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Fiscal Indicators for Economic Growth: An Illusory Search?

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Abstract

The search for ways to ensure growth while accommodating necessary expenditure cuts to correct fiscal imbalances, has often led to the advocacy of the government own savings (GOS) measure as an indicator of growth potential in fiscal adjustment. This paper critically examines the rationale of this approach and its implicit assumption of the primacy of capital expenditure for the growth process. In light of the problems revealed in the GOS approach, the paper explores the possibility of alternative weighted expenditure indicators and illustrates the proposed technique, employing data from Thailand.

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Summary

It has often been claimed that, in the process of fiscal adjust-ment, setting targets for aggregate spending and ignoring its composi-tion diminish the quality of expenditure and inhibit growth. In turn, this criticism has often been translated into a call for higher levels of capital spending and for concentrating on the government own savings measure as an indicator of the growth potential in fiscal adjustment. This paper critically examines the case for this measure and highlights its underlying assumption of the primary role of capital expenditure in economic growth. At the same time, while recognizing the primacy of the overall deficit as a fiscal indicator for the purposes of demand management, the paper recognizes that there is an argument for supplementing the deficit indicator with some indicator of the quality of fiscal adjustment from the perspective of economic growth.

To this end, the paper develops alternative expenditure indicators based on a system of weighting expenditures by function and economic type. For illustrative purposes, and to reveal the practical problems involved, these indicators are applied to data from Thailand. The paper stresses that in devising operational indicators of growth potential, three main hurdles must be overcome. First, a conceptual framework must be decided on, defining the type of government expendi-ture influencing growth. Second, a system of weights must be devised, reflecting the assumed importance of each type of expenditure. Third, the resulting data requirements must be met if the indicator is to be operational. Each step is so fraught with ambiguity that it is diffi-cult not to concede that any attempt to describe the fiscal impact on growth by a simple index would be more misleading than helpful. At the same time, it could be argued that there is scope for devising some weighting system, if for no other reason than to correct the impressionistic, and often imprecise, approaches currently employed by expenditure analysts.

I. Introduction

A complaint often voiced regarding adjustment programs is that by setting targets for aggregate spending and ignoring its composition, the quality of expenditure has deteriorated with respect to the growth objective. In turn, this criticism has often been translated into a call for higher levels of investment spending and, in the absence of any alternative, for the use of the government own savings (GOS) measure as an indicator of growth potential in fiscal adjustment.

An examination of the rationale for the GOS measure in Section II highlights the crucial assumption of capital expenditure's primary role in economic growth. Section III critically reviews the case for favoring capital expenditures as opposed to other government expenditures during fiscal adjustment. In light of this discussion, Section IV reappraises the GOS as an indicator to judge fiscal performance with respect to the economic growth objective. Alternative weighted expenditure indicators are then developed in Section V. For illustrative purposes, and to reveal the practical problems involved, in Section VI these indicators are then applied to data from Thailand. Some concluding remarks are contained in Section VII.

II. The Case for the Government Own Savings Indicator

In recent years concern over the poor growth performance of developing countries has encouraged efforts to accommodate the growth objective in adjustment programs. 1/ At the same time, disenchantment with many programs of fiscal adjustment has often arisen from the suspicion that economic growth has been unduly inhibited by the excessive, or even exclusive, emphasis on demand management requirements of fiscal policy. Certainly, in discussing the appropriateness of fiscal measures, a polarization of views is increasingly evident between those emphasizing stabilization and those emphasizing growth. For example, in the design of stabilization programs a choice has often to be made between cutting government current expenditures or cutting investment outlays in order to reach some overall fiscal objective. As a result, the controversy over growth versus adjustment has typically been centered on the appropriate level of the government's capital budget.

To oversimplify, those who view the prime objective of fiscal policy as the management of aggregate demand generally place emphasis on aggregate government expenditure and appear reluctant to differentiate between current and capital expenditure. From this policy perspective,

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1/ See, for example, International Monetary Fund (1987); Intergovernmental Group of Twenty-Four on International Monetary Affairs (1987); Carbo, Goldstein, and Khan (1987); Hernandez-Cata (1988); and Khan and Montiel (1988).

the prime fiscal indicator used to judge the appropriateness of fiscal policy has been the overall deficit. So far as short-term demand management is concerned, it is immaterial whether the deficit is reduced by cutting capital or current expenditures. This is inevitably a short-run view of fiscal adjustment.

In contrast, those who emphasize the importance of the growth objective tend to emphasize the importance of capital expenditures and of associated recurrent expenditures in maintaining the existing capital stock. They attack the short-sightedness of fiscal adjustment based solely on the requirements of demand management. It is argued that current outlays associated with wages and entitlements tend to be more difficult to adjust in the short run. This, it is felt, has led to a disproportionate reliance on cuts in capital expenditures to reach fiscal targets. Although this may lead to an immediate improvement in the fiscal deficit, it is argued that if these expenditures had taken place they may have induced desirable supply-side effects. As a result, greater medium-term improvement in the fiscal deficit may have been sacrificed for short-term gains. Moreover, efforts to reach speedily some overall deficit target may precipitate a counterproductive curtailment in material and maintenance expenditures with a consequent deterioration in a country's infrastructure. To undo these effects in the future, it is argued, will require expensive reconstruction and rehabilitation projects, adding to future fiscal deficits.

Thus while not denying the primacy of the overall deficit as a fiscal indicator for the purposes of demand management, it could be argued that there may be a case for supplementing this with some indicator of the quality of fiscal adjustment from the perspective of economic growth. How one would approach the construction of such an indicator forms the basis of this paper. In the past, with the emphasis on capital expenditure's contribution to growth, analysts have often used the GOS concept for this purpose. This is defined as government's current account surplus, or total current revenue (TR) 1/ less government current expenditure (CE), and attempts to measure the investable surplus derived from the government's operations.

How adequate is such a measure in judging the growth implications of fiscal policy? In answering this question it should be recognized that the GOS concept has three critical elements in common with all approaches to devising operational indicators of growth potential.

1/ Conventionally, foreign grants are excluded following the argument that unlike other revenues they are outside the control of the government. Hence the term "own" savings. However, given the fungibility of receipts and the power of government policy to encourage/discourage foreign support, this assumption could be disputed. In practice all revenues from the sale of capital assets, as well as the proceeds of divestment are excluded from revenues since they tend to represent once-off transactions, usually linked to previous year's savings.

