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**Enhancing the Compilation, Dissemination and Utilization of the Input-
Output (I-O) Accounts in the Philippines**

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ABSTRACT

One important feature of the Philippine System of National Accounts (PSNA) is the integration of supply and use tables as well as symmetric input-output tables into the system. Aside from providing a framework for statistical coordination, these tables strengthen the analytical power of the PSNA by providing a breakdown of the production account, the generation of income account and the goods and services account which make them useful in analyzing the link between final demand and industrial output levels.

Despite its potential as an analytical tool, the input-output tables of the Philippines have not been compiled with strict regularity and have not been disseminated effectively. The tables have been compiled for 1961, 1965, 1969, 1974, 1979, 1985, 1988 and 1994 with updates in 1983 and 1990. Thus, the utilization of these tables has nowhere been near optimal.

This paper presents approaches and strategies to improve the compilation and enhance the relevance of the input-output tables in monitoring the performance of the Philippine economy. It also shows computations to illustrate the uses of these tables.

KEYWORDS: *input-output tables, symmetric tables, benchmark I-O, industry technology approach, commodity technology approach, make matrix, use matrix, technical coefficients, inverse coefficients matrix, backward linkages, forward linkages, impact analysis, price-cost analysis.*

I. Introduction

The Input-Output (I-O) Accounts are analytical tools concerned with the quantitative representation of the interdependence of the producing and consuming units in an economy. They illustrate the structure of the country's production system for a particular period, usually one year. They also provide measures of the direct and indirect relationships between industries and commodities. Thus, from an I-O table, the flow of goods and services in the economy, including which products were produced by which industry and how they are used/consumed could be traced. Among the more popular analytical uses and applications of the I-O are that of measuring the impact of policies related to goods and services (Impact Analysis) and that of observing the effect/s of price escalations of a specific commodity or set of commodities to prices of other commodities/industries which naturally will affect the cost of producing inputs to production (Price-Cost Analysis). In addition to its

¹ Secretary General, Statistical Coordination Officer VI, Statistical Coordination Officer IV, Statistical Coordination Officer III, Statistical Coordination Officer II and Statistical Coordination Officer I, respectively, of the National Statistical Coordination Board. The authors acknowledge the assistance of Amando G. Patio Jr. in the preparation of this paper. The views expressed in the paper are those of the authors and do not necessarily reflect the views of the NSCB.

analytical uses, the I-O tables provide a framework for checking the consistency of statistics on flows of goods and services obtained from different data sources. Thus, they serve as a coordinating framework for economic statistics, conceptually for ensuring the consistency of the definitions and classifications used and as an accounting framework for ensuring the numerical consistency of data drawn from different sources [11].

Since 1961, the Philippines has produced eight Benchmark I-O tables, through the collaborative efforts of the National Statistical Coordination Board (NSCB) and the National Statistics Office (NSO), the latest of which is the 1994 I-O released in October 1999. On the other hand, I-O updates were prepared for the years 1983 (update of 1979) and 1990 (update of 1988). The I-O Tables are important features of the Philippine System of National Accounts (PSNA).

While the I-O accounts continue to gain recognition as a vital tool for planning and policy-making, its importance in monitoring the Philippine economy has not generated the necessary attention in recent years. Limited studies using the IO have been conducted and there are not many users who are familiar with these accounts, their strengths and limitations.

This paper attempts to present approaches and strategies to improve the compilation, dissemination and utilization of the Philippine I-O. It also tries to highlight the relevance of the I-O tables in monitoring the performance of the Philippine economy and in studying industry behavior by providing some examples of impact and price cost analyses using the 1994 I-O.

II. Present Compilation, dissemination and utilization practices

A. Compilation

Starting with the 1985 I-O, international guidelines on the compilation of the I-O have been adopted to the extent possible. The System of National Accounts (SNA) provides a comprehensive accounting framework within which economic data can be compiled and presented in a format that is designed for purposes of economic analysis, decision- and policy-making [11]. It presents in a condensed way, detailed information, organized according to economic principles and perceptions, about the working of an economy and gives a comprehensive and detailed record of the complex economic activities taking place within the economy. One of the more important features of the 1993 SNA is the integration of the I-O Accounts, which is particularly vital in relation to the goods and services accounts and to the shortened sequence of accounts for industries.

For a greater appreciation of the important link between the Supply and Use Table (SUT) and the I-O Tables, the more important concepts and definitions being used in the I-O Compilation will be discussed briefly, in the context of the SNA [11] and as implemented in the PSS [9].

