



WP/02/167

IMF Working Paper

Statistical Treatment of 'Build-Own-Operate-Transfer' Schemes

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IMF Working Paper

Statistics Department

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October 2002

Abstract

<p>The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.</p>
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The paper argues that assets produced under build-own-operate-transfer (BOOT) schemes—under which public infrastructure assets are legally owned and operated for a defined period by the private corporation that constructs them, before being transferred to the government—should be treated in macroeconomic statistics as owned by the government² from the outset. The paper considers three approaches to the treatment of the economic stocks and flows entailed in these arrangements. While the preferred approach conceptually is to impute the creation and extinguishment of financial assets and liabilities, this approach is not consistent with the *System of National Accounts 1993*, and therefore an operating lease approach to BOOT schemes is recommended.

JEL Classification Numbers: H1, H5, H6, H7, E6

Keywords: build-own-operate-transfer, BOOT

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¹ The author was a Senior Economist in the Government Finance Division of the Statistics Department when he prepared this paper. He is grateful to Paul Cotterell, Rob Dipplesmann, Nils Mæhle, Robert Heath, John Pitzer, and Betty Gruber for their comments. Any remaining omissions and errors are solely the author's responsibility.

² Although, conceptually, BOOT schemes could be set up between private sector entities, in practice such schemes are only important for contracts between the government and private sectors.

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I. INTRODUCTION

This paper discusses the appropriate treatment in macroeconomic statistics of build-own-operate-transfer (BOOT) schemes. In particular, it considers how the economic flows and balances should be recorded for schemes in which private sector corporations:

- construct public infrastructure assets which have traditionally been associated with general government or public corporation investment,
- legally own and operate such infrastructure assets for a defined period, and then
- “transfer” the assets to the government.

BOOT schemes³ are a subset of a wider set of Public Investment Projects (PIPs), which involve the construction and operation by private corporations of assets of a kind which are usually the responsibility of the general government sector, or public corporations. These commonly include, for example, roads, bridges, water supply and sewerage treatment works, hospitals, prison facilities, electricity generation and distribution facilities, and pipelines. The corporation may use the asset to sell services directly to the government itself, or to the general public.

The essential element of BOOT schemes is that the contract between the government⁴ and private sector corporation specifies that the asset will be “transferred” to government after a defined period, or otherwise includes provisions (such as an option to buy at a nominal price) which have the same economic effect.

II. *SYSTEM OF NATIONAL ACCOUNTS 1993'S (1993 SNA) TREATMENT OF BOOT SCHEMES*

The appropriate treatment of BOOT schemes has not been directly addressed in the *System of National Accounts 1993 (1993 SNA)*.⁵ However, the application of *1993 SNA* rules on ownership, control, and leasing clearly indicate that

- Where an asset is constructed by a corporation and transferred to government on completion, the asset should be classified as government capital expenditure

³ Sometimes referred to as build-operate-transfer (BOT) schemes.

⁴ Such schemes could in theory involve the provision of assets to private sector entities, but in practice these arrangements are only important for the provision of public assets. For simplicity, this paper considers these schemes from the point of view of government, but the same arguments would apply to similar schemes involving only private sector entities.

⁵ Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank: *System of National Accounts 1993*, Brussels/Luxembourg, New York, Paris, Washington, D.C., 1993.

(including work in progress), with corresponding financing and interest flows from the government to the corporation (i.e., vendor financing).

- Where the corporation retains indefinite legal ownership and control of the asset, the asset (and transactions related to its construction) should be classified to the nonfinancial corporations sector.
- Lease arrangements between the government and corporation would be classified in the normal way as operating or financial leases, depending on whether the government or corporation gains most of the risks and benefits of ownership as a result of the contracts entered into (see also discussion of the treatment of lease “assets” below).

However, application of 1993 SNA principles is less clear for BOOT schemes. The conventional approach has been to classify the asset as being owned and controlled by the private sector corporation during the period in which the corporation operates the asset⁶, and to show a transfer of the asset to the government at the end of that period. This is the approach adopted in the European System of Accounts (ESA95) *Manual on Government Deficit and Debt (ESA Debt Manual)*.⁷

Box 1. BOOT Schemes: European System of Accounts Debt Manual Treatment

The ESA95 *Manual on Government Deficit and Debt (ESA Debt Manual)* addresses BOOT schemes under Part IV, “Public infrastructure financed and exploited by the corporation sector.” The *ESA Debt Manual* divides such infrastructure into two main types of cases:

- (1) Case 1: Government enters into a contract with a corporation for the construction of infrastructure used to provide services which constitute government final consumption (i.e., where the government directly pays for the service provided by the infrastructure).
- (2) Case 2: A corporation constructs and/or operates public infrastructure and finances the costs by charging users who are not the government.

