relevant. Even though the UN SNA standard itself continues to evolve, the same goals motivate both the ongoing UN revision of the SNA and China's implementation of the Full Hybrid System. Both seek better coverage, greater accuracy, lower cost, increased policy relevance, and continuity with the past. China's need for change, however, is more immediate and more dramatic than for most countries, because reforms in the management of its entire economy continue to introduce market forces at a relatively rapid pace. These market forces, in turn, generate a wide range of economic activities for which both the earlier MPS and the Full Hybrid System provide insufficient coverage. For this reason, it is important to emphasize that while the Hybrid System is a useful compromise arrangement, it is still only an early stage in the overall transition to a more stable national accounting framework adequate for analyzing the wide range of market-oriented economic activities now appearing in China.

B. Creation of China's Hybrid System

8.2 In assessing China's Full Hybrid System, it is useful to review its origins. Economic reforms since 1978 and official recognition of traditional MPS shortcomings led to a relatively early government consensus on the need to develop a new system of national economic accounts that would serve the needs of a "socialist planned commodity economy."1/ While noting that the Western market-oriented accounting framework, as represented by the full SNA, is more comprehensive than the MPS, Chinese authorities contended that the full SNA would not wholly suit Chinese circumstances and needs, especially now, as the economy is itself in transition and retains many of its central planning institutions.

1/ This is the phrase China uses to describe the goal of its economic reforms, since in China the word "commodity" embraces most of the characteristics associated with market forces. Such a "planned commodity" economy, it has been stressed by SSB officials, would retain some amount of central planning to guide its market-oriented dimensions.

8.3 Work on developing the Hybrid System began in January 1984 when the State Council promulgated the "Decision on Strengthening Statistical Work" and directed explicitly: "In order to enhance China's economic management level, a unified, scientific national accounting system shall be established, the accounting system of statistics, accounting and operation are defined in a unified way, and a leading group shall be set up to formulate unified national economic accounting standards." In November 1984, a Leading Group was established and SSB created a Systems and Methods Department to work on the design of the system. Developmental work continued and formal responsibility for putting together the system was transferred to SSB in late 1988. A four-year program for finalization and implementation of the new system was also put in place.

C. Design of the Full Hybrid System

8.4 The design of China's Full Hybrid System reflects the official view in the early 1980s that China's MPS system no longer served the country's needs, as it shifted from a centrally planned economy to "a planned commodity economy." The official view recognized that exclusion of nonmaterial production in the MPS was a fundamental shortcoming, particularly in view of the growth of the services sector after 1978. Reformers also realized that the MPS system concentrated on measurement of output in constant or comparable prices and did not sufficiently recognize the role of prices, inflation, or the role of finance and credit. The Hybrid System's designers further recognized that modern macroeconomic management, the achievement of overall equilibrium, and the analytical needs of linking savings, investment and consumption could not be based on MPS aggregates. Reformers further noted that, as China became increasingly interlinked with the global economy, international comparisons would be increasingly useful for domestic policy formation. The MPS did not lend itself to such purposes. The weak financial and accounting systems in place at the grassroots level, and their separation from the recording of production, reduced the value of the MPS framework as a tool for economic management.

8.5 In the early 1980s, initial Chinese discussions concerning the development of a new system of national accounting revealed three distinct bodies of thought. One group proposed that even after economic reforms were completed, China could continue to use the MPS, with makeshift adjustments allowing a few limited SNA measures for international comparisons. A second school argued for a gradual long-term transformation of the MPS into an SNA-based framework. A third group wanted China's eventual post-reform national accounting framework to be a compromise system with elements of both the MPS and SNA frameworks. China's new Hybrid System is a combination of the second and third approaches, because it has the flexibility of either remaining China's long-term system (the second option), or of performing a transitional role to an SNA with Chinese characteristics (a special version of the third option).

8.6 In May 1986, the Leading Group established by the State Council recommended the Hybrid System approach. This recommendation was endorsed by the State Council, which noted: "We should pay attention to statistical work

on GDP and on the production of the tertiary industry 2/ while continuously working on the statistics on social general production and national income. Consent is given to the view of the State Statistical Bureau that in the long run, we shall gradually establish a set of accounting systems suited to China's socialist planned commodity economy in the light of our country's specific conditions while drawing on the strength of accounting systems of Eastern and Western Countries." The arguments advanced by SSB, and the rationale for adopting this posture are cast in the following terms: during a period of transition the economy will change, but even in the post-reform evolved state, central planning will coexist with a large market-oriented dimension; the MPS provides the means for maintaining the balance of material financial and human resources; the SNA has the advantage of capturing activities not covered by the MPS and furthermore provides a wide set of useful indicators for purposes of economic management; hence under these circumstances, the new Hybrid System would best serve China's needs.

D. Structure of the Full Hybrid National Accounting System

8.7 The Full Hybrid System recognizes that economic transactions can be categorized according to the process of production, distribution, circulation and utilization. The overall framework consists of six parts:

Part I — Depicts elements which provide the basis for social reproduction, covering population, labor, capital assets, and the stock of natural resources.