The SNA has always highlighted the importance of an integrated set of SUTs, or matrices, as well as the Symmetric Input-Output Tables (SIOT). A SIOT is one, which has the same number of classifications in the rows and in the columns. The SUT and the SIOT provide a detailed analysis of the process of production and the use of goods and services (products/commodities) and the income generated in that production. To complement the full sequence of accounts for institutional sectors, which cover all kinds of accounts in the SNA, the SUT, and subsequently the SIOT, aim to provide a more detailed basis for analyzing industries and products through a breakdown of the production account, the generation of income account and the goods and services account leading to the SIOT.

The basic design of the country's input-output transaction tables shows the divisions of demand or uses of goods and services into two categories: intermediate and final, and the classification of inputs into intermediate and primary. The 1994 Philippine I-O, whose most disaggregated table is the 229 x 229-Sector Table, has two versions: the competitive-imports type and the non-competitive-imports type or domestic I-O. The difference between the two versions lies in the treatment of imported inputs. The competitive-imports type I-O contains intermediate inputs that are produced locally as well as imported components while in the non-competitive-imports type I-O, the imported components of the intermediate inputs and final expenditure are separated out. Thus, the I-O tables include a commodity by commodity import matrix. In addition to the 229 x 229-Sector tables, the 11 x 11- and the 59 x 59-Sector tables are also compiled.

In terms of format, it follows the one adopted since the 1985 I-O compilation wherein distinction is made between commodities and industries. But an additional feature introduced in 1988 is the presentation of total import duties as a separate item, which is then added to the total gross value added by sector to come up with Gross Domestic Product. Two intermediate tables, the MAKE and the USE matrices are compiled and serve as an intermediate stage between the basic statistics and the SIOT. Analytical tables such as the Table of Technical Coefficients (TC) and the Inverse Coefficient matrix are also part of the 1994 I-O Accounts. The backward and forward linkages which measure the cyclical effect of supply and demand, such as the effect of an increase in the output of one sector on the other sectors.

An important concept crucial to SNA is valuation. In theory, the entries in the I-O transaction table may be recorded in physical units. In practice, this cannot be done because physical quantities are not available for many items. Even if they were, however, commodities could not be aggregated in such units, such as adding tons of *camotes* and gallons of *tuba*. Therefore, the flows in a table are usually expressed in money values; which are obtained by multiplying physical quantities by prices. Any transaction if described in monetary rather than physical units may be valued either at the price received by the producer or at the price paid by the consumer. The difference between the two values is the marketing costs which include such items as transport costs, wholesale and trade mark-ups (trade mark-ups), insurance and warehouse costs and net indirect taxes, i.e. indirect taxes less subsidies. The

1994 IO is valued at producers' price in which the row total of each sector excludes any transport charges invoiced separately by the producer.

The treatment of secondary and ancillary products is also critical in the construction of an I-O. Many establishments produce more than one product, usually one of the products is of primary importance and the others are either secondary or part of its ancillary activities. Secondary products give rise to considerable difficulties in I-O analysis. The main problem is that the allocation to one sector of an establishment having several products impairs the principle of homogeneity and gives rise to misleading results when the table is used for planning purposes. A number of methods are available for dealing with problems of this kind depending on the nature of the products concerned. A satisfactory solution, the commodity technology approach previously explained, which applies to all classes of secondary products might be to separate the inputs used in the production of the secondary products from those used in the production of the primary products and to rearrange, in one sector, all products of a given type regardless of where they have been produced. However, for the 1994 I-O, the industry technology approach was used.

The compilation of the I-O is a joint undertaking of the NSCB and the NSO. In the current effort to produce the 2000 I-O, aside from the conduct of the various surveys, the NSO estimates/compiles the industry totals, the trade and transport margins and the import matrix. The NSCB does the rest of the estimation including the finalization, the analysis and the write-up. The NSCB and the NSO jointly conduct the dissemination fora.

B. Dissemination

In the past, the I-O has not met the requirements of the System of Designated Statistics (SDS)². Under the SDS, the 2000 Benchmark I-O is supposed to be released in September 2005.

The earlier I-Os were consolidated as a set of basic I-O Analytical tables and combined into one publication. Hard copies are made available to stakeholders at the National Statistical Information Center (NSIC) for free; but users can opt to have their own hard or electronic copy for a fee. The 1994 I-O publication includes the more aggregated 11 x 11- and 59 x 59 - Sector I-O Tables. The more disaggregated 229 x 229 – Sector I-O Tables are only available in electronic format for a fee.

To enhance appreciation of the I-O, the NSCB and the NSO jointly conducted a Users Forum, with the assistance of the Philippine Institute for Development Studies to present the results of the 1994 I-O in October 1999.

