
Technical Path Analysis of Government Asset Measurement and Reporting

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Abstract: In order to promote the fiduciary responsibility of the public sector and strengthen the effective management of government assets, the Chinese governments at all levels should not only prepare reports on state-owned assets, but also prepare comprehensive financial reports based on accrual basis after 2020. The authenticity and reliability of government assets information directly affect the effective implementation of these two reforms, and the quality of assets information is highly dependent on the accrual basis of accounting measurement and reporting. Accrual basis accounting and reporting are relatively mature and scientific technology in business. China attempts to apply this business approach directly to public sector measurement and reporting of government assets. However, there is a natural difference between government assets and commercial assets. Asset measurement and reporting techniques are more complex in the practice of public sector asset management. From four dimensions of concept, scope, method selection and implementation effect, this article analysis asset identification, asset value, assets cost allocation and asset report path, and draw lessons from international experience, combined with China's actual situation, analysis the problems existing in the government assets measurement and reporting. In order to provide effective asset management reform must practice guidance, the article put forward the corresponding solution path.

Keywords: Accrual Basis, Asset Identification, Valuation Method, Depreciation of Assets, Scope of Report Preparation

1. Introduction

According to the opinions of the 'CPC Central Committee on the establishment of a system for The State Council to report on the management of state-owned assets to the standing committee of the National People's Congress' (no.33 [2017]) of the five-year plan (2018-2022), a statement on state-owned assets of administrative undertakings shall be submitted in 2019. The statement of state assets of administrative institution includes two kinds of assets of administrative nature and institutional nature. According to the request of government accounting reform, since January 1, 2019 full implementation of the administrative institution accounting system, the government subject table (finance and accounting) [2017] no. 25, means that the Chinese government fully implementing the accrual basis of

accounting, and will prepare the accrual basis in 2020 comprehensive financial reports and government financial report (2019) - China's first comprehensive government financial report.^① These two reports have laid a solid foundation for comprehensively understanding the assets of government departments, enhancing asset management and promoting fiduciary responsibility. However, both government asset reports and comprehensive government

^① The government's comprehensive financial report is prepared by the financial departments at all levels, mainly consisting of a balance sheet, a income and expense statement, a statement of changes in net assets and notes to reflect the financial status, operating results, and cash of the primary government (or lower-level government). Flow situation, this information should be adjusted based on the department's financial report data. The basic format of the department's financial report is the same as the government's comprehensive financial report (four tables plus notes), but it is compiled by each department based on relevant data of the department.

financial reports are highly dependent on comprehensive and reliable asset information. Key asset information is generated by scientific and reasonable accounting system, and accounting information is highly dependent on the scientific selection of asset identification and measurement methods. Therefore, reasonable definition and identification of assets, accurate measurement of assets, reasonable allocation of asset costs and comprehensive and scientific preparation of asset reports are the prerequisite and basic path for high-quality asset information.

Recently, financial accounting based on accrual basis has been introduced comprehensively in the public sector, providing a technical tool for comprehensive accounting and reporting of asset information. However, the application of accrual accounting in the provision of public sector asset information is complex, with obvious confusion and uncertainty. If not properly handled, the huge increase in information may lead to more confusion for managers, which may lead to false and confusing data for financial report users [1]. Most OECD countries have completed the reform of accrual accounting, and practice has shown that countries have encountered many challenges in implementing accrual accounting, such as the inventory and valuation of assets, the design and promotion of new information technology systems, and the preparation of integrated financial reports [2]. At present, China is in the early stage of the comprehensive reform of government accounting, so the scientific and reasonable measurement and reporting of government assets is a major subject faced by China's asset management and financial management, as well as one of the academic focuses.