Part II — Endeavors to capture production within the national economy and provides aggregates of national income and its distribution, including consumption and investment. Both net material product and gross domestic product are measured. Four basic tabulations are generated portraying output and its use, "major resources of physical products and their use," composite price indices, and an input-output statement.

Part III — Deals with uses of national income and is shown in four tables: (a) capital flow statements for physical transactions; (b) financial transactions; (c) financial balance sheets; and (d) commodity balances.

Part IV — Deals with investment and consumption by source and function.

Part V — Focuses on external transactions, both of a current and capital nature.

Part VI — Is a composite matrix encompassing all of the elements dealt with in the previous parts and is in the nature of an input-output table with features of a social account-

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2/ Services in the context of the SNA.

ing matrix. Both MPS and SNA subaggregates can be derived from the framework.

E. Features of the Hybrid System

8.8 It should be noted that although the Full Hybrid System accounting framework will provide useful estimates of national income and product in both the MPS and SNA modes, it will still be basically a modified MPS framework. It does permit the calculation of some SNA-related aggregates and subaggregates, and there are many other useful changes, but most of the Full Hybrid System categories, concepts, and data collection conventions will continue to reflect strong MPS influence, and in essence the MPS framework will be largely maintained. For instance, the sectors continue to be classified in MPS terms; computational procedures are barely altered; calculations continue to rely heavily on MPS practices (as for depreciation); present data sources based on MPS concepts would continue to be tapped. On the other hand, the modifications being introduced do recognize and address the issue of coverage of services currently not covered in order to meet SNA requirements. There is some greater recognition of the role of financial institutions and flow of funds, and certain disaggregations not shown in the MPS (such as household consumption) are introduced in the Hybrid System.

8.9 There are of course important similarities between the MPS foundation to the Hybrid System and the full SNA, which can be quickly recounted. In both accounting systems, income is calculated and shown by sector or origin, by type, and by disposition. Both systems distinguish between intermediate and final goods, with only the latter entering into the final calculations of national income (either NMP or GDP). Both focus on current incomes, and transfers are omitted.

8.10 In spite of these similarities, and even though the Hybrid System has corrected for some of the most obvious differences between the MPS and SNA standards, the MPS and the SNA differ in many more ways than just their formal treatment of "nonmaterial" services and depreciation (see Chapter II for a fuller discussion of these topics). The additional differences are both conceptual and operational, and many of them remain in the new Hybrid System. For example, the Full Hybrid System is inconsistent in its treatment of aggregates such as passenger transport and communications because, in brief, the MPS criteria for distinguishing "nonproductive" activities are ambiguous. This ambiguity influences the Hybrid System. Similarly, grass-roots data collection will still reflect traditional MPS overemphasis of physical output measures and MPS underemphasis of financial and monetary linkages. SNA concepts, on the other hand, attempt neutral measures of all transactions in the economy, using the same collection methods regardless of an activity's "material" status. As a result, the SNA achieves a fuller and more useful integration of national accounts without jeopardizing its ability to generate separate estimates of "material" and "nonmaterial" output.

8.11 Another MPS feature carried on to the Full Hybrid System is the measurement of long-term trends in national income. The Hybrid System uses "comparable" prices, which in turn are based on officially published "constant" prices (see Chapters II and IV for a discussion of comparable and constant prices). The SNA, however, measures real long-term trends by beginning

with data on actual current-priced transactions and then correcting for inflation using price deflators. The use of a base year is common to both approaches, but the methodologies--both conceptual and operational--differ significantly.

8.12 The Hybrid System's continued use of the MPS approach to measuring long-term trends, even if acceptable in theory, gives rise to a number of practical problems in applications. Assigning "constant prices" to goods newly produced after the base year raises a particular difficulty, because in many cases an attempt is made to invent an appropriate base-year price for the product in question. While this can be done by reference to trends from the base year in prices of similar products already in production, in reality this is complex and not done. In China's case, the introduction of a whole range of new products, especially by Town and Village Enterprises in recent years, has meant that these products have been given "constant" prices based for the most part on prices prevailing around the time of their introduction. It is likely that this distortion will continue in the future, because the Full Hybrid System framework does not explicitly intend to modify the practice of using official constant prices. Distortions will therefore continue to affect reported trends in overall Hybrid System aggregates, such as NMP and GDP, which will in part reflect current-year inflated prices. Measurements of growth will thus be distorted. It should be further noted that measurement in official "constant" prices is appropriate in the calculation of gross value of outputs but is not entirely satisfactory in the calculation of value added, as it is often difficult to calculate intermediate consumption in official constant prices.

8.13 It should also be noted that the issue of new products is not unique to the Hybrid System and its MPS foundation. The SNA has developed corrections to deal with the same problem. Price indices used for deflating current-price series in SNA accounts also acquire biases, unless there are regular revisions in data collection to reflect new products and unless there are new weights for new products. Countries using the SNA therefore usually update price indices at five- to seven-year intervals, particularly if rapid changes are taking place in the product mix. In the interim, SNA measurements often introduce prices for new products by replacing prices for discontinued products.