In Case 1, the infrastructure is recorded.

- (a) In the corporation’s balance sheet if the contract with the government is in the nature of an operating contract (i.e., where most of the risks and benefits remain with the corporation); and
- (b) In the governments balance sheet if the contract is in the nature of a finance lease (with most of the risks and benefits being transferred to government).

⁶ Although of course subsequent financial lease arrangements can result in effective transfer of ownership back to the government.

⁷ Eurostat, European System of Accounts 1995 (ESA95) *Manual on government deficit and debt*, Luxembourg, 2002.

In Case 2, the infrastructure is recorded in the corporation's balance sheet.

Where the infrastructure asset is recorded in the corporation's balance sheet, but is transferred to government at the end of the period of exploitation, the *ESA Debt Manual* recommends that this be recorded as government gross fixed capital formation, balanced by a capital transfer from the corporation to government.

III. PROBLEMS WITH THE CONVENTIONAL TREATMENT OF BOOT SCHEMES

Although the conventional treatment of BOOT schemes is coherent and straightforward in an accounting sense, it hides underlying economic reality and creates loopholes for governments to understate their expenditure and to put more of their obligations out of their balance sheets.

There are four major problems with the conventional treatment:

- (1) Usually the assets concerned have very long lives, and retain a majority of their value when they "revert" to government. The "reversion" to government control requires the creation of a large and clearly bogus transaction (the "gift" of the asset from the corporation to the government).
- (2) Since the contract provides, from the start, for the asset to be transferred to government control, recording the asset as belonging to the corporate sector during the period the corporation is entitled to use the asset overstates the corporation's asset values, i.e., the benefits to the corporation of the BOOT arrangements are less than the value of the asset itself.⁸ Conversely, it understates the value of government assets and net worth, since it does not recognize the government's right to the use of the asset once the corporation returns it to government control.
- (3) The government typically has most of the risks and benefits of ownership. In particular:
 - (a) construction shortcomings, such that the asset does not meet its designed life and service requirements, will usually have more impact on the government than the corporation (i.e., the interest of the corporation extends only to ensuring that the asset provides an acceptable rate of return during the period that it is allowed to use the asset). In practice, this is reflected in close government involvement in the specification and quality control of BOOT assets to the extent that the design and quality specifications of BOOT assets are usually determined by the government, rather than the corporation;

⁸ The corporation is likely to value the asset at the present value of the income stream that the corporation expects to receive over the period that it controls the asset. If so, the asset value would be correct from the corporation's point of view, but would understate the true value of the fixed asset. In any event, the government asset values are understated.

- (b) similarly, it is mainly the government's net worth which is affected by the consumption of fixed capital (COFC) relating to the asset, and therefore COFC should be classified as a government expense (for the corporation the relevant expense is the amortization of its control of the asset);
 - (c) holding gains and losses relating to the asset itself will also mainly impact on government, which holds the residual value of the asset—the corporation will be affected only by holding gains and losses relating to the arrangements governing its use of the asset;
 - (d) the contracts are usually such that the government retains many of the risks of ownership even during the exploitation period—e.g., income and/or financing guarantees, restrictions on competing infrastructure, exclusive contracts, etc. In principle such risks could be shown as separate contingent or actual liabilities, but in practice it is likely to be very difficult to disentangle all the risks assumed by governments in BOOT schemes.
- (4) BOOT schemes are not normal commercial arrangements. They are found mainly (and probably only) in contracts involving the public sector, and have been specifically created to evade fiscal or financing constraints and/or to conceal actual fiscal policy. Moreover, such schemes are most attractive to governments when financing or other fiscal constraints are most severe. Not only do BOOT schemes degrade the transparency of government fiscal policy, but they also leave governments or the public exposed to greater costs than other more straightforward financing arrangements. Also, the corporations involved in such schemes explicitly or implicitly obtain preferential access to domestic and/or foreign credit. Therefore the conventional treatment of BOOT schemes conceals the creation of government assets via the “back door” and reduces the economic value of the statistics as a measure of public sector transactions and stocks. As a corollary, the success of this approach in reducing (or at least postponing) the recording of government capital formation could encourage the inappropriate use of corporations to create government infrastructure, and the evasion of fiscal policy restrictions.

IV. SMOOTHING THE TRANSFER OF THE BOOT ASSET TO GOVERNMENT

The most obvious problem with the conventional approach is that it involves a wholly implausible transfer (gift) of the asset from the corporation to the government. Two possible solutions have been suggested to deal with this problem.