At present, International studies on measurement and reporting of government assets are relatively in-depth and extensive, but there are few practical studies on China. The relevant domestic research also mainly concentrated in the meaning of reporting system of state-owned assets, the construction of system and the system implementation, natural resources accounting and balance sheet and administrative institution fixed, intangible assets, and public infrastructure, cultural relics, cultural assets such as the measurement and accounting of assets from several aspects [3-12]. These studies have laid a good foundation for the research of this paper. However, the existing research focuses on the difficulties and solutions in the process of asset measurement and accounting, and there are few systematic studies on the analytical framework and technical path of government asset measurement and reporting. For this reason, this paper takes asset identification, asset measurement, asset cost allocation and asset report compilation as the analysis path. From four dimensions of concept, applicable scope, method selection and implementation effect, it draws lessons from international experience and combines with China's actual situation to analyze the problems existing in the measurement of government assets and propose solutions. The research of this paper is divided into six parts: the first part, the question raised, the second part, the definition and identification of government assets, the third part, the accurate measurement and valuation of asset costs; The fourth part, reasonable

allocation of asset cost; The fifth part timely reports and discloses the financial information of asset management; The sixth part is the conclusion part.

2. Identification and Accounting Confirmation of Government Assets

Government assets are part of state-owned assets, which are controlled by government departments in the process of providing public services. Has narrow and broad government assets, the former mainly limited to the financial and administrative institutions at all levels, used or occupied management (assets of administration, for example), the latter, contains the former and not only that, also including government control for the public service of non-profit organizations (association) kinds of assets, including non-financial companies with financial assets of the company. Since companies mainly follow the accounting system of enterprises and non-profit organizations follow the accounting system of non-profit organizations, this study only discusses the narrow sense of government assets.

Government asset identification and accounting confirmation are the starting point of asset measurement and reporting. In China, before the promulgation of the basic standards on government accounting, the concept of government assets originated from the interim measures on the management of state-owned assets in administrative units and interim measures on the management of state-owned assets in public institutions (decree no. 35 and 36 of the ministry of finance in 2006). In this document, the assets of administrative institutions are clearly defined as "the general term of all kinds of economic resources that are owned and used by administrative units and are legally owned by the state and can be measured in monetary terms". At that time, the accounting standards and systems of administrative institutions all followed this concept.^②The concept defines the range of assets that a unit owns and USES, and "managed" assets -- public infrastructure, government reserves, cultural assets and affordable housing -- may be excluded. Managed assets are usually financed and used by the public, not owned by an administrative or public institution. Practice has proved that this concept caused confusion in practice before the implementation of the new government's accounting system. Part of the assets under management, such as affordable housing, some financial personnel in the form of fixed assets of the unit into the account, then most of the other assets under management did not enter the account. Finally, a large amount of capital expenditure is not reflected in the form of assets in the account.

On January 1, 2017, China officially implemented the basic standards for government accounting (order of the ministry of finance of 2015), which redefined assets. Assets are defined as "economic resources formed by the past economic business or

^② The "Accounting Standards for Institutions" implemented in 2013, the "Financial Rules of Administrative Units" and the accounting systems of various industries directly refer to this concept.

events of the government accounting entity, controlled by the government accounting entity, and expected to generate service potential or bring economic benefits into the economy". This concept is consistent with the definition of assets in the international public sector accounting standard (ipso 01).

Asset identification needs to be strengthened from the following two aspects:

The first aspect is the identification based on "control". "Control" is legally described as "all." In business accounting, "all" is the ownership of assets, which is an accepted, universally accepted and easily identifiable standard. However, the government accounting entity's "control" of assets usually includes custody, right of use, right of transfer and right of abandonment of assets. In China, the concept of "control" includes two major categories: the ownership and use of assets and assets under management. However, there is no detailed explanation of "control" in China's government accounting standard system, and the property right relationship between Chinese government departments is complicated. As a result, the definition and identification of assets in financial practice is still a thorny problem. For example, some assets are funded by the competent department and used by the subordinate unit. The asset allocation relationship is not timely or clearly defined, which results in many property rights (right of use) are not clear and cannot be recorded correctly.

The second aspect is the identification of "future economic benefits or service potential".

International public sector accounting standards "in the future economic benefits or service potential" to describe the double meaning of public sector assets, government accounting entity is different from business accounting entity, in addition to a small number of for-profit assets is given priority to with the pursuit of interests, most of the assets is not for-profit, but to provide public service for the purpose. Thus, service-oriented assets represent the potential capacity of future governments to provide services to the public. For example, education, transportation, national defense and other sectors have a large amount of capital assets, which can provide future public services. However, it is usually impossible to have the inflow of economic benefits, or even more cash flow outflow (such as the outflow of a large number of contract funds due to asset maintenance and maintenance).