8.14 Most analysts around the world acknowledge the weaknesses of the MPS framework. China's Full Hybrid System inherits a number of these. Most economies--including many centrally planned economies--are either adopting the SNA or are in a transitional process designed to develop such a system eventually. Virtually all those MPS economies which are introducing market reforms have also decided to introduce the SNA accounting framework, and they are gearing basic data collection to meet the SNA requirements for GDP calculations. If China decided to stop its statistical reforms with the Full Hybrid System and use the Full Hybrid System as its ultimate national accounting framework, China--alone among these nations--would be retaining an MPS-oriented system with almost all of the MPS procedures and concepts at its core. In terms of the effectiveness of China's national accounts, if China clings to the Full Hybrid System as its permanent long term system, MPS concepts and classifications will continue to influence data collection and thus leave unaddressed the most important concerns identified in this report. Without further tran-

sitional phases in the direction of an "SNA with Chinese characteristics," China will not have the flexible, well-articulated, consistent accounting framework it needs to serve its emerging "planned commodity economy."

8.15 Furthermore, an SNA with Chinese characteristics would still be able to serve the needs of planning and state management. Almost all developing countries have used the SNA framework, even though many of them have strong, centrally planned sectors. India is a case in point, as are several African economies. Hungary and Yugoslavia have used dual systems of national accounting, because they introduced the SNA early in their reforms, and the availability of national accounts in the SNA format greatly facilitated market-oriented reforms and macroeconomic policy formation. At the same time, they retained accounts in the MPS format. All other East European economies--who are in various phases of reform transition--have chosen the SNA, and their choice underscores two points. First, the SNA is compatible with central planning and a mixed economic system. Indeed, being a more comprehensive system, the SNA provides the basis for greater flexibility in the management of such an economy. Second, the SNA better mirrors transactions and flows in any economy, irrespective of its orientation. The SNA's more transparent measurements have advantages that are absent in the Hybrid System, because of its core MPS orientation. In all of the countries cited, SNA-oriented national accounts have eased the policy process by providing a wide range of information on price, investment and consumption trends, and the SNA has served as an organizing framework for development of statistical work beyond the collection of just output data.

8.16 All of these concerns address the possibility that China will keep the Hybrid System as its ultimate national accounting framework, even though SSB and other Chinese authorities have not officially decided to do so. Indeed, a speedy introduction of full SNA procedures would require a major reorientation of the statistical system, which would be both costly and beyond the SSB's present expansion capacity. The Hybrid System is a useful and affordable temporary step and reflects a great deal of hard work and creative energy. SSB continues its pursuit of full implementation with support from the highest levels of the government. Nevertheless, for the medium-term and long-term, gradual introduction of a fuller SNA--with Chinese characteristics--is possible, and this report recommends that China reexamine its implementation of the Hybrid System with this goal in mind. This is the approach being followed by other MPS countries adopting the SNA.

F. The Next Phases for China's Hybrid System

8.17 Rather than accept the Hybrid System as China's best long-term solution to its national accounting needs, this report recommends that SSB develop a dual system for use in its next several phases of a long-term transition to full SNA accounting with Chinese characteristics. The dual system would consist of both the Full Hybrid System, with ongoing modifications, and a parallel and largely independent SNA system based on an entirely different set of data collection concepts and recording formats and relying much more heavily on sample survey statistics. There would of course be natural overlap between the two parallel systems, and the long-term period of transition could last a decade or more. For the sake of statistical continuity and to meet the ongoing needs of Chinese economic planning, these next phases of the transition

would continue to generate national accounting statistics using the Full Hybrid System's MPS-based accounts. The gradual introduction of a parallel SNA system alongside and in addition to the Hybrid System framework, however, calls for a special effort. It would need significant domestic and international resources and careful attention to a number of issues. Most of these issues fit into three broad categories: classification schemes, data collection, and SNA-MPS compatibility.

Classification Schemes

8.18 Particular attention should be paid to issues of institutional sectoring. To illustrate the point, it would be highly desirable, from both an analytical viewpoint and for greater consistency with the SNA, that enterprises be divided by legal status, separating public, cooperative, and privately owned enterprises. Although the Hybrid System's MPS-based data collection and aggregation methods have ownership subcategories, they are designed for the pre-1978 economic management system. They depend on rigid separation between urban and rural enterprises, and they do not classify urban enterprises in ways which statistical experience in market economies has shown to be most useful. Similarly, financial institutions should be defined so that the central monetary authorities are separately identified from the rest of the banking system. The roles and functions of China's central monetary authorities will become increasingly distinct from commercial banking operations, as they are in other economies, and the statistical system should reflect this distinction.

8.19 Attention should also be paid to increasingly detailed classifications of industries beyond the primary, secondary, tertiary categorization. For improving the usefulness of the accounts as market forces strengthen, there is a need for a clearly defined set of classifications which take account of appropriate international standards (such as the International Standard Industrial Classification). Therefore, this report recommends that, before settling the framework for the next phase of adjustments in industrial classifications, SSB design a long-term strategy for gradually approaching a full range of SNA classifications. Subsequent phases in development of China's accounting framework could then articulate and subdivide each of the main industrial categories in ways which are compatible with its long-term strategy.