A. Derivative Asset Approach

One approach is to impute the creation of a financial asset (a type of derivative contract) at the start of the BOOT contract, which corresponds in economic terms to an option for the

government to buy the BOOT asset for zero value⁹ at some time in the future (i.e., at the time it is due to be “transferred” to the government). The counterpart liability is the claim on the BOOT corporation to provide the BOOT asset to the government at that time. Initially the financial asset would have zero value, but its value would increase over time as the eventual transfer of the BOOT asset becomes more imminent, and would eventually equal the value of the asset at time of transfer (less any amounts actually paid by government). The transfer of the BOOT asset would then be imputed as the purchase of the BOOT asset from the corporation by the government, offset by the extinguishment of the financial claim on the corporation. This would avoid the need to record a gift from the corporation to the government, and allow the increase in the government net worth to occur smoothly over time. Since the financial asset has the character of a financial derivative, the increase in value would be classified a revaluation.

While this approach addresses the problem of accounting for the transfer of the BOOT asset, it does not provide a satisfactory solution for the other problems with the current treatment outlined above. Also, the difference in value between the market value of the asset and the price (if any) paid by the government is not in reality due to revaluations (i.e., price changes), but reflects amortization for the period over which the corporation can use the asset, which is an integral part of the BOOT contract, and should therefore be classified as a transaction.

Finally, the imputed “option” would not satisfy the *1993 SNA* criterion to be recognized as a derivative contract, since it would not be tradable on financial markets.

B. Imputed Tax Approach

Pitzer has suggested¹⁰ that the best way of showing the government’s increasing residual interest in the BOOT asset, during the period the asset is controlled by the corporation, would be to record imputed tax revenue (payable by the corporation) during this period. Because taxes are not actually paid, a financial asset, BOOT taxes receivable, would have to be added to the government’s balance sheet. At the end of the period, the taxes receivable asset would be used to purchase the asset from the corporation.

This approach would also “smooth” the process of asset acquisition by the government, and has the advantage that the increase in government net worth would be classified as transactions (taxes), which better reflects the nature of the flows involved in an agreement of this sort. The classification of the transactions as taxes reflects the fact that all BOOT schemes ultimately rely on the control exerted by government to reduce or eliminate

⁹ The BOOT contracts could always be varied to require a nominal value to be paid at the time of transfer, in which case the value of the “option” would be the market value of the BOOT asset, less the cost of exercising the option.

¹⁰ Part III, Section F of *Government Assets and Liabilities: Licenses, Leases, and Other Issues – A Paper Prepared for the 27th General Conference of The International Association for Research in Income and Wealth, Stockholm, August 18 to 24, 2002.*

competition, so that the high returns which allow the corporation to earn a satisfactory rate of return, while ultimately ceding the asset to government, can be obtained. Pitzer regards the return earned on the asset, over and above that which could be obtained from normal commercial arrangements, as similar to taxes collected by the corporation on behalf of the government.

However, this classification would not apply where the government is itself paying for the use of the asset, and therefore a different approach would be required in those cases.

C. Inadequacy of Transfer Smoothing Approaches

While the imputed tax approach has a number of attractions in regard to dealing with the process by which the government eventually gains control over the BOOT asset, neither of the “asset transfer smoothing” approaches described above reflect the underlying economic reality that *where there is a provision in the original contract for the eventual transfer of an asset from a corporation to government, the corporation has the right to exploit that asset for a defined period, while the government has (at least most of) the other risks and benefits of ownership. In other words, the government is financing the acquisition of the asset by giving up some of the income stream which can be derived from using the asset.*

V. PROPOSED GOVERNMENT FINANCE STATISTICS TREATMENT OF BOOT SCHEMES

To provide a better analytical measure of BOOT schemes in government finance statistics (GFS), it is proposed that such schemes should be regarded as essentially encompassing:

- (1) the construction of a fixed asset (by the private sector “BOOT” corporation) on behalf of the public sector¹¹
 - (i) if the fixed asset is used to provide services charged directly to general government, it is owned by a general government entity.
 - (ii) if the fixed asset is used to provide services charged directly to the general public, it is owned by a public nonfinancial corporation, the equity of which is owned by the government.
- (2) the financing¹² of the asset acquisition by allowing the use of the asset by the BOOT corporation for a defined period. This may create a separate asset for the BOOT corporation, the nature of which is discussed further below.

This approach has several analytical advantages over the more traditional approach of treating BOOT assets as belonging to the private sector, and then being transferred to government at the end of the period of exploitation by the BOOT enterprise:

¹¹ For simplicity, the public sector is referred to as “government” in the following discussion.