First, a conceptual framework which defines what types of expenditure
influence growth. Second, a system of weights based on the importance
of each type of expenditure. Third, a set of data requirements that
must be satisfied to make the indicator operational. Reviewing the GOS
indicator from this perspective, we can see that it is based on a rather
simple conceptual scheme which identifies capital expenditures alone as
having an impact on growth. As a consequence, its system of weights for
the growth potential of different types of expenditure is rather
simple: zero for current expenditure and unity for capital expendi-
ture. This simplicity is reflected in its low data requirements, which
are also its greatest strength, since they allow the GOS indicator to be
made operational with comparative ease.

Although simplicity is the GOS's main strength, it is also its
great weakness. The conceptual scheme from which it derives its
rationale is based on the assumed overriding importance of capital
expenditure for the growth process. Yet in LDCs it is usually not
difficult to find examples that seem to refute such an easy
assumption. The so-called "white elephant" projects are an obvious
contradiction of the idea that all capital expenditure is productive.
The demonstrated importance of expenditure on education in developing
human capital, and of expenditures to maintain existing physical capital
assets, suggest some current expenditures can be as productive as any
capital expenditures. Further, one must accommodate the fact that some
current expenditures are complementary to capital spending, and are
necessary to make it productive. As a result, the usual example of the
low productivity of road workers without necessary shovels or other
equipment could be reversed. However, since it has been so crucial in
the discussion of the growth implications of fiscal policy, the
assumption of capital expenditure's inherent superiority seems to merit
a more detailed examination.

III. Capital Expenditure and Fiscal Adjustment

In reviewing the literature, one encounters three recurring
arguments for favoring capital expenditures over current expenditures.
First, that they are essential for growth. Second, that they have been
discriminated against in the past. Third, that they are less
inflationary than other expenditures. Each of these arguments merits
more detailed consideration.

1. Capital expenditures are essential for growth

Largely as a result of influential growth models developed in the
1950s and 1960s, a prevalent view persists among development economists
that there is some minimum amount of capital expenditure required for

growth. 1/ This presumption has in the past led to public investment in large-scale "modern" industry, a strategy which it was felt would lead to faster growth than the promotion of private investment alone. Emphasis on growth linkages also promoted the idea of public investment as a leader in the growth process, by providing the necessary infrastructure to ensure adequate returns to private investment.

However, the assumed relationship between private or public investment and the growth of output has been increasingly disputed in recent years. Experience of developing countries has shown that countries with high rates of growth have not had proportionally higher rates of investment. On the contrary, some African countries have had high rates of investment but experienced low or even negative growth rates. Indeed, it can be argued that the debt problems currently facing so many developing countries have arisen from unwise public sector investments in the past. 2/ As a result, though emphasizing the importance of investment, development economists now tend to lay greater stress on the efficiency of resource allocation.

Following this line of reasoning, it has been claimed that capital expenditures tend to be qualitatively superior to equivalent amounts of recurrent spending. It is argued that because most capital spending is discrete and tends to be incremental in nature, it can be subjected to careful appraisal at the margin to ensure that it is fully productive. Typically, this is not possible with most recurrent expenditures.

However, capital expenditures, if properly defined, measure additions to durable goods in the economy and for at least two reasons are likely to be only imperfect indicators of their contribution to increasing the productive capacity of the economy. At one level, there are data problems: it is not always possible to consistently apply the durable goods criterion to distinguish capital from current expenditures. At another level, partly also reflecting these data problems, the connection between the accumulation of durable production goods and economic growth is only imperfectly understood and, as many researchers have discovered, difficult to demonstrate empirically. 3/ A priori it is possible to argue that some current expenditure may well be equally beneficial to growth (e.g., education), while some capital expenditures are obviously wasteful. Elsewhere, the present author has reported empirical results that include both current and capital functional expenditure categories in explaining the growth performance

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1/ This perception forms the basis for the World Bank's concept of a "core investment" program. Indeed, numerous countries' investment planning has been based on an assumed relationship between investment and the growth of output.

2/ For an elaboration of this increasing critical side effect see Tanzi (1988).

3/ For a review of the literature see Diamond (1989), p. 13ff.

of a sample of LDCs. Evidence is also presented that implies that not all categories of capital spending have had an identifiable influence on growth (Diamond (1989)).

Moreover, even in economies where investment is applied more efficiently, as in the advanced countries, economic analysis of their growth performance by Abramovitz (1956), Cairncross (1962), Denison (1974), Kuznets (1966), and Solow (1957) among others, still leads to the conclusion that investment has made a very small contribution to growth. There is little reason to expect the same would not apply to the Third World. Moreover, for this investment to make an impact, it must compensate for the typically high rates of population growth in developing countries. As Anderson (1987), 1/ pointed out, if a developing country had a high rate of investment, say 20 percent, and a very good rate of return to that investment, say 15 percent, it could only aspire to a growth rate of 0.2 x 15 = 3 percent, which for many countries would be close to the population growth rate.

2.   Capital expenditure has been overly discriminated against

The criticism is often voiced that the failure to differentiate between types of expenditure in fiscal adjustment has been unduly detrimental to capital spending. In particular, it is pointed out that since the benefits from capital spending are only realized in the future, they tend to be the most susceptible to cuts. This is in part because of political expediency, and in part a preference for current consumption over future consumption.

Of course, the nature of many capital expenditures is such that they are incurred in discrete amounts for limited periods, and may be postponed rather than cut entirely. However, from the stabilization viewpoint, often concerned with the speed and magnitude by which expenditures can be cut, the sensitivity of capital expenditures in expenditure cutting exercises does not necessarily appear a disadvantage. In any case, casual observation of LDCs does not appear to bear out the presumed overriding preference for current spending. It is true that in many countries some types of current spending like the wage bill are regarded as sacrosanct. But the large number of white elephant projects and status buildings in LDCs testify to the political gains from conspicuous capital spending. Indeed, in undertaking expenditure cuts, there is perhaps more discrimination displayed against particular types of current expenditure. For example, operations and maintenance expenditures have tended to suffer at the expense of wages

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1/   Anderson, 1987, p. 17.

and entitlements, as is evidenced by the prevalence of severe
maintenance problems and the underutilization of productive capacity in
many LDCs. 1/

3. Capital expenditure is less inflationary

Two distinct arguments are often made on behalf of capital
expenditure being less inflationary than recurrent spending. Firstly,
it is argued that if capital expenditure is financed by concessional
foreign loans or grants, then it is counterproductive to cut such
capital expenditure to reach some overall deficit target, since no
crowding out of private sector credit will be implied. Secondly, some
would claim that the usual rationale for spending cuts does not apply to
capital spending. Namely, fiscal adjustment often aims at reducing
government expenditure so that the crowding out that has taken place in
the past will be negated, leaving room for private investment and thus
encouraging growth in the economy. Unlike current spending which
competes with private investment, the complementarity between government
and private investment is stressed. Cutting the former, it is argued,
will be highly contractionary in causing a further fall in private
investment.