8.20 Detailed definitions of many of the basic SNA elements appropriate for China in the long run are provided in tables in an annex to this chapter. It should be emphasized that some further adaptations and refinements would be appropriate to suit circumstances prevailing in China.

8.21 For example, gross domestic product (GDP) can be calculated by the distribution method, as the sum of primary incomes of all enterprises, institutions, organizations, and the population--income received in connection with the production of goods and services (Tables 8.4-8.5). These incomes include wages and other types of remuneration of labor, allowances for social insurance, profits, taxes and other primary incomes. Also included are amortization allowances.

8.22 Finally, as an extension of work on classifications and definitions, greater attention should be paid to the rules underlying particular calculations. To mention but two, the basis for calculation of depreciation ought to be fully reviewed along with the procedures for imputing the value of owner occupied dwellings. The use of an original cost basis in calculating depreciation understates the size of the existing capital stock. The use of low rates of depreciation, which ascribe a long life to assets, does not adequately account for obsolescence. Furthermore, the use of capital stock in the production process is underestimated in overall terms. Although the approach does not appear to be based on theoretical considerations, MPS practices will be embodied in the Hybrid System. As noted above, SSB should modify its present practices and begin to use replacement costs as a basis for calculating depreciation. This improvement--as well as depreciation rates that better reflect the rate at which equipment must be replaced--will assume greater importance during periods of inflation such as those which usually accompany price reform.

8.23 There are numerous other related issues. The question of imputing values for owner occupied dwellings has been dealt with in Chapter III, but it bears repetition to state that SSB should devise procedures that reflect the cost of replacing the housing stock over time and attribute the real costs involved. The basis for valuation of general industrial output should also be clarified. If producer prices are to be the norm, there is a need to indicate how indirect taxes and subsidies are to be treated. It is recommended that greater use be made of SNA conventions for specific calculations and imputations.

Data Collection

8.24 SSB's plans call for an expanded collection of data from sectors which are currently inadequately covered by statistical operations. While this is welcomed, SSB should place less emphasis on elaborate reporting arrangements which will only serve to burden the statistical system. This report recommends that the comprehensive administrative reporting system currently so important for Hybrid System accounts not be extended to sectors previously not covered. Full or complete enumeration is not justified for several reasons: high cost, SSB's inability to absorb and process the data, and the general difficulty ensuring data quality. A more realistic approach based on well-designed, carefully supervised and well-executed enterprise and business surveys will overcome many of the hurdles that exist. This approach is widely used in most countries, including both developing and developed countries (including those in East Europe), and permits linkages with commercial accounting and tax practices. It would also imply that the present emphasis on measurement of physical output would be reduced. The proposed surveys would focus on revenues, costs, and profits, all of which are emphasized by the economic reforms.

8.25 It is recognized that changes in collection procedures will require changes at both the enterprise level and at SSB. The present practice of using report forms, with aggregations taking place at various levels of the statistical system, is deficient in that it permits errors, misreporting, and falsification to go undetected. Local and provincial agencies are left with too much freedom and to many opportunities to modify what is reported. At

present there are no integrated accounts that are provided by enterprises to the statistical agencies. This implies that consistency checks are difficult in practice because the available information is partial. With the introduction of sampling on a larger scale it should prove possible for the Provincial and State Statistical Bureaus to directly receive and check forms. Indeed, it would be desirable to review the entire system of reporting with the aim of reducing the size of collections and the role of lower-level units in the statistical chain. The present report forms in themselves should be modified so as to enhance clarity, and introduce new data elements that will be needed to satisfy new demands.

8.26 Earlier references to the need for fully articulated classification schemes must again be stressed. These should be used in conjunction with the revised reporting forms and questionnaires. It should be stressed that without changes in the manner in which micro data are collected, there is little likelihood of a significant improvement in the overall quality of the national accounts of China. Such changes need to be phased in over a period of years and probably need to be introduced first in the larger enterprises and in sectors which are not covered at present.

SNA-MPS Compatibility

8.27 There has been considerable work at the international level directed at defining a set of SNA-related national accounting tables appropriate for countries which have previously relied on the MPS. These tables permit the compilation of GDP estimates by adapting existing data flows and institutional circumstances. It is recommended that SSB integrate this approach into future phases of its transition from to an SNA with Chinese characteristics. A tabular scheme is presented at the end of this chapter to enable SSB to proceed with the task. The scheme takes account of the special institutional arrangements in China, and the proposed tables can therefore be derived in China's context with little difficulty.

8.28 The information presently collected, if supplemented by surveys covering sectors presently not covered, along with new price indices and tapping of data sets compiled by the tax authorities, should begin to provide the basis for parallel compilation of the SNA-related tables presented below (Tables 8.1-8.3). Such an approach would essentially require a rearrangement of information in SNA format. During China's relatively long period of transition, continuity with historical series would be maintained, since the Full Hybrid System could continue to produce MPS accounts, while the next transitional phases provide a bridge to the future by introducing the SNA tables recommended below.