¹² Using financing in the general sense of obtaining resources to pay for such acquisitions.

- at the end of the period of private sector exploitation (when the asset reverts to government control) there are no capital transfers or purchases required, i.e., there is no need to show a “gift” from the private sector to government;
- the value of the BOOT asset is apportioned between the government and the private sector, depending on the net present value of expected future economic flows arising from use of the asset, and asset/liability values change smoothly over time for both sectors to reflect the consumption of fixed capital and the amortization of the period during which the corporation is entitled to use the BOOT asset;
- the gross fixed capital formation of the public sector, and associated financing arrangements, are recorded in the period in which public assets are created.

Where a BOOT asset is constructed over a number of accounting periods, the acquisition of the fixed asset, and corresponding “financing” transactions, should be recorded as work is put in place.

VI. TREATMENT OF THE CORPORATION’S USE OF THE BOOT FIXED ASSET

If the asset in a BOOT contract is treated as government capital formation as proposed in Part V, then it is necessary to consider the treatment of the use of the BOOT asset by the corporation until that asset is “transferred” to government.

BOOT arrangements are a special case of a wider category of leases and similar arrangements. As argued above, the essence of a BOOT contract is the provision for the corporation which constructs an asset to have exclusive use of that asset for a defined period, after which the asset reverts to government control. This is equivalent in economic terms to a lease of the asset to the corporation for the same period.

There are at least three alternative approaches to treating the corporation’s use of the BOOT fixed asset:

- A Treatment as an operating lease;
- B Treatment as the sale of an intangible nonfinancial asset by the government to the corporation; or
- C Treatment as an incurrence of a liability (government) and acquisition of a financial asset (corporation).

A fourth option, namely a financial lease of the BOOT asset, is possible, but is not considered here because it would entail control of the asset by the corporation for most of its service life, and is unlikely to be attractive to either the corporation or the government (see Box 2).

A. Operating Lease Approach

This is conceptually the simplest way of recording the use of the BOOT asset by the corporation. It also accords with the 1993 SNA treatment of leases of fixed assets, since BOOT arrangements do not cover the bulk of the service potential of the assets, and hence do not qualify as finance leases.

However, this approach entails the imputation of financing transactions and debt as counterparts to the government acquisition of the BOOT asset. The initial financing transaction (borrowing) and debt must be imputed as equal to the market value of the asset at the time of acquisition. Subsequent financing transactions (repayment of principal) and interest payments would also need to be imputed. These transactions would be offset by imputed revenue—classified as a sale of goods and services—from the operating lease (adjusted, as necessary, to account for other revenue or expense associated with the lease).

Box 2. Financial Leases and BOOT Schemes

Financial leases and BOOT schemes both allow the risks and rewards of ownership to be shifted from the nominal owner (e.g., a corporation) to the user (e.g., the government) of an asset, and thereby may be used to conceal government acquisition of nonfinancial assets, and incurrence of liabilities. However, they operate in different ways.

Financial leases are structured in the same way as operating leases, but the totality of the conditions set out in the lease are such that the majority of the risks and rewards of ownership of the leased asset are held by the lessee. For example, such leases typically cover the bulk of the useful life of the asset, and set the prices and quantities of goods or services to be delivered, so that the economic effect is similar to the lessee owning the asset, and the lessor having a financial claim on the lessee. Such schemes are classified in GFS as the acquisition of the fixed asset by the lessee, and the incurrence of a liability (i.e., vendor financing) by the lessee to the lessor.

In contrast, in BOOT schemes the provision for the eventual “transfer” of ownership of the asset from the corporation to the government effectively shifts most of the risks and benefits of ownership from the corporation to the government, with the government financing the acquisition of the BOOT asset by leasing it back to the corporation for a period. The lease back is classified as an operating lease because it typically does not cover the bulk (or even the majority) of the useful life of the asset.

A government expense item must also be imputed for *consumption of fixed capital*.

The need to impute debt and debt-servicing transactions is a major drawback to this approach. Clearly, in this case, the interpretation of “debt” is problematical. For example, the normal implication that debt will impose future pressure on the deficit does not apply, because all imputed debt servicing requirements are automatically offset by imputed lease revenue.

Also this approach does not cater for the value of the lease to the corporation, or changes in that value over the period of the lease to reflect the potential returns from the use of the asset. The existence of economic value associated with the lease implies that it is an asset of the corporation, which is incompatible with the treatment as an operating lease.

B. Intangible Nonfinancial Asset Approach

Under this approach the corporation purchases an intangible nonfinancial asset from the government (i.e., the exclusive right to the stream of income from the BOOT asset during the period that the asset is controlled by the corporation).