Those primarily concerned with stabilization usually counter the
first of these arguments by pointing out that although grant-financed
capital expenditures may have no adverse impact on the balance of
payments or may crowd out private investment, they are still infla-
tionary to the extent that they increase aggregate demand for domestic
goods and services. Moreover, given the greater availability of inter-
national finance for investment projects than for maintenance expendi-
ture, there may be an overemphasis on foreign financed capital expendi-
tures. This is reinforced by the greater political payoff in creating
new infrastructure than in maintaining the old. Certainly the fact that
capital expenditures are financed from abroad does not imply that they
are any more productive than other capital expenditures, nor that they

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1/ Tanzi has emphasized that a general problem in developing
countries is that they "have been more successful at building
infrastructure, than at its adequate maintenance or use" (Tanzi (1988),
p. 16). See also the various examples cited in the World Bank's World
Development Report of 1983, which concluded that "use of plants and
equipment is often extremely low, sometimes only a quarter or a third of
the rates achieved by the best maintenance organizations.... The lack
of spare parts and fuel is often to blame for poor plant utilization"
(World Bank (1983), p. 45).

require less operating and maintenance recurrent expenditures. 1/ The latter will usually not be eligible for financing by grants or concessional loans.

Moreover, insofar as capital expenditure is financed by concessional loans, balancing any longer-term impact on growth is the obligation to repay that will have future consequences for the deficit and balance of payments. As to the complementarity between government and private investment, it should not be forgotten that complementarity also exists between government current expenditures and private investment. For instance, expenditure on law on order, and basic administration, and the stability this creates, may be regarded as prerequisites for private investment. As W.A. Lewis pointed out some time ago:

> "Economic growth is associated with an increase in capital per head. It is, as we have seen, also associated with much else: with institutions which give incentive to effort, with attitudes which value economic efficiency, with growing technical knowledge, and so on. Capital is not the only requirement for growth, and if capital is made available without at the same time providing a fruitful framework for its use, it will be wasted" (Lewis (1955)).

To sum up, the above discussion would lead us to conclude that characterizing the choice between stabilization and growth as a choice between recurrent and capital expenditures is misguided. A priori, one could expect some current expenditures and not all capital expenditures to contribute to growth. Further, the author's own admittedly preliminary exercises seem to confirm this conclusion. As a consequence, in developing indicators of growth potential, emphasis should be placed on the broader concept of growth-oriented expenditures rather than concentrating on total capital expenditure alone.

The latter in turn would suggest a careful examination of the composition of capital as well as current expenditures.

1/ Indeed, Tanzi warns there may be influences biasing these expenditures toward being less productive. Given the very large sums involved, and the potential benefits to the firms who receive the contracts, there is likely to be greater attempts at bribing associated with the capital expenditure part of public spending than with the current expenditure part. When these attempts succeed, as they occasionally do, part of the capital expenditure is de facto transformed into what could be called a transfer payment (Tanzi (1988), p. 18).

IV. The GOS Indicator Reconsidered

Viewed in the light of the previous discussion, the GOS indicator based on the presumed overriding importance of capital expenditure appears somewhat limited. The most important problem is that it focuses on the distinction between capital and current expenditure when, as argued above, the more important distinction perhaps should be between growth-promoting and nongrowth-promoting expenditure. The GOS measure does not recognize that some current expenditures are more productive than others and that some current expenditures may be more productive than some types of capital expenditure. It also fails to capture the complementarity that often exists between capital and current spending.

Consider, for example, two expenditure mixes: the first with a high proportion of growth-promoting capital expenditures but with no recurrent maintenance or operations expenditure; and the second, representing the same level of spending with a lower proportion of growth-promoting capital expenditures that do have the necessary complementary current expenditures. There is the strong possibility that the first mix of expenditure will not have as favorable an impact on aggregate growth. Approaches to estimating these weights are discussed in Section V below.

One possible approach to accommodate this problem of the composition of spending is to adjust the GOS indicator to better reflect the "surplus" available for growth-promoting expenditures. The adjusted GOS would be defined as:

$$\text{Adjusted GOS} = TR - \sum_{i=1}^{N} w_i \, CE_i \tag{1}$$

where TR is total current revenue (excluding grants), w_i are a set of derived weights reflecting the potential growth-promoting value of category i current expenditure, CE. Thus one could visualize a weighting scheme where defense expenditures may have a weighting of one, while operating and maintenance expenditures may have a weighting close to zero reflecting their greater potential contribution to growth. Approaches to estimating these weights are discussed in Section V below.

Apart from the practical problems in making such an indicator operational, two obvious drawbacks still remain with the adjusted GOS indicator. First, the underlying presumption that all capital spending is growth promoting is retained. However, there may be a case for allowing some capital expenditures to have a weight less than zero, and allowing some current spending to have a weight lower than some categories of capital spending. Second, the adjusted GOS measure, in common with the unadjusted GOS, ignores how government expenditures are financed. By ignoring the growth implications of government revenue-raising measures, the GOS indicator, both in its adjusted and original forms, takes a partial view of the impact of government operations on

growth and by doing so may be misleading. For example, a budget with a high proportion of growth-promoting expenditures financed by growth-inhibiting taxation may not be viewed as favorably as a lower percentage of growth-promoting expenditures financed by growth-neutral taxation. Similarly, growth-promoting expenditures financed by inflationary means may end up inhibiting growth by accelerating inflation and possibly inhibiting private investment, while a lower level of such expenditures financed in a noninflationary way may have a more beneficial impact on growth.