8.29 SSB stands to gain from ongoing work along these lines at the international level and might wish to participate in that effort. Beyond these considerations, adoption of such an approach would permit SSB to move forward towards a wholly SNA-based system (with Chinese characteristics) in gradual stages, while keeping pace with economic and institutional changes in China. This proposal is in keeping with desires expressed by SSB that the Chinese authorities would like to retain a dual system for the foreseeable future. Methodological work should continue. SSB staff familiar with SNA practices are dedicated and resourceful, but they are few in number. As a

first step, more staff need to study both the 1968 SNA and its current formal international revision, due for adoption in 1993. The new international SNA will become the world's universal national accounting framework. Expanding and training a core staff in basic and advanced SNA methods will enlarge SSB's capacity to engage in methodological work in a more systematic way.

Table 8.1: GDP BY INDUSTRIAL ORIGIN

Code (1)	Value added by industries (2)	Value (3)
01	Industry	
02	Construction	
03	Agriculture	
04	Forestry	
05	Transport	
06	Communications	
07	Trade, Material-Technical Supply and Procurement	
08	Other sectors of Material Production	
09	Housing-Communal Economy and Everyday Services	
10	Science	
11	Education	
12	Culture and the Arts	
13	Public Health, Social Insurance, Physical Culture, and Tourism	
14	Finances, Credit, Insurance	
15	General Government	
16	Other Sectors of the Nonmaterial Sphere	
A	Total for the national economy	
B	Import Duties	
C	Difference between interest received and paid out by the banks under transactions involving provision of attracted funds.	
D	Gross Domestic Product (A + B - C)	
E	Incomes of residents of a given country received abroad from their participation in the production of goods and services minus similar incomes received by residents of other countries on the territory of a given country (balance)	
	Gross national product (D + E)	

The calculation of gross value added by the production method also allows GDP to be grouped by institutional sectors. This is illustrated by the table below:

Table 8.2: GDP BY INSTITUTIONAL SECTORS

Code (1)	Institutional sectors (2)	Value (3)
1	Nonfinancial enterprises	
2	Financial institutions	
3	State administration bodies	
4	Households including holdings of the population and private unincorporated enterprises	
5	Social organizations servicing households	
A	Total for the National Economy	
B	Import Duties	
C	Difference between interest received and paid out by the banks under transactions involving provision of attracted funds	
D	Gross Domestic Product (A + B - C)	
E	Incomes of residents of a given country received abroad from their participation in the production of goods and services minus similar incomes received by residents of other countries on the territory of a given country (balance)	
F	Gross National Product (D + E)	

It is also possible to calculate gross value added by types of ownership, which can be depicted as follows:

Table 8.3: GDP BY SOCIAL SECTORS

Code (1)	Socioeconomic subsectors (2)	Value (3)
1	Public subsector	
2	Cooperative subsector	
3	Corporate subsector	
4	Social organizations	
5	Private subsector	
6	Units not employing hired labor	
A	Total for the National Economy	
B	Import Duties	
C	Difference between interest received and paid out by banks under transactions involving provision of attracted funds.	
D	Gross Domestic Product (A + B - C)	
E	Incomes of residents of a given country received abroad from their participation in the production of goods and services minus similar incomes received by residents of other countries on the territory of a given country (balance)	
F	Gross National Product (D + E)	

Table 8.4: CALCULATION OF GDP BY THE DISTRIBUTION METHOD

No.	Income items	Total (4 + 5)	Material production sphere (value)	The sphere of nonmaterial services (value)
(1)	(2)	(3)	(4)	(5)
1	Population incomes (1.1+1.2+1.3+1.4+1.5)			
1.1	Wages and Salaries			
1.2	Remuneration of labor in agricultural cooperatives			
1.3	Incomes of private enterprises and holdings			
1.4	Value added by subsidiary holdings of the population			
1.5	Incomes from individual labor activity (net)			
2	Incomes of enterprises and organizations (2.1+2.2+2.3+2.4+2.5)			
2.1	Allowances for social insurance			
2.2	Operating surplus (or incomes equated with them)			
2.3	Turnover tax (or taxes equated with it)			
2.4	Other items			
2.5	Depreciation allowances			
3	Difference between interest received and paid out by the banks under transactions involving provision of attracted funds.			
4	Gross Domestic Product (1 + 2 + 3)			
5	Incomes of residents of a given country received abroad from their participation in the production of goods and services minus similar incomes received by residents of other countries on the territory of a given country (balance)			
6	Gross National Product (4 + 5)			