The sale of this asset by the government offsets the purchase cost of the BOOT asset.¹³ Thus there is no need to impute debt, or debt servicing transactions.

The government retains ownership of the BOOT asset, but to avoid arbitrarily increasing net assets the original value of the BOOT asset must be reduced by an amount equal to the value of the intangible nonproduced asset owned by the corporation.¹⁴ Over time, the total value of the BOOT asset plus the intangible non-financial asset must equal the original value of the BOOT asset less depreciation (consumption of fixed capital).

Because the government bears the cost of depreciation on the residual value of the asset, a government expense item for *consumption of fixed capital* must be imputed, notwithstanding the provision of operational services by the BOOT enterprise during the lease period.¹⁵ Note, however, that consumption of fixed capital should be calculated on the full, rather than the residual value, of the asset (i.e., not discounted to reflect the sale of the “right to use”).

The amortization (i.e., reduction over time) in the market value of the BOOT lease, and consequential increase in the government asset values, is treated as offsetting *other changes in the volume of assets* to the government and corporation sectors. This results in a smooth transition over time in asset values, reflecting the balance of remaining corporation control. However, it does not correctly measure the impact of these flows on the operating balances of either the government or corporation (the operating balance does not include *other changes in the volume of assets*).

The main advantages of the “sale of an intangible asset,” compared with the “operating lease” approach, are:

¹³ Less any amounts explicitly paid by government for the asset, *plus* any lease-related payments made by the corporation (but excluding taxation, and any amounts paid for government services, etc.).

¹⁴ To avoid swings in asset values, the intangible “right to use” asset, and associated economic flows, must be deemed to come into existence as work is put in place on the BOOT asset.

¹⁵ Because the other changes in the volume of assets represents the return of the BOOT asset value to government over a period which is less than the useful life of the asset, it will be greater than the depreciation expense for the BOOT asset, and government net worth will increase over the life of the BOOT period.

- as noted above, it does not require imputation of debt and debt servicing transactions;
- it allows for the change in value of the BOOT arrangements due to changes in the potential return from the asset.

Its main disadvantage is the problem of correctly determining asset values. As noted above, to avoid arbitrarily increasing net assets it is necessary to reduce the value of the BOOT asset by an amount equal to the intangible non-produced asset owned by the corporation. However, this distorts the type of asset valuation for the economy as a whole, because part of the fixed asset value is replaced by an intangible nonproduced asset. Also, the full fixed asset value must be used for calculation of depreciation, and this is obviously inconsistent with the reduction of the value of the BOOT fixed asset.

A further problem arises from the conventional treatment of amortization of the intangible nonproduced asset (the “right to use”) owned by the corporation. Amortization of contractual arrangements is included in the *Other changes in the Volume of Assets* account. Therefore the BOOT arrangements will not appear in the revenue and expenditure accounts. The treatment of the changes to the government’s net worth as “other economic flows” rather than transactions (revenue) is misleading, because BOOT contracts result indirectly in an increase in government revenue, being a portion of the higher charges¹⁶ for the asset services required to compensate for the “transfer” provision in the contract. BOOT schemes typically involve monopoly or oligopoly situations, which guarantee the relatively high prices required to provide the return on investment which will induce corporations to enter into these arrangements. The government, however, captures part of the revenue resulting from the high prices by (apparently) getting an asset for free. Transparency demands that the revenue obtained by government resulting from BOOT contracts, and the use of that revenue to acquire fixed assets, should be explicitly shown.

[NOTE: The “sale of an intangible nonfinancial asset” approach proposed here is similar to the treatment of the spectrum leases which has recently been endorsed by the Inter-Secretariat Working Group on National Accounts (ISWGNA), and Eurostat.¹⁷]

¹⁶ Either internally if the BOOT involves assets used by government itself, or charges to the public if the asset is used to produce goods and services for sale.

¹⁷ Inter-Secretariat Working Group on National Accounts, Reports on the ISWGNA Meetings, *Report on the Treatment of Mobile Phone Licences in the National Accounts*, December 21, 2001. Available via Internet: <http://unstats.un.org/unsd/nationalaccount/iswgna.htm>. See also *Eurostat Decision on the Allocation of Mobile Phone Licenses (UMTS)*. Eurostat news release No. 18/2000, July 14, 2000. Available via Internet: <http://www.europa-kommissionen.dk/presse/eurostat/2-14072000-EN-AP-EN/>

C. Financial Asset and Liability Approach

As argued above, the agreement to allow the BOOT corporation exclusive use of the BOOT asset for a defined period is equivalent in economic terms to a lease of the BOOT asset by the government to the corporation.