3. Measurement and Valuation of Initial Cost of Public Sector Assets

Asset valuation is often one of the technical bottlenecks in the successful implementation of accrual accounting in many countries. Asset measurement and valuation are critical to financial performance, reporting on asset service potential consumption, assessing future capital needs, and complying with expenditure authority. Non-financial assets are the key measure of public sector assets. Compared with financial assets, changes in non-financial assets are sometimes not

verified and measured through identifiable third party economies, such as the monetary measurement of assets such as art collections, school buildings, museum collections, roads, Bridges, library collections, parks, wildlife and government buildings.

For the measurement of non-financial assets, two steps are required. First, the service potential of assets is calculated and evaluated, and then the service potential is converted into monetary value. Many government assets need to be estimated through future service potential, and many government services have no market reference value, so they must rely on very subjective evaluation to determine the actual existence of activities. The complexity and subjectivity of non-financial asset valuation cause uncertainty of asset valuation and cost. In order to prevent excessive loss of the reliability of asset identification and measurement, a set of principles or criteria are required to regulate when, how and how to measure asset values and their changes. International public sector accounting standards on the measurement of non-financial assets, including fair value, use value, historical cost, replacement cost and other methods.^③ Adopting different approaches brings risks and limitations to asset management [13].

In the public sector, the fair value of assets is an indirect and fair measure of the value recognized for the needs that these services have the potential to meet. However, in the public environment, it is difficult to find the market value of most assets. Most of the assets of the public sector have no cash flow, and the operational difficulties caused by using value measurement are obvious.

Historical cost is a measure of the resources of assets purchased by the public sector, as well as an approximate valuation of reasonable economic benefits. The greatest advantage of historical cost measurement is its ease of operation, and its limitation is the inability to effectively measure the future economic benefits or service potential of assets in the use phase. Because the infrastructure assets has a long production life, assets in use process, in addition to the normal value consumption (depreciation costs), its actual value with changes in internal and external environment (such as price changes, technology upgrade, etc.), historical cost measurement value of the asset correlation is low, and in the performance measurement may be misleading [14].

Replacement cost measurement implies a measure of the future economic benefits or service potential of existing assets, i.e. the public sector can continue to provide a certain standard of services and improve services as much as possible to meet the growing public demand [15]. Through replacement cost measurement, real-time detection of the need to maintain a certain standard of service, to a certain extent, can avoid the intergenerational transfer of costs caused by the deterioration of assets. The us financial accounting standards board

^③ Fair value is the price determined by the seller and the buyer in the case of fair trade and voluntariness according to market conditions, and can reflect the fair value of assets, liabilities and equity and related changes. The replacement cost refers to the current value of the new asset (same as the assessed asset) minus the value of the asset consumption.

(FASAB), which requires buildings, plants and equipment to be recorded at cost less depreciation, encourages the use of write-down current costs (or replacement values) for asset valuation. However, this usually results in a higher depreciation charge (and therefore a lower reported profit) for the utility than would be the case under traditional cost accounting. It is also a justification for the rise in the price of some government services. Over time, this approach can produce unstable and unreliable measures of financial performance [16]. The accounting rules for tangible capital assets in the balance sheet of the public administration of Canada (PSASB, 2007b) are based solely on historical costs and do not impose replacement costs. In China, accounting standards clearly stipulate that historical cost should be adopted first, unless historical cost, fair value and evaluation value cannot be obtained, replacement cost can be considered.

However, regardless of the measurement, accounting figures are difficult to fully express the potential of services that the public receives from the public sector. The lack of established accounting policies on asset measurement and valuation in many countries, especially the valuation options allowed by asset valuation guidelines, may lead to different valuation methods in different regions or sectors, resulting in uncertainty of asset cost information and lack of comparability. Therefore, the introduction of asset measurement and valuation policies and their detailed rules is difficult, but also crucial.

Some capital assets (such as fixed assets, public infrastructure) enter the use phase, and there will be subsequent measurement (capitalization of maintenance costs).

Some non-financial assets, especially non-current assets such as fixed assets and public infrastructure, need continuous maintenance and repair, which are highly correlated with the quality and time of asset service delivery [17]. Therefore, it is difficult for the follow-up measurement of non-current assets to determine whether asset maintenance costs are capitalized or expensed.