Such considerations imply that it would not be meaningful to talk of a growth-weighted GOS indicator unless all expenditures <u>and</u> the receipts that financed them were weighted to reflect their potential effect on growth. Thus one could define a weighted GOS indicator:

$$\text{Weighted GOS} = \sum_{j=1}^{M} g_j R_j - \sum_{i=1}^{N} w_i E_i \qquad (2)$$

where R = total receipts, including sources of borrowing as well as different taxes; E = total expenditure, including capital as well as current expenditures; g_j = weight reflecting the growth potential of category j receipts; and w_i weight reflecting the growth potential of category i expenditure.

Obviously, the weighted indicator described in equation (2) is far removed from the simple easily operational GOS measure we first started with. Although the simplicity that characterized the original GOS concept was its greatest strength, it was argued that this was more than outweighed by the danger of its being overly simplistic and coming to misleading conclusions. At the same time, to contemplate constructing such a comprehensive indicator as the weighted GOS is overly ambitious given our limited capacity to explain economic growth, let alone its relation to government operations. In the public finance literature, for example, one often encounters speculation on the growth impact of different taxes. In particular, the old controversy about the choice of a consumption- or income-based tax system (Hall (1968), Tanzi (1969), Goode (1976), Meade (1978), and Pechman (1980)) recently had a new spurt of life with the emergence of the "supply side" approach (e.g., Boskin (1978), Canto, Joines, and Laffer (1983)). However, despite intensive work in this field, the empirical relationship between taxes and growth is far from conclusive. In contrast, the relationship between the structure of government expenditures and economic growth has received much less attention and is even less clear.

Given the present state of the art, the approach suggested in this paper is much less ambitious. It adopts a partial approach to the problem that can be characterized as follows. In assessing the adequacy of a fiscal adjustment program, it is common to face the situation where, with a given balance of payments outlook, and an estimate of the financing requirements of the nongovernment sector, there is felt to be

some maximum level of aggregate government resource use. In the short run the level and structure of taxes can be assumed fixed, and an assessment made of the possible sources of government financing. As a result, the level of aggregate government expenditure emerges that meets the overall demand management objectives of the adjustment program. The question then arises as to how one can best assess the impact on growth of this level and composition of government expenditure.

One possible approach is illustrated in the following sections of this paper. It should be admitted from the outset that at the present state of knowledge we cannot hope to come to any firm conclusions. Rather the method, and the case study illustrating its application, is offered as a demonstration of a technique yet to be refined. In highlighting the type of problems likely to be encountered, it also suggests further areas of research that need to be completed before this approach can become fully operational.

V. Indicators of the Quality of Expenditures [1]

The previous discussion stressed the importance of looking at the composition rather than the aggregative level of expenditures, as well as the functional manner in which are deployed. To compare two sets of expenditure data from different time periods on a consistent basis, it also appears necessary to deflate them by the corresponding level of GDP. Ideally, this allows the composition of expenditures in any year to be shown as a matrix of deflated expenditures, E_{ij}, with i = 1, N functions and j = 1, M economic types. The next step is to assign weights to the different categories of expenditure according to some view as to their potential contribution to growth. In terms of the matrix of expenditures, there are two sets of weights to consider: a set of functional weights, f_i; and a set of economic type weights, t_j.

Using this method, five different comparisons are possible:

1. Weighting each sector's expenditure by its functional weights, f_i, it is possible to derive an assessment of the growth potential of spending in each sector:

$$F_i = \sum_{j=1}^{M} f_i \, E_{ij} \qquad (3)$$

2. Weighting each economic category of expenditure by its weight by type, t_i, a similar assessment can be made:

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[1] Although directed toward devising indicators of growth potential, this approach can be generalized to other policy objectives (e.g., employment potential, redistribution, regional balance, etc.).

$$T_j = \sum_{i=1}^{N} t_j E_{ij} \tag{4}$$

3. Each sector's expenditure may also be weighted by a composite weight derived from its functional weight and the weights of its composition of expenditures by economic type:

$$F_i^* = \sum_{j=1}^{M} f_i t_j E_{ij} \tag{5}$$

4. In a similar fashion, each economic category of expenditure may be weighted by a composite of its economic type weight and that of its distribution across functions:

$$T_j^* = \sum_{i=1}^{N} f_i t_j E_{ij} \tag{6}$$

5. The exercise also allows an assessment of the growth implications of the compositional change in expenditures between two time periods to be reduced to a single index number of growth potential:

$$G = \sum_{i}^{N} \sum_{j}^{M} f_i t_j E_{ij} = \sum_{i=1}^{N} F_i = \sum_{j=1}^{M} T_j \tag{7}$$

To make this method operational, two issues must be resolved: firstly, obtaining detailed expenditure data; and secondly, deciding on a system of weights.

1. Data requirements

In any attempt to classify expenditures by their potential growth effects an obvious constraint to be overcome is that of obtaining a sufficiently disaggregated data base. Ideally, it is necessary to assess the growth implications of different functional compositions of expenditures together with the different economic types of expenditures. For example, it may be necessary to assume that spending (whether current or capital) in the agricultural sector may make a greater contribution to growth than equivalent amounts spent on social security transfers. Certainly, most development plans in developing countries have some preconceived sectoral priorities from the viewpoint of growth. At the same time, the economic type of expenditure in each function may also be critical. As previously discussed, the distinction between current and capital expenditures, whether legitimate or not, has

often been highlighted. However, within current expenditures, one could expect a different impact on growth from current spending, say, on the wage cost of road maintenance as opposed to interest payments.

At the same time, one must be aware of the dangers of this approach. An assessment of, say, the impact on growth of expenditure on wages and salaries is difficult to analyze without some consideration of norms of employment and wage rate levels in the government sector, as well as the functional nature of these expenditures. For example, an increase in wage expenditure may entail an increase in employment and a reduction in real wages, which may be very unproductive. Alternatively, with no increase in numbers, an increase in real wages has the potential for either a positive or negative impact on growth, depending on how the labor is employed. The basic problem is there is some implicit production function for different categories of expenditure and it is impossible to ascertain whether the balance between different economic categories is correct. Increasing wage expenditure may not be productive if there is no increase in supporting spending on complementary supplies and maintenance. Bearing these qualifications in mind, a weighting based solely on economic categories of expenditures should be treated with a great deal of caution.