The economic effect of lease and similar arrangements is to create reciprocal rights and obligations between the lessor and lessee. The rights are owned by an institutional unit (the lessee), which can obtain economic benefits by holding them or using them, and they therefore meet the 1993 SNA definition of economic assets. On the other hand, the obligations incurred by the lessor entail a loss of future economic benefits, i.e., a liability. Leases therefore have the economic character of financial assets and liabilities, where the asset, a claim by one entity on another, has a counterpart liability, being the obligation to meet that claim.

Therefore, conceptually the most appropriate treatment of BOOT leases is as liabilities of governments and corresponding financial assets of the BOOT corporations.

Further, because the amortization of the lease (during which the corporation has exclusive use of the BOOT asset) results from an agreement between two parties, it has the character of a *transaction* rather than an *other economic flow*. Therefore the amortization should be classified as government revenue (and corresponding corporation expense¹⁸)—reflecting the simultaneous reduction of the lessor liability and lessee asset. This would ensure that the effective increase in government revenue outlined above (see the discussion of option B), as well as the acquisition of fixed assets, is captured in fiscal data.

The revenue would be classified as a form of property income for the government and property expense for the corporation (a new item classification would need to be established).

The problem with this approach is that it is not, at present, consistent with the 1993 SNA treatment of leases and similar arrangements. Since consistency with the 1993 SNA is a prime objective of the *Government Finance Statistics Manual 2001*¹⁹, adoption of the financial asset and liability treatment of BOOT leases is dependent on a review of the 1993 SNA treatment of leases.

¹⁸ Consistent with normal commercial accounting practices.

¹⁹ International Monetary Fund, *Government Finance Statistics Manual 2001*, (Washington, D.C.: International Monetary Fund, Publication Services, 2nd ed.), 2001. Also available via Internet: <http://www.imf.org/external/pubs/ft/gfs/manual/index.htm>.

VII. SNA TREATMENT OF LEASE CONTRACTS

The *1993 SNA* treats some (transferable) leases as nonfinancial nonproduced intangible assets—with no counterpart liability. Furthermore, the *1993 SNA* defines financial assets by listing them—as comprising financial claims, and specified other assets (SDRs, Monetary Gold, Shares, and Derivatives). Leases do not correspond directly to any of the categories on this list, although they share some of the characteristics of shares and derivatives.

For example, the value of the rights and obligations associated with leases are conditional on the circumstances applying during the lease period, and do not directly involve flows relating to the use of the asset (i.e., property income) between the lessor and lessee. While most financial assets and liabilities involve an unconditional relationship between the two parties, and payments of property income (interest) as well as principal, the *1993 SNA* makes specific allowance for shares and derivatives, which do not involve unconditional relationships²⁰ or property incomes, as “special cases” of the financial assets/liabilities category. There is no obvious reason, and no explanation, why the *1993 SNA* stops with the inclusion of shares and derivatives in the category of financial assets and liabilities, and does not go on to consider other contractual arrangements which confer reciprocal rights and benefits.

A. Partitioned Assets

The advantage of treating leases and similar arrangements as financial assets and liabilities is that it provides a conceptually consistent and practical way of dealing with “partitioned” assets, i.e., assets where two or more parties each have a right to some portion of the total inflow of economic resources which will be derived from the asset. BOOT schemes are part of a larger set of such “partitioning” arrangements, which are not satisfactorily addressed by conventional statistical treatments.

Partitioning arrangements divide the economic benefits from an asset in such a way that the increase in an asset for one party causes a complementary reduction in the asset for the other. This complementary character occurs naturally for financial assets and liabilities, where an asset for one party is a negative asset (i.e., liability) for the other. However, it cannot be properly accommodated by other asset categories. Instead, we are forced to reduce the value of an asset held by one party, while increasing the value of a different kind of asset held by another. When (as is the case for BOOT arrangements) one of those assets is a fixed asset, while the other is an intangible non-produced asset, we are left with the absurd result that the value which must be used for calculation of consumption of fixed capital is greater than the asset value when reduced to take account of the partitioning of the asset.

Therefore the only appropriate treatment for leases, and similar contractual arrangements, is to extend the definition of financial asset/liability to include all contracts which generate reciprocal rights and obligations.

²⁰ i.e., where the value of the contract does not depend on other transactions.

Leases, and similar contracts, should constitute a separate category in financial assets/liabilities.

The classification of leases has been raised in this paper because it is relevant to the treatment of BOOT schemes. However, this issue clearly has much wider ramifications and should be considered in more detail in a separate paper.