In China, the "specific standards of government accounting no. 3 - fixed assets" stipulates that if the maintenance meets the requirements of asset recognition, it is directly capitalized, otherwise, it is expensed. "Specific standards of government accounting no. 5 - public infrastructure" stipulates that subsequent expenditures, such as alterations and expansions, incurred in order to increase the use efficiency of public infrastructure or extend its service life, shall be included in the cost of public infrastructure. The follow-up expenditures such as daily maintenance and maintenance incurred in order to maintain the normal use of public infrastructure shall be included in the current expenses; According to the classification of government revenue and expenditure in 2019, equipment, buildings and public infrastructure that meet the requirements of asset recognition shall be capitalized, while the maintenance and maintenance of fixed assets (excluding vehicles, boats and other means of transportation) and the operation and maintenance of information systems shall be included in the current expenses. It can be seen that the

maintenance and maintenance of assets are generally required at the standard level, but there is no specific application guide. In practical operation, financial personnel deal with this issue more randomly, resulting in huge maintenance and maintenance costs of many assets, high operating costs of asset management and low transparency.

In Australia, the steering committee recommended that maintenance expenditure should be included as an expenditure, but that service capacity which was substantial and effectively increased assets should be capitalized (SCNPMGTE, 1994, para 270).

4. Asset Cost Allocation

Through asset identification and recording, the monetary value of all assets "controlled" by the public sector can be calculated. Departmental cost or service cost is formed by the allocation of asset value consumption between different accounting periods or departments or specific items. Depreciation (amortization) of fixed assets and other non-current assets plays an important role in the process of cost allocation. Depreciation is a kind of loss of value, which is caused by the deterioration (wear and tear) and aging of the real object that cannot be repaired through repair and repair. It is a process of cost allocation and valuation in the expected life of the asset [18]. The scientific rationality of depreciation cost accounting depends on the determination of the accrued depreciation amount and residual value of assets, the determination of depreciation life and the method of depreciation. For example, for some capital intensive assets with a long life cycle, shortening the depreciation life or underestimating the depreciation life may lead to the early replacement of assets, thus increasing the current cost, that is, the future burden is transferred to the current period, and conversely, the current burden is transferred to the future. In order to facilitate operation, assets depreciation in the public sector usually adopts a simplified method compared with that in the private sector. However, public sector asset depreciation has been criticized and questioned.

After the full introduction of accrual accounting in our country, we try to implement depreciation (amortization) for all departments' fixed assets, intangible assets, public infrastructure, cultural and cultural heritage assets, government reserve materials and affordable housing. In practice, at present due to the intangible assets, public infrastructure, the operation of the cultural relics asset class guide is not issued, the related depreciation (amortization) these conditions are less or more obscure, and lack of initial costs in some assets, caused many intangible assets unamortized, public infrastructure, cultural relics assets such as a large number of assets of administration is not depreciated. The distortion of depreciation information will inevitably lead to the unreliability of operating expenses and service cost information, and then affect the asset management decision and service pricing decision of the organization.^④

^④ Through the asset depreciation technology, the total asset cost of the

In the UK, accrual accounting was introduced in the 1970s. Due to the impact of asset valuation technology and depreciation technology of the public sector, local governments did not conduct depreciation accounting until 1989, and could not provide information on asset stock use regularly, so the decision was questioned because there was no reliable basis for asset disposal [18]. Pilcher (2005) studied 28 local governments in Australia and concluded that because some models included depreciation estimates inaccurately. Judging the performance decision model of local government committees and measuring the performance objectives are inconsistent, vague and irrelevant [19].

In a word, from the international perspective, the improvement of asset depreciation system is a difficult point, which requires a long-term standardized process, as well as the coordination of relevant policies and technologies, such as the specific specifications of the depreciation life and method of industrial assets or departmental assets.

5. Preparation and Disclosure of Financial Reports

Accrual basis of government financial report is a kind of integrated financial information, but also to report to stakeholders and disclosure of information carrier. The government assets report is mainly reflected and disclosed through the government financial report. The reliability and authenticity of government financial report information and the relevance of demand (literature), and the quality of report information is not only determined by asset definition, cost measurement and allocation, but also closely related to report content selection and merger technology.