Moreover, there are dangers in isolating one type of expenditure and ignoring the balance between expenditures. For example, it is clear that to be productive, capital formation requires certain supporting expenditures on goods and services and wages and salaries. Again, the lack of information on production function relationships within the government sector implies that generally accepted norms for the required expenditure to support and maintain capital formation in different sectors are not available. Undoubtedly, such limitations represent a major constraint in identifying growth-oriented expenditures. These considerations suggest that a cross-classification of expenditure by function and economic type is required as a basis for judging growth potential, which admittedly is not always readily available in most LDCs.

2. Assigning weights

Once a data base has been assembled, preferably in sufficient detail to reflect major functions and economic categories, the question arises as to how to weight the different expenditure categories to reflect their potential impact on growth. In the choice of weights two basic strategies can be envisaged: derivation of the weights ex post or ex ante. In the former approach two different, although not necessarily competing, methods seem possible: econometric and cost benefit.

a. Econometric

In this approach, econometric models of the growth process would be used to relate real rates of growth (in aggregate and sectorally) to different patterns of expenditure. With a reasonably well fitted model, it would then be possible to use the coefficients on each category of expenditure (both capital and current) as a basis to derive weights.

From this viewpoint, a review of empirical studies is somewhat discouraging: there are formidable problems to be overcome before such theories can be adequately tested empirically, or much less form the basis of policy weights. 1/ Problems arise from two main sources: namely, inadequacies in the theoretical framework, and data deficiencies. Given the current state of growth theory, any conceptual scheme for analyzing growth may be disputed. However, even if correct, it would still prove difficult to identify possible influences of government expenditure on economic growth for at least three reasons.

First, as discussed above, government expenditure may affect growth in different ways, and it is extremely difficult empirically to separate the different influences. Second, it does not appear possible to separate empirically the influence of capital and current expenditures, and to isolate one type of expenditure as being more relevant to the growth process. Third, it is impossible to isolate government expenditures from the basic macroeconomic relationships that impinge on growth, and consequently, by concentrating only on government expenditures, may result in erroneous conclusions. For example, depending on the financing strategy, increasing "growth promoting" government expenditures (current or capital) may depress private capital expenditure, and/or create inflation, both of which may have a deleterious effect on aggregate capital accumulation and economic growth.

Apart from the lack of a sufficiently comprehensive model for combining these elements, we must also admit the inevitably poor data base creates a further constraint. At the aggregate level, in the absence of suitable time series data, we typically have to settle for cross-country data of dubious comparability. However, even if aggregate data are available, all indications are that further disaggregation is required, especially to deal with complementarity between capital and current expenditures. Moreover, the econometric approach, relying as it does on ex post data, may not be the best basis for policy weights. There are important normative implications of applying coefficients

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1/ See the discussion in Section IV, Diamond (1989).

derived from past performance with all existing distortions and constraints as the standard by which to judge the efficacy of present policies. 1/

b. Microeconomic cost-benefit approach

To pursue a different tack, it may be possible to derive a system of policy weights by examining government expenditures at the micro level. Project data may exist that has been used to calculate necessary levels of complementary current expenditures to various productive capital expenditures. At the same time, rates of return for different types of current and capital spending may also be available. When ranked by order of magnitude, these rates of return from different sectors would form the basis for policy weights. Unfortunately, in many important sectors, such as health and education, there is a marked absence of cost-benefit analyses which would allow a subsectoral or total sectoral ranking. As a result, it is probable that assembling such data for any developing country would involve a major research effort.

c. Ex ante approach

In the absence of the means of operationalizing the above two methods, perhaps there is no alternative but to adopt an ex ante assignment of "Bayesian"-type weights. This is the approach adopted in the following case study. Obviously, an ex ante choice of weights could utilize as much information as available from the previous approaches, but would depend heavily on the value judgments of the policymaker. These may be embodied in national plans which often describe the government's priorities between different sectors with respect to economic growth. There may also be ex ante data at the project level that describes projected rates of return from different categories of planned government expenditures. Certainly from this review it would appear that the empirical basis for the construction of weights should be an area for future research.

1/ A similar problem arises in trying to derive indicators of tax effort from econometric models. As Tanzi has succinctly put it: "If we believe, as we all seem to do, that the tax structures of most developing countries are far from what they should be and they should be changed, why should we use as our reference point the average of all these distortions?" (Tanzi (1973), p. 207).

VI. Thailand: A Case Study

From the discussion of the previous section, the first and most important step is to compile expenditure data by function and economic type on as a disaggregated and consistent basis as possible. Appendix I shows the matrix of government expenditures in Thailand for 1984 broken down by economic function and economic type, while Appendix II shows the equivalent breakdown for 1985.

It must be admitted that the degree of disaggregation possible for Thai expenditure data is superior to most developing countries. However, even at this level of disaggregation some of the categories may need further exploration. However, taking these data as a starting point, let us pose a hypothetical question: supposing the 1984 level of expenditure is considered "optimal" how can we assess the growth implications of the change in composition of expenditures between 1984 and 1985?

1. Functional weights

It is evident in Appendices I and II that Thai budget codes have been generally assigned in hierarchical order that may reflect their potential impact on growth. Of course, within each of these categories the contribution to growth is likely to differ. For example, within the social services category, education, health, and social security expenditures are likely to have widely differing impacts on growth and *with differing time lags. Similarly, within the education category, one* can expect different returns from technological training as opposed to primary education. Unfortunately, at the present state of knowledge it is not possible to separately weight each subcategory of expenditure, and we may have to settle for weights based on, say, one digit breakdowns. Such a weighting scheme is shown in Table 1, with weights, (f_i, i = 1, N), assigned on a scale of zero to one depending on their assumed contribution to growth (Table 1, column 1).

2. Economic type weights

In Table 2 it can be seen that expenditures have been broken into six broad economic types: wages and salaries; supplies and utilities; other goods and services; fixed capital formation; transfers to the households; and transfers to local government. As discussed previously, for our purposes one would like to separate those more productive current expenditures, for example, those complementary to productive capital expenditures, from those likely to have a less direct impact on growth. In this regard it should be noted that maintenance expenditures are generally found in third category (other goods and services), while supplies and utilities generally refer to recurrent needs of the ministries.