Box 3. Partitioning the Spectrum

One example of a partitioned asset which has recently occasioned extensive debate is the granting by governments of long term mobile phone licenses which entitle the owners to exclusive use of portions of the electromagnetic spectrum. The treatment proposed in the two papers referenced below²¹ is to regard the license as an intangible nonproduced asset, separate from the spectrum (a tangible nonproduced asset). While the government retains ownership of the spectrum asset itself, it sells the license, i.e., the right to use the spectrum for a defined period, to the corporation. Since the two assets are linked complementarily, this approach allows the flow of economic value from the spectrum to be partitioned between the two parties.

However, the nature of the “complementary” link between the two assets is problematic. In effect, an increase or decrease in the value of the license has a corresponding offset to the value of the spectrum. Because the spectrum is a tangible nonproduced asset, and the license is an intangible nonproduced asset, this implies the partitioning has in fact changed the composition of assets for the economy as a whole. If leases and similar arrangements are treated as financial assets and liabilities, the “complementary” nature of such contracts follows naturally, and has no impact on the asset structure.

VIII. CONCLUSION

BOOT schemes entail the construction of a fixed asset by a corporation (the BOOT corporation) on behalf of the government. The acquisition of the fixed asset by the government is financed by the government ceding the “right to use” the asset to the corporation for a defined period.

Conceptually, the preferred option for the classification of the “right to use” is that set out in Section VI, Option C. That is, BOOT schemes should be regarded as involving, in essence:

- The acquisition of a fixed asset (the BOOT asset) by the government
- The simultaneous incurrence of an imputed liability²² of the same value to the BOOT corporation

²¹ Robert J. Dippelsman and Nils Ø. Mæhle, *Treatment of Mobile Phone Licenses in the National Accounts*, IMF Working Paper 01/72 (Washington, D.C., International Monetary Fund), 2001. See also the Intersecretariat Working Group on the National Accounts, report of the meeting of 18 April, 2001, as reported on the SNA News and Notes, Issue 14, April 2002. Available via Internet: <http://unstats.un.org/unsd/nationalaccount/sna/sna14-en.htm>.

²² i.e., the right to the exclusive use of the BOOT asset for a defined period.

- The progressive reduction (amortization) of the liability over the period during which the corporation has the right to use the asset, which
- is an expense for the corporation and (property) revenue for the government.

However, Option C is not at present consistent with the exclusion of lease contracts from financial assets and liabilities in the *1993 SNA*, and the adoption of Option C in GFS would give rise to major inconsistencies between these closely related sets of statistics. Therefore, until a satisfactory treatment of lease contracts has been adopted in the *1993 SNA*, the adoption of the operating lease approach (Option A above) should be the fallback option for classifying the use of the BOOT asset by the corporation and the source of revenue used by the government to acquire the BOOT asset. The fallback option involves:

- The acquisition of a fixed asset by the government (as for Option C)
- The simultaneous incurrence of an imputed loan liability (similar to vendor financing) to the BOOT corporation
- Imputation of operating lease revenue payable by the corporation to the government during the period the corporation has the right to use the asset
- The use of this revenue by the government to pay principal and interest on the imputed loan

Although there are important shortcomings to this approach, it does result in the acquisition of fixed assets under BOOT schemes, and the revenue resulting from the subsequent amortization of the BOOT lease, both being included in GFS. This is essential if GFS is to provide complete coverage of public sector stocks and flows. While the liability resulting from the acquisition of the BOOT asset is different in important respects from ordinary debt liabilities, it should be noted that this liability often corresponds to conventional debt in its effect on foreign liabilities (where the BOOT corporation is foreign based), and the explicit/implicit guarantees on corporation borrowing entailed by BOOT schemes gives borrowing of ostensibly private corporations much of the same economic character as borrowing by public corporations.²³

Fiscal reporting under Fund-supported arrangements should ensure that BOOT schemes are recorded as fixed asset acquisition, and the incurrence of a liability, as work is put in place on the BOOT asset. It would be preferable for the liability transactions and balances associated with BOOT schemes to be segregated from normal debt, because BOOT schemes are self-financing and therefore do not directly affect future fiscal balances.²⁴

²³ It should also be noted that the designation of a lease as a finance lease also results in the imputation of debt and debt servicing transactions.

²⁴ However, it should be noted that where the BOOT corporation is foreign, or uses foreign financing, the effect on the future balance of payments may be similar to that resulting from foreign debt.

NUMERICAL EXAMPLES

BOOT schemes are often very complicated. However, the essential features of such schemes, and the proposed alternative treatments, can be illustrated by a simple numerical example.

In this example an asset is constructed at a cost of \$100m by a private corporation under a BOOT contract which specifies that the corporation has the right to use the asset for 20 years, after which the asset will “revert” to government control.