5.1. Information Content Selection of Financial Report

Financial reports, introduced in the public sector, or reference to enterprise financial accounting report, the reference or direct reference to the international public sector financial report, therefore, countries have the same financial reporting format, financial report information is mainly composed of financial statements (balance sheets, income, expenses and the cash flow statement) and notes. Information about government assets and liabilities is mainly reported through the balance sheet. Assets reflect the possible service potential of the government in the future, while liabilities reflect the possible risks arising from the supply of government services. The income expense statement reflects the changes in net assets in the current period. Assets and liabilities that meet the concept and its recognition conditions need to be reflected through the balance sheet.

Different stakeholders have different demands on financial report information: government departments introduce accrual

accounting and financial report in an attempt to promote decision-making and improve government performance. On the other hand, they strengthen the accountability of officials and institutions and promote the discharge of fiduciary responsibility. The vast majority of citizens do not have enough accounting knowledge or professional knowledge to understand the technology and documents containing a large number of aspects of information. Practice research shows that the lack of public interest in public sector financial reporting afterwards, they are more willing to understand public sector value creation, service supply activities, as well as the future of sustainable and risk, to pay attention to the government assets to maintain and expand the service, as well as to the state of these assets to achieve a satisfactory future cost estimates; Investors are more exposed to fiscal risk.

Therefore, the specific content covered by government financial reports has been a hot topic of official and academic discussions in different countries.

The public sector possesses a large number of capital assets, especially public infrastructure, which is characterized by large investment, long life cycle and numerous stakeholders. Compared with debt, the maintenance of the service capacity of public sector assets may be more worthy of attention. Debt can be "rolled over" (deferred repayment), but delaying infrastructure maintenance spending could have disastrous social and financial consequences if the system fails. Thus, the cost of repair or necessary upgrades may prove to be a bigger problem than public sector "debt" [20]. Moreover, the degradation of service functions of public sector assets, especially public infrastructure, can easily result in intergenerational transfer of financial burden. These problems are directly perceived by the public. However, due to medium - and long-term strategic planning and budgetary arrangements, maintenance expenditure is usually not given priority. In the process of public sector asset management in some countries, the status of infrastructure assets is not often evaluated and reported and corresponding maintenance and repair costs are estimated [21]. As a result, the reporting and disclosure of information (financial and non-financial) on this subject in many countries is significantly inadequate.

Since 1995, the financial accounting standards board (FASAB) has been promoting the submission of supplementary reports on deferred maintenance and has recommended that management explain the number of critical and non-critical repairs required to restore each major asset class to an acceptable state; In its statement, the U.S. national environment agency encourages regular reporting of infrastructure "condition assessments" and annual estimates of the amount of money needed to maintain and preserve these assets. Australian local government legislation requires councils to estimate the amount of money needed to bring their infrastructure to a "satisfactory state". Other standard-setting bodies: the international accounting standards board, Britain's ASB and Australia's have yet to tackle the problem [22]. In our country, the full implementation of accrual accounting, gradually report and disclosure of government assets, assets maintenance and maintenance costs

organization is apportioned in different accounting periods to form the operating expenses of the unit accounting period. The distribution and operation of the operating expenses in different service objects or specific projects form the service (output) cost and service. Cost is an important basis for service pricing decisions and management operations decisions.

and cost estimates have not been concerned and attention.

On the other hand, the information of government financial report is becoming more and more detailed, which leads to the information overload of financial report and makes it unusable in government decision-making [23]. How to ensure the simplification and reliability of information and meet the public demand is one of the problems faced by the financial reporting of the public sector.

5.2. Define the Subject Scope of Financial Report Consolidation

Comprehensive government financial reports (departmental financial reports) are the consolidated financial statements of multiple agencies, which are designed to provide the overall financial information of the government (or department). Due to a series of problems such as different functions of budget agencies, complex relationship between administrative subordination and budget allocation, frequent asset allocation among government agencies, unclear property right boundary and so on, the complexity of financial statement consolidation of public sector is much higher than that of private sector. The most difficult problem in the process of report merge is the definition of the scope of the merge subject.

The choice of the scope of the entity is directly determined by the objective of financial reporting, while the objective of reporting is determined by the concept of control or fiduciary responsibility followed by the formulation of government accounting standards.