Table 8.5: GDP BY END USE

	Items	Value
1	Final consumption (1.1+1.2+1.3)	
1.1	Final consumption expenditure of households	
1.2.1	Final consumption expenditure of state institutions (1.2.1+1.2.2) of which on:	
1.2.1	Services meeting individual requirements of the population	
1.2.2	Services meeting collective requirements of the population	
1.3	Final consumption expenditure of public (noncommercial) organizations servicing the population (1.3.1+1.3.2) of which on:	
1.3.1	Services meeting individual requirements of the population	
1.3.2	Services meeting collective requirements of the population	
2	Gross capital formation (2.1+2.2)	
2.1	Gross fixed capital formation	
2.2	Increase in stocks	
3	Foreign trade balance	
4	Losses of material current capital	
5	Gross Domestic Product (5+6)	
6	Incomes of resident of a given country received abroad from their participation in the production of goods and services minus similar incomes received by residents of other countries on the territory of a given country (balance)	
7	Gross National Product (5+6)	

IX. ORGANIZATION AND TECHNICAL ASSISTANCE

9.1 This report has reviewed China's statistical system and its national accounting practices. The report recommends that China move over the longer term to an accounting framework based on the United Nation's System of National Accounts (SNA). To this end, SSB is encouraged to take steps seeking external assistance to further strengthen its already extensive statistical organization. It is particularly important that the technical assistance program improve the effectiveness and long-term affordability of data collection. The program should also improve cooperation and interaction among different relevant government agencies.

9.2 For maximum effectiveness, this report recommends that the assistance program combine a domestically-funded modernization program with compatible international provision of expertise, training, and equipment. As a step in the design of such a joint program, this report recommends SSB cooperation in a seminar focused on specific Hybrid System features, to further clarify China's national accounting and data collection conventions. The domestically-funded modernization program would focus on extension of a grassroots network for data collection by random sample surveys, especially for production data. Internationally-funded assistance would complement the domestic effort with a variety of programs. These would include orientation study tours for higher-level statistical personnel, extended middle-level staff training in economic survey techniques and national accounts, seminars by international experts, design of domestic training programs, and appropriate computer equipment to meet central, provincial and even lower-level needs.

Interactions with Other Agencies

9.3 This report recommends that SSB improve its working relationships with statistical units in other government ministries and agencies, even though SSB already has formal arrangements with many of them. SSB officials would benefit from closer working relationships with statistical offices in the Ministry of Finance, for example, to speed up and fill out transmission of tax data, especially data at a less aggregated level. Although these data flows already exist, SSB needs to pursue how the process can be strengthened. As a first step, SSB should define with some degree of specificity the range and nature of information it requires. Discussions should then proceed with Ministry officials as to how best the flows could be improved. In the event resources are an issue, SSB should seek additional budgetary support for this purpose. In relative terms, the extra costs would be modest in relation to SSB mounting a wholly parallel effort to collect the same data from responding units. If problems persist, SSB might seek the intervention of the State Council to put in place regulations and enforcement that would require other agencies to share with SSB information in their possession.

9.4 In more general terms, a serious effort needs to be made to reduce or eliminate the classified, confidential (nei-bu), or otherwise secret status of economic statistics throughout the government's various ministries, agencies, corporations, banks, and other bodies. In the prereform era, all statistical information was treated as a state secret. At the same time there was a tendency for different agencies to operate in a compartmentalized man-

ner, and in general data were not shared. Although these factors have become less important and there is far greater openness, vestiges of these earlier practices persist. An effective Committee or Council at which all producers of data can come together to iron out differences and promote data exchange should be established. There are many areas where SSB needs data collected by other agencies, such as trade price data from the State Price Bureau, registration data from the Customs, agencies that regulate newly established enterprises, and monetary data from the People's Bank. SSB has a mandate under the Statistics Law to play a leadership role in the release and dissemination of these data, and it should exercise that authority.

9.5 On the opposite side of the coin, SSB should establish and strengthen "User Committees" and enhance its delivery of statistical information to other government agencies. Several key agencies such as the Development Research Center, the State Planning Commission and the Systems Reform Commission need information that is more disaggregated than that the SSB publishes. Their needs are being only partially satisfied. SSB may wish to review its present practices as regards the sharing of disaggregated statistics with key user agencies. Appropriate safeguards about confidentiality of individual returns must of course remain in place but, with some prudent safeguards, much more can be done. It is for this reason that an examination of present policies and attitudes is urged. Although SSB has understandable concerns about its responsibility for the quality of data released in this way, SSB should note that users can make a constructive contribution by evaluating the data in the process of utilizing the data. Such constructive feedback will enable SSB to introduce refinements and thus, in the longer term, gain a wider reputation for excellence. Most countries witness tensions between statistical agencies and data users, but many of these countries have been able to minimize difficulties by establishing User Committees, and SSB should develop and strengthen similar institutional arrangements.

Improving SSB's Technical Capacity

9.6 A coordinated program of domestic investment in China's statistical infrastructure, backed up by foreign technical assistance, would significantly strengthen SSB's technical capacity to provide policy-relevant national accounting data. This report strongly recommends such a program. After study and consultation concerning relevant components and details, the program would probably consist of several major elements: broad domestic training for manpower and skill development, focused international study and training for higher- and middle-level leadership personnel, international seminars designed to resolve conceptual and technical difficulties, and significant investment in computational equipment for all levels of the system--national, provincial, and local. As part of study and consultation in preparation for such a program, this report recommends that a seminar originally proposed to review narrow quantitative issues be converted to a focused investigation of the many still poorly-understood dimensions of China's national accounting framework and their differences from SNA standards.