The asset’s economic life is estimated to be 100 years, giving rise to C.O.F.C. of \$1m per year (assuming straight line depreciation). Interest (long term bond) rates are five percent.

BOOT schemes can be designed to create assets used by either the general government or public corporations sectors—for simplicity the public sector is designated as “government” in this example.

Conventional treatment

Year 1

- ❖ Gross fixed capital expenditure by the private sector corporation = \$100m

Years 1–20

- ❖ C.O.F.C. expense for the corporation (\$1m per year) = \$20m.
- ❖ No government transactions.

Year 21

- ❖ Transfer of (written down value) of asset to government—government revenue (and corporation expense) = \$80m.

Including derivative financial asset (“option to buy”)

Year 1

- Gross fixed capital expenditure by private sector corporation = \$100m

Years 1–20

- C.O.F.C. expense for the corporation = \$20m²⁵
- Increase in government net worth–revaluation–(\$4m per year) = \$80m

Year 21

- Exercise by government of “option to buy” the BOOT asset = \$80m

Including imputed tax receivable from corporation

Year 1

- Gross fixed capital expenditure by private sector corporation = \$100m

Years 1–20

- C.O.F.C. expense for the corporation = \$20m
- Increase in taxes receivable from BOOT corporation, and net worth = \$80m

Year 21

- Purchase of BOOT asset from corporation in exchange for taxes receivable = \$80m

Alternative GFS treatments

There are three different possible approaches to the treatment of BOOT schemes in GFS, but they are all premised on the basis that the government acquires the BOOT asset and leases²⁶ it to the corporation immediately upon completion. Since no explicit liabilities are incurred by the government, outside of the BOOT lease arrangements, the value of the financing or sale arrangements which provide the resources to purchase the BOOT asset are imputed to be equal to the value of the asset.

²⁵ However, it is likely that the corporation will expense the whole value of the asset over the period of its exclusive use, i.e., an expense of \$5m per year.

²⁶ As argued in Part V, the granting of a period during which the BOOT corporation has exclusive use of the BOOT asset is equivalent, in economic terms, to the granting of a lease over the asset during that period.

(a) Operating lease approach

Year 1

- ❖ Gross fixed capital expenditure (i.e., acquisition of the BOOT asset from the private corporation) by the government = \$100m.
- ❖ financed by government borrowing (vendor financing) from the corporation of \$100m.

Years 1–20

- ❖ Imputed government principal repayments (\$5m per year) = \$100m.
- ❖ Imputed government interest expenses (assuming five percent interest²⁷ on remaining principal) = \$52.5m.
- ❖ Government C.O.F.C. expense (\$1m per year) = \$20m.
- ❖ Government revenue from operating lease = \$152.5m (imputed equal to principal repayments and interest expense).
- ❖ Increase of government net operating balance (revenue less expense), and increase in net worth = \$80m.

(b) Intangible nonfinancial asset approach

Year 1

- ❖ Acquisition of BOOT asset by the government = \$100m.
- ❖ Creation of an intangible non-financial asset = \$100m, with simultaneous reduction of value of BOOT asset by \$100m.
- ❖ Government sale of intangible nonfinancial asset (a 20-year right to use BOOT asset) to corporation = \$100m, and
- ❖ Payment for BOOT asset (financing) to corporation = \$100m. No change in government net worth.

Years 1–20

- ❖ Increase in government net worth = \$100m as a result of the amortization of the BOOT lease, classified as an “other change in the volume of assets.” This increase is not included in the statement of government operations, and therefore does not affect the government net operating balance, or net lending/borrowing.
- ❖ Government C.O.F.C. expense—calculated on the full value of the asset—(\$1m per year) = \$20m.
- ❖ Total increase in net worth = \$80m.

²⁷ The interest rate chosen is arbitrary, and results in offsetting expense and revenue flows. Perhaps an interest rate which merely maintains the real value of remaining principal should be used here.

(c) **Financial asset and liability approach**

Year 1

- ❖ Government acquisition of BOOT asset = \$100m, and
- ❖ Simultaneous incurrence of lease liability = \$100m (i.e., liability to provide the services of the BOOT asset to the corporation for 20 years). No change to government net worth.

Years 1–20

- ❖ Revenue²⁸—the reduction of government liability due to amortization of the BOOT lease - (\$5m per year) = \$100m.
- ❖ C.O.F.C. expense (\$1m per year) = \$20m.
- ❖ Increase in net operating balance, and net worth = \$80m.

²⁸ As discussed in Part V, Section B, lease amortizations should be classified as *transactions*, rather than *other economic flows*. Transactions which reduce liabilities are classified as revenues.