IPSAS35 defines the concept of "control" mainly around the two key factors of "power" and "income", emphasizing that an accounting entity has the power in another entity and has the ability to use the existing power to influence the nature and quantity of its own income (see article). However, due to the ambiguity of the boundary between government and market, it is difficult to determine the merging subject based on the concept of "control" in practice. Other concepts, such as fiduciary responsibility, have also been considered in some countries.

Therefore, although different countries have the tendency of international convergence, the subject of merger is also different. For example, the integrated financial report (WGA) of the British government includes local governments, while Australian local governments are excluded from the consolidated financial report of the central government.

In China, in the basic standards of government accounting, the definition of assets is based on the concept of "control", and the goal of financial reporting is based on the concepts of "control" and "fiduciary responsibility". The government accounting standards no. 9 - preparation and presentation of financial statements defines the consolidated entity, but does not clearly define the scope of the consolidated entity. The definition of fuzziness will inevitably lead to the uncertainty of the accounting entity's actual consolidated statements. Some government agencies overconsolidate during the reporting process, and the information in the final report may disguise some units with poor performance or underestimate the units with good performance [24]. The information quality

of the report further influences the release of the fiduciary responsibility of asset management and the effectiveness of the decision.

6. The Conclusion

The application of accrual accounting technology is systematic and complex, among which the asset identification, definition, cost measurement and valuation, information reporting and disclosure and other aspects have been troubling the effectiveness of the reform of accrual accounting system, and are also the technical difficulties that affect the potential advantages of accrual accounting in asset performance management. According to international experience, the failure to properly solve these technical problems will affect the success or failure of the accrual accounting reform and the effective implementation of asset performance management. To solve these problems, the government needs to pay high attention to them for a long time and constantly find the best solution.

Asset registration is the basis of asset performance management and a prerequisite for asset management transparency and fiduciary responsibility. Whether at home or abroad, in the process of full introduction of accrual accounting into the public sector, government assets are firstly checked and verified comprehensively, and on this basis, assets status is attempted to be comprehensively identified, recorded and reported, and the report and disclosure contents are gradually refined. Therefore, the advantages of accrual accounting and reporting in enhancing the transparency of assets and improving fiduciary responsibility have been given full play in practice and laid a good foundation for asset performance management.

On the overall record, on the basis of asset value, and through the accounting value of the assets depreciation cost allocation, to completely accurate accounting department or service cost, then for the cost control, pricing, service outsourcing services, investment as well as the disposal of the asset (assets), and other decision-making provides the prerequisites - cost information base. The universality of accrual accounting's potential advantages in decision making into actual benefits is poor.

In addition, for example, the division of accrual accounting in asset management, the cognition of managers on accrual accounting, the change of performance concept, and the application and integration of asset management system and financial system will affect the role of accrual accounting in asset management.

This article also need to learn from the international experience, overcome a series of technical problems, and do a good job in the corresponding system reform measures.

This paper will improve the government accounting and reporting system, accelerate the formulation and publication of specific government accounting standards and their application guidelines, and in particular formulate corresponding supplementary provisions for some technical problems (such as valuation methods for different types of

assets, scope of consolidated accounting entities and detailed rules for consolidation).

This paper will accelerate the reform of the accounting system and promote the effective implementation of the reform of the accountability accounting system. Strengthen the professional knowledge training for financial personnel and asset management personnel. Strengthen the strategic management of public sector asset management, establish and improve asset management system, link or integrate various activities and functions of the organization, integrate asset management system and financial system, and improve the efficiency of asset management.

Comprehensive and scientific identification of assets is the starting point of asset measurement and reporting. Selecting appropriate measurement attributes for accurate measurement and valuation of asset costs is the basis. Reasonable allocation of asset costs in operation expenses and output is the core of asset management. Fourth, timely preparation of reports is the key.

From the technical perspective, this paper analyzes the potential advantages of accrual accounting in public sector asset management and gives full play to these potential advantages and technical difficulties and problems. In addition, the technical path of the above four aspects is a prerequisite for the potential advantages of accrual accounting in asset management, but the value and implementation conditions of accrual accounting in public sector asset management are far more than these. The government incentive mechanism, social culture, decentralization, human factors and the degree of integration of asset management information system and financial system will affect the superiority of accrual accounting in asset performance management. These problems have not been discussed in this paper, but they deserve further study.

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