Manpower and Skills

9.7 In broad terms China's statistical system employs almost a million persons, if account is taken of those employed at the grassroots level. By

any standard this is a large work force and almost impossible to manage and direct. It is to SSB's credit that it has been able to build up a capacity as large as this in the past decade from the ruins of the Cultural Revolution when the statistical system was eliminated as a functioning entity. While mindful of the enormity of the task that has been undertaken and the large effort made to develop the skills of its work force, it must be recognized that much remains to be done. It should be noted that the staff at the grass-roots level are the backbone of China's statistical structure and the success or failure of how the statistical system responds will depend on the quality and performance of personnel at this level. Although SSB has endeavored to upgrade skills and strengthen computing capacities, SSB itself acknowledges that current arrangements are still inadequate for the enormous task at hand. In strengthening the statistical system, it is imperative that particular attention be focused on equipping and training of staff at all levels, but especially at the local level.

9.8 This report therefore recommends that an appropriate training and skill development strategy be prepared and implemented. Implementation of such a strategy would require significant domestic resources, and the degree of its successful implementation will be the single most important factor in determining the overall success of the entire development and assistance program. Such a strategy would have a variety of dimensions and components, including recruitment, expansion and strengthening of training centers, and the preparation of qualified training personnel, including trainers at the county level. As a minimum, it would be appropriate to have a trainer at each county statistical office who would take responsibility for training personnel at the enterprise level. The development of handbooks and manuals will also be an essential job, to enable on-the-job training of county-level staff.

9.9 This report also recommends that existing training centers at the provincial and regional levels be strengthened. The caliber of staff at the Municipal Statistical Bureau in Chongqing was impressive. If the same situation prevails at other Municipal and Provincial Bureaus, the basis for optimism about the future evolution of the statistical system is well founded. However, most staff, while competent and articulate, appeared to have little familiarity with SNA concepts and methodologies, although they were well-acquainted with the MPS framework and with the methods associated with comprehensive reporting. The mission did not find a clear and full understanding of Western economic concepts or sample survey techniques. There is thus a need to train staff at this intermediate level in these and other technical areas. But a reorientation of the content of training is essential, with greater focus on applications and less on statistical theory.

9.10 This report recommends that SSB's training centers and their programs be modified to focus on training staff in three important areas: (a) national accounting and economic statistics, (b) sampling methodology and applications, and (c) the use of microcomputing equipment. In the first place, SSB should develop appropriate teaching materials for use in these courses. It is suggested that instead of developing such material from scratch, SSB should acquire course material from training institutions abroad. To mention but one such institution, the US Census Bureau's International Training Center offers opportunities. Courses developed by the US Bureau are well-designed, and with some modifications they could suit China's circum-

stances. Training documents should be translated into Chinese for use at the Provincial and Regional centers. If this effort is coupled with the training of a core body of trainers through the US Census Bureau program or similar courses elsewhere, rapid progress could be made in creating a network of training facilities to prepare well-trained statistical personnel familiar with current mainstream world thinking on statistical issues and applications. To supplement the arrangements proposed above, SSB should arrange for a series of seminars and workshops over a three-year period with guest lecturers from abroad. These workshops should focus on the collection of economic statistics with an SNA orientation.

Technical Cooperation

9.11 SSB has received technical assistance on an ad hoc basis from a variety of sources over the past several years, but the very ad hoc nature of this assistance has greatly reduced its effectiveness. The Asian Development Bank has assisted SSB with work on the input-output tables. The UN Statistical Office has advised on sampling, International Comparisons Project (ICP), and computerization in the context of the population census. The International Statistical Institute has provided inputs in developing training institutions and sample survey methods. Staff of the Statistical Office of the European Community (EUROSTAT) have advised on the industrial census. Funding from the UN Fund for Population Activities (UNFPA) has been made available for the population census, in particular for acquiring hardware. SSB has also benefited from participation in training courses at the Statistical Institute for Asia and the Pacific (SIAP), the Economic and Social Commission for Asia and the Pacific (ESCAP), the Munich Advanced Statistical Training Center, the US Bureaus of the Census and Labor Statistics. This listing is not exhaustive but is indicative of what support has been forthcoming. Given the size of China, these training efforts have been modest, but their inputs have made a significant contribution. Their ad hoc nature, however, has meant that SSB has not benefited from a coordinated approach within an overall set of work priorities. Coordinated foreign assistance must be part of a complementary domestic program on an adequate scale.