Table 1. Thailand: Comparison of Growth-Weighted Expenditures, 1984 and 1985

(By function)

Code	Sector	(1) Sector Weights	(2) (3) Weighted Only by Function		(4)= (3)/(2)	(5) (6) Weighted by Function and Type		(7)= (6)/(5)
			1984	1985		1984	1985	
1.000	Economic service		2.222	2.320	1.044	1.179	1.333	1.130
1.100	Agriculture and non-mineral resources	0.800	1.215	1.270	1.046	0.577	0.650	1.127
1.110	Administration	0.800	0.064	0.062	0.972	0.009	0.009	0.952
1.130	Agriculture	0.800	0.994	1.045	1.052	0.510	0.581	1.140
1.131	Irrigation	0.800	0.664	0.681	1.026	0.397	0.440	1.109
1.133	Self-help land settlement	0.800	--	0.003	--	--	0.002	--
	settlement	0.800	0.057	0.014	0.252	0.024	0.002	0.088
1.134	Other	0.800	0.273	0.350	1.282	0.088	0.139	1.568
1.140	Forestry	0.800	0.108	0.105	0.973	0.041	0.038	0.944
1.150	Fishing	0.800	0.049	0.058	1.184	0.017	0.022	1.282
1.200	Fuel and power	0.900	0.052	0.012	0.233	0.024	0.004	0.176
1.300	Other mineral resources	0.800	0.042	0.036	0.851	0.012	0.008	0.660
1.400	Transport, storage, and communications	0.900	0.882	0.966	1.095	0.558	0.655	1.176
1.480	Roads	0.900	0.796	0.894	1.122	0.522	0.627	1.201
1.500	Others	0.700	0.032	0.036	1.136	0.010	0.016	1.646
2.000	Social service		2.903	2.863	0.987	0.669	0.678	--
2.100	Education	0.625	2.510	2.482	0.989	0.584	0.580	0.994
2.120	Primary schools	0.700	1.571	1.555	0.989	0.356	0.332	0.934
2.130	Secondary schools	0.600	0.435	0.449	1.032	0.093	0.115	1.236
2.140	Colleges and universities	0.500	0.223	0.208	0.931	0.064	0.061	0.950
2.150	Technical training	0.700	0.279	0.270	0.968	0.072	0.073	1.015
2.200	Health	0.450	0.393	0.381	0.971	0.085	0.097	1.140
2.210	Administration	0.300	0.049	0.042	0.846	0.011	0.005	0.459
2.230	Hospitals	0.400	0.240	0.246	1.022	0.039	0.066	1.711
2.241	Medical and dental centers and clinics	0.500	0.022	0.006	0.250	0.012	0.001	0.080
2.242	Individual health services	0.500	0.005	0.007	1.309	0.001	0.002	1.526
2.243	National health schemes	0.500	0.041	0.048	1.176	0.015	0.016	1.101
2.250	Special health programs	0.500	0.036	0.034	0.961	0.007	0.006	0.913
2.300	Social security and welfare	--	--	--	--	--	--	--
2.320	Social security benefits	--	--	--	--	--	--	--
2.400	Others	--	--	--	--	--	--	--
2.440	Water supply	--	--	--	--	--	--	--
3.000	General services	--	0.205	0.296	1.441	0.041	0.112	2.755
3.100	General administration	--	--	--	--	--	--	--
3.200	Defense	--	--	--	--	--	--	--
3.300	Other general services	0.200	0.205	0.296	1.441	0.041	0.112	2.755
3.320	Law courts	0.200	0.017	0.030	1.771	0.004	0.015	3.557
3.330	Police	0.200	0.172	0.177	1.029	0.033	0.036	1.084
3.340	Prisons	0.200	0.016	0.017	1.058	0.003	0.004	1.214
3.400	Others	--	--	--	--	--	--	--
4.000	Unallocable		0.014	--	--	0.004	--	--
4.100	General debt service	--	--	--	--	--	--	--
4.300	General transfer to local government	0.700	0.014	--	--	0.004	--	--
4.500	Others	--	--	--	--	--	--	--
	Total		5.344	5.479	1.025	1.893	2.122	1.121

Table 2. Thailand. Comparison of Growth-Weighted Expenditures, 1984 and 1985

(By economic type)

Sector	(1) Type Weights	(2) (3) Weighted Only by Type		(4)= (3)/(2)	(5) (6) Weighted by Function and Type		(7)= (5)/(4)
		1984	1985		1984	1985	
Wages and salaries	0.100	0.598	0.693	1.159	0.252	0.254	1.007
Purchase of supplies and utilities	0.200	0.456	0.645	1.415	0.110	0.111	1.011
Other purchases of goods and services	0.400	1.239	0.492	0.397	0.148	0.068	0.461
Fixed capital formation	0.800	1.962	3.035	1.547	1.340	1.661	1.240
Subsidies to households	--	--	--	--	--	--	--
Transfer to local government	0.300	0.126	0.118	0.931	0.044	0.028	0.647
Total		4.382	4.983		1.893	2.122	

The degree of aggregation of the fixed capital formation category is also something of a problem. As previously indicated it would be a mistake to classify all of this category as productive. To some extent the need to separate different types of capital expenditures by their probable growth impact is accommodated by assigning sector weights. However, even within individual sectoral subcategories there is likely to be wide variation in rates of return, which only detailed research would allow some approximation. For example, based on investigations of rates of return to different types of education in other developing countries, a higher weight is assigned to primary education than secondary education, and the latter is given a higher weight than university education. With these qualifications in mind, ex ante weights are assigned to each economic type of expenditure (t_{ij}, i = 1, M) on a scale of zero to one as shown in Table 2, column 1.

Accepting for the moment the validity of these weights, a comparison both in terms of function and economic type can be made which is summarized in Tables 1 and 2. Indices of the growth potential of each functional category of expenditure, F_i, are shown in columns 2 and 3 of Table 1, while indices for each economic category of expenditure, the T_{ij}, are shown in columns 2 and 3 of Table 2. Composite weights, $\hat{F}_j$ and $\hat{T}_j$, are shown in columns 5 and 6 of Tables 1 and 2, respectively. It can be seen that the overall index of growth potential, G, increased from 1.89 to 2.12 (or 12 percent) from 1984 to 1985.