Computerization

9.12 The statistical system has made enormous progress in computerization of statistical work in the past decade. SSB has acquired central processing facilities at the headquarters level. Similar facilities exist at Provincial and Municipal levels. There has also been a sizable increase in the availability of microcomputers at all levels of the statistical chain. SSB indicated that some 5,000 microcomputers were available at statistical offices at and above the county level. Some 60 percent of statistical units at the county level have equipment, although much of the equipment in place has been deployed for processing the recent population census. Long-range computer networks have been gradually developed and now function. These bridge the enormous distances between the center and the remote statistical units. However, many statistical functions are still performed with the aid of abacuses. The available hardware equipment is inadequate to serve the needs of the statistical system.

Concluding Remarks

9.13 This report has sought to evaluate China's national accounting practices and their ability to generate reasonably accurate measures of real economic performance. The accuracy of these aggregates is important, since they usually form the basis for decisions by Chinese policymakers on macroeconomic management and strategic development. They are also important for helping China apply lessons from development experience in other parts of the world to comparable Chinese circumstances. The report recognizes both the advantages and the long-term weaknesses of China's Hybrid System of national accounts and recommends changes to improve the existing system and speed its evolution in the direction of an SNA with Chinese characteristics. Grassroots data collection and processing are critical in this regard, especially the extended application of sample survey techniques. The report's recommendations have incorporated the need for continued generation of MPS aggregates while substantially improving the accuracy of existing SNA measures. Such a dual-track system will ease the process of economic reform in China by providing policymakers with timely comprehensive reports and an increasingly better gauge of economic development patterns and trends.

Chart 9.1: CHINA'S STATISTICAL SYSTEM

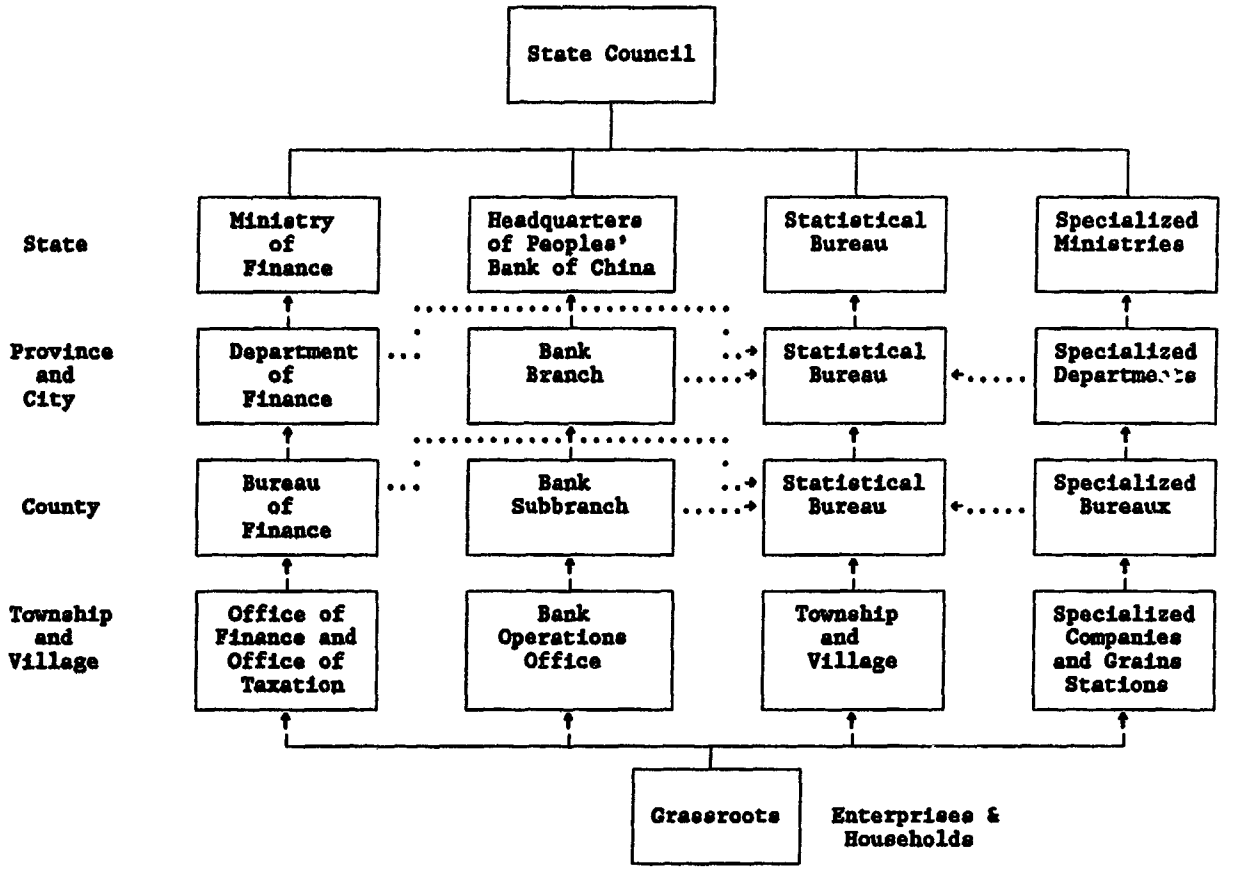

Chart 9.2: STATE STATISTICAL BUREAU ORGANIZATION CHART