By examining column 7 of Table 1 it is evident that the major changes in potential contribution to growth appear to have originated from increased expenditures on agriculture, fishing, roads, other communications, and secondary schooling. For comparative purposes, 1984/85 expenditures are shown weighted only by functional weights (Table 1, column 4) and economic type weights (Table 2). Functional weights as a whole also show an improvement, contributed by much the same sectors as identified previously, but of a much smaller magnitude (3.5 percent). In terms of the economic type of expenditure, it would appear, firstly, that the increase in capital formation and, secondly, the increase in purchases of supplies and utilities, made the greatest contribution. This largely reflects their relative policy weights.

VII. Conclusion Remarks

To sum up, this paper proposed a method by which expenditure data might be adjusted, arranged, and consolidated to yield a simple short-hand index of the impact of fiscal adjustments on the growth of the economy. In pursuing this proposal by calculating a weighted growth index, a number of necessary assumptions have been revealed.

This exercise pinpointed the need to take decisions about whether or not to weight expenditures, and if so, what weights to use. Unfortunately, it must be admitted that the inherent problem in the

above approach arises from the fact that there is not, nor is there likely to be in the near future, a weighting scheme that would not be disputed. As a result, any weighting procedure could be exposed to charges of manipulation, or worse, be considered so inaccurate that we might have to abandon altogether any attempt to construct unidimensional measures of the fiscal impact on growth. Certainly our brief review of the causes of growth would allow one to sympathize with the view that, at best, the fiscal impact on economic growth was so complicated a question that any attempt to describe it in a simple index would be more misleading than helpful.

Alternatively, a more positive stance could be adopted. Short of overwhelming agreement as to the best weights, there might still be some agreement on some weights being better than others. The question would then be whether this set is sufficiently better than not having weights at all to justify probably confusion in its use. This paper does not claim to provide a definitive answer to this question. Rather an attempt has been made to outline how the problem could be approached, to pinpoint the major difficulties encountered, and to suggest further areas of research that would be required to make the approach operational.

The method outlined above, after all, can be viewed as little more than formalizing the impressionistic, and often imprecise, approaches already employed by expenditure analysts. Certainly, the adoption of this type of quantitative approach seems worthy of closer examination, if for no other reason than the detailed analysis of the structure of government expenditures it entails and the resulting discipline it imposes. As a consequence, conclusions based on this type of yardstick are likely to be a lot less arbitrary than those based on currently employed approaches, such as the GOS concept.

Table 3. Thailand: Structure of Government Expenditure, 1984

(In thousands of baht)

Code	Sector	Goods and Services	Wages and Salaries	Current Year Purchase of Supplies and Utilities	Current Year Other Purchases Goods and Services	Carry-over Previous Year	Subsidies to Households	Transfers to Local Government	Current Year Fixed Capital Formation	(Carry-over Previous Year) Fixed Capital Formation
1.000	Economic services	8,984	6,018	2,345	621	2,353	—	395	9,649	4,485
1.100	Agriculture and nonmineral resources	6,443	4,347	1,634	462	1,349	—	—	5,686	1,320
1.110	Administration	750	541	194	15	17	—	—	7	5
1.130	Agriculture	4,520	2,976	1,147	397	1,240	—	—	5,157	1,193
1.131	Irrigation	1,976	1,618	162	196	796	—	—	4,466	850
1.133	Self help land Settlement	178	106	60	12	271	—	—	17	230
1.134	Other	2,366	1,252	925	189	173	—	—	674	113
1.140	Forestry	777	591	186	—	54	—	—	436	46
1.150	Fishing	396	239	107	50	38	—	—	86	76
1.200	Fuel and power	113	53	28	32	306	—	—	12	131
1.300	Other mineral resources	380	263	103	14	29	—	—	30	72
1.400	Transport, storage and communications	1,731	1,144	492	95	640	—	395	3,831	2,957
1.480	Roads	1,300	878	352	70	456	—	395	3,602	2,871
1.500	Others	317	211	88	18	29	—	—	90	5
2.000	Social services	34,527	29,294	4,157	1,076	2,216	6,310	1,784	2,480	4,876
2.100	Education	27,777	25,151	2,274	352	1,326	834	1,317	1,859	4,086
2.120	Primary schools	16,802	16,143	432	227	401	62	1,317	827	2,473
2.130	Secondary schools	4,885	4,677	188	20	415	725	—	201	847
2.140	Colleges and universities	3,080	2,187	836	57	315	42	—	580	337
2.150	Technical training	3,010	2,144	818	48	195	5	—	251	429
2.200	Health	6,116	3,792	1,702	622	761	438	—	335	651
2.210	Administration	1,208	1,141	59	8	79	35	—	13	254
2.230	Hospitals	3,566	2,230	1,271	65	303	403	—	298	116
2.241	Medical and dental centers and clinics	94	63	30	1	77	—	—	—	259
2.242	Individual health services	87	22	49	16	—	—	—	11	—

Table 3. Thailand: Structure of Government Expenditure, 1984 (concluded)

(In thousands of baht)

Code	Sector	Goods and Services	Wages and Salaries	Current Year Purchase of Supplies and Utilities	Current Year Other Purchases Goods and Services	Carry-over Previous Year	Subsidies to Households	Transfers to Local Government	Current Year Fixed Capital Formation	(Carry-over Previous Year) Fixed Capital Formation
2.243	National health schemes	598	35	69	494	185	—	—	3	5
2.250	Special health programmes	563	301	224	38	117	—	—	10	7
2.300	Social security and welfare	327	173	103	51	75	4,941	467	11	20
2.320	Social security benefits	1	—	—	1	—	—	—	—	—
2.400	Others	307	178	78	51	54	97	—	275	119
2.440	Water supply	123	66	33	24	43	97	—	234	95
3.000	General services	40,730	21,629	9,605	9,496	10,346	58	1,705	1,395	662
3.100	General administration	6,037	4,620	1,054	363	354	2	—	268	185
3.110	Organization of State	752	403	109	240	96	2	—	28	68
3.120	Fiscal administration	1,382	1,117	232	33	109	—	—	90	20
3.130	General economic regulations	381	296	77	8	16	—	—	14	11
3.140	Foreign affairs	694	427	236	31	31	—	—	69	43
3.150	Others	2,828	2,377	400	51	102	—	—	77	43
3.200	Defense	24,560	10,348	5,370	8,842	8,907	19	—	—	—
3.220	Armed forces	22,908	10,219	5,270	7,419	8,613	19	—	—	—
3.230	Civil defense	250	68	90	92	119	—	—	—	—
3.240	Others	1,402	61	10	1331	175	—	—	—	—
3.300	Other general services	8,491	5,577	2,772	142	853	—	—	452	211
3.320	Law courts	663	558	104	1	34	—	—	122	18
3.330	Police	7,138	4,682	2,315	141	764	—	—	305	180
3.340	Prisons	690	337	353	—	55	—	—	25	13
3.400	Others	1,642	1,084	409	149	232	37	1,705	675	266
3.440	Other community services (transfered to local government)	849	575	205	69	109	—	1,705	475	100
4.000	Unallocable	7,762	—	—	7,762	596	—	201	—	—
4.100	General debt service	34	—	—	—	—	—	—	—	—
4.300	General transfers to local government	—	—	—	—	—	—	189	—	—
4.500	Others	7,722	—	—	7,722	596	—	11	—	—
	Total	92,003	56,941	16,107	18,95	15,511	6,368	4,085	13,524	10,023

Source: Budget Document, Budget Bureau, Ministry of Finance, Thailand; compiled by Department of Economic Research, Bank of Thailand.

Table 4. Thailand: Structure of Government Expenditure, 1985

(In thousands of baht)

Code	Sector	Goods and Services	Wages and Salaries	Current Year Purchase of Supplies and Utilities	Current Year Other Purchases Goods and Services	Carry-over Previous Year	Subsidies to Households	Transfers to Local Government	Current Year Fixed Capital Formation	Fixed Capital Formation (Carry-over Previous Year)
1.000	Economic services	9,209	6,378	2,342	489	961	—	57	11,702	6,739
1.100	Agriculture and nonmineral resources	6,795	4,637	1,681	477	422	—	30	6,538	2,660
1.110	Administration	769	569	197	13	21	—	—	5	8
1.130	Agriculture	4,723	3,160	1,155	408	339	—	15	6,018	2,444
1.131	Irrigation	1,977	1,693	73	211	75	—	—	5,000	1,744
1.133	Self help land settlement	179	113	57	9	7	—	—	17	18
1.134	Other	2,567	1,354	1,025	188	257	—	15	1,001	682
1.140	Forestry	841	646	192	3	32	—	—	430	52
1.150	Fishing	462	262	147	53	30	—	15	85	156
1.200	Fuel and power	94	46	18	30	16	—	—	5	24
1.300	Other Mineral Resources	390	279	101	10	16	—	—	19	36
1.400	Transport, storage and communications	1,647	1,205	482	-40	499	—	27	5,101	3,818
1.430	Roads	1,191	928	342	-79	399	—	26	4,923	3,720
1.500	Others	283	211	60	12	8	—	—	39	201
2.000	Social services	37,268	31,577	4,515	1,176	1,904	6,952	1,778	2,921	5,596
2.100	Education	29,337	26,870	2,233	304	694	838	1,343	2,342	4,375
2.120	Primary schools	17,984	17,300	571	213	389	156	1,343	1,186	1,895
2.130	Secondary schools	5,251	5,050	200	1	32	679	—	409	1,368
2.140	Colleges and universities	3,050	2,300	694	56	166	43	—	466	571
2.150	Technical training	3,052	2,250	768	34	107	10	—	281	541
2.200	Health	7,172	4,294	2,093	685	757	420	—	363	1,017
2.210	Administration	1,239	1,240	84	14	38	25	—	8	26
2.230	Hospitals	4,371	2,700	1,591	80	285	395	—	335	742
2.241	Medical and dental centers and clinics	103	70	33	—	4	—	—	2	5
2.242	Individual health services	86	11	50	25	29	—	—	6	15

Table 4. Thailand: Structure of Government Expenditure, 1985 (concluded)

(In thousands of baht)

Code	Sector	Goods and Services	Wages and Salaries	Current Year Purchase of Supplies and Utilities	Other Purchases Goods and Services	Carry-over Previous Year	Subsidies to Households	Transfers to Local Government	Current Year Fixed Capital Formation	Fixed Capital Formation (Carry-over Previous Year)
2.243	National health schemes	652	40	87	525	328	—	—	2	4
2.250	Special health programs	622	333	248	41	737	—	—	10	5
2.300	Social security and welfare	398	183	105	110	13	5,539	435	16	13
2.320	Social security benefits	13	65	78	-104	13	5,196	435	—	—
2.400	Others	361	200	84	77	40	105	—	270	191
2.440	Water supply	150	70	35	45	26	—	—	227	151
3.000	General services	46,892	23,293	12,233	11,366	11,226	78	2,008	1,469	1,600
3.100	General administration	6,674	5,030	1,227	417	276	2	—	275	317
3.110	Organization of State	933	489	201	243	83	2	—	24	47
3.120	Fiscal Administration	1,449	1,181	250	18	74	—	—	61	87
3.130	General Economic Regulations	451	338	102	11	14	—	—	12	6
3.140	Foreign Affairs	724	481	230	13	30	—	—	60	41
3.150	Others	3,115	2,540	444	131	75	—	—	118	135
3.200	Defense	29,368	11,200	7,563	10,605	10,137	25	—	—	—
3.220	Armed forces	27,716	11,031	7,028	9,657	9,614	—	—	—	—
3.230	Civil defense	645	84	463	98	125	—	—	18	2
3.240	Others	1,006	72	73	861	207	—	—	—	—
3.300	Other general services	9,156	5,960	3,037	159	698	—	—	4,896	544
3.320	Law courts	715	604	109	3	16	—	—	756	34
3.330	Police	7,675	4,991	2,547	137	654	—	—	425	393
3.340	Prisons	765	365	381	19	27	—	—	26	60
3.400	Others	1,694	1,116	406	172	115	50	2,010	617	352
3.440	Other community services (transferred to local government)	964	632	218	114	46	—	1,720	484	527
4.000	Unallocable (including adjustments)	7,572	8,768	8,771	-9,967	1,193	—	220	837	93
4.100	General debt service	—	-180	-270	360	—	—	—	—	—
4.400	General transfers to local government	—	—	—	—	—	—	215	837	93
4.500	Others (including adjustments)	7,544	8,750	8,764	-9,970	1,192	—	5	14	—
	Total	100,941	70,016	27,861	3,064	14,884	7,030	4,063	16,999	14,028

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