² Under Executive Order Numbered 352 signed by President Fidel V. Ramos on 1 July 1996.

C. Utilization

Among others, the following studies benefited from the use of I-O:

- The evaluation of the Investment Priorities Plan of the Board of Investments [6];
- The projection of the manpower requirements for a four-year development plan of the National Manpower and Youth Council [6];
- The analysis of forward and backward linkages of the housing and construction industry using the 12-sector I-O Table [5] and
- The use of the 1978 I-O model of the Philippine economy to evaluate the impact of expenditures on tourism on the rest of the economy compared with similar expenditures on social services [1].

In addition, the NSCB prepared and disseminated two Factsheets using the 1994 I-O – one on the effect of a 32% price hike on petroleum products and one on the effect of the holiday economics [7]

III. Uses and Applications of the I-O Accounts and Derived Tables

One common application of the I-O is an input-output analysis of the unit cost structure thru the TC. It shows the direct requirements of inputs per unit of output and derived when each input value is divided by the output of the industry. For example, in the 1994 I-O, each peso of palay output requires 0.029607 of inputs from within its own sector or palay itself, while 0.076035 of inputs is required from other crops and agricultural services. This analysis provides a glimpse of the dependence of one sector of the economy on the other sectors

Because of the inter-relationship between different sectors of an economy, as measured from the TC, a change in final demand for the products of one sector causes ramifications throughout the system, which change not only the output of the sector concerned but also those of other sectors of the economy. In order to capture these changes, the inverse matrix, also known as the Leontief inverse is derived. This shows the direct and indirect sectoral output requirements needed to meet a unit increase in final demand for a specific sector's product. Hence, the inverse matrix is particularly useful in the conduct of Impact analysis which projects the sectoral output given a specified bill of final demand.

Another use of the I-O is the study of price effects arising from changes in primary input coefficients also known as the Price-Cost Analysis. Under this model, given an increase in the factor prices of one or more sectors, the I-O price model computes for the corresponding increase in the prices of the other sectors in the economy.

Apart from Impact and Price-Cost Analysis, the I-O can be used in assessing the economy [13] in terms of:

- Supply and demand situation (Structural Analysis);
- Output Structure including the shift in production patterns from primary and secondary industries to tertiary activities;
- Input Structure;
- Demand Structure/patterns expressed as ratios to total demand;
- Import Structure showing the imports by industries and type of use;
- The Degree of Import Dependence;
- The Degree of Self-sufficiency which shows whether domestic production meets domestic demand; and
- The Backward and Forward linkages, which measure the relative importance of a sector as a purchaser and supplier, respectively, of raw materials.

In this paper, we will illustrate the Impact and Price Cost Analyses described in Appendix 1 and Appendix 2.

A. Impact Analysis

We study the effects of the election using an Impact Analysis based on the I-O. The election-related spending increases the consumption of certain industries which in turn affect total output and the Gross Domestic Product.

In a speech before the Association of Government Auditors of the Philippines at the Baguio Country Club in January, 2004, Land Bank President Margarito Teves, identified the industries that would be most affected by the May 2004 election as printing and publishing, hotels and restaurants, garments, foods, advertising, broadcasting, transportation and telecommunications. To investigate the impact of election-related expenses, the following assumptions are made:

- a) The affected industries during an election are publishing and printing, telecommunications, garments, foods, transportation, hotels and restaurants, advertising and broadcasting;
- b) The increase in the personal consumption expenditures from 2003 to 2004 for the identified sectors is equal to the average of the rates of increase in spending for these sectors from 1991 to 1992 and from 1997 to 1998 (Table 1).

Using the methodology described in Appendix 1, we are able to derive a vector of the expected rate of change in output as a result of increases in demand for election-related industries (Table 2).

Thus, using the 1994 I-O model and holding all other variables constant, total output during election years could increase by 2.8 percent from the previous year. Outputs of other non-metallic, crude petroleum, manufacture of starch, milk processing and textile industries are projected to post the biggest increases during election years of 120.1 percent, 85.4 percent, 18.4 percent, 16.6 percent and 15.4 percent, respectively.

B. Input-Output Price Model (Price-Cost Analysis)

To illustrate price cost analysis, we study the impact of the increase in jeepney fare and autocalesa operations (sector 178 of the 1994 I-O) from 4 pesos to 5.50 pesos, a 37.5 percent increase. Specifically, we compute the effect of the 37.5% increase on the unit prices of the other commodities, using the 229 x 229 commodity by commodity use matrix. The methodology is described in Appendix 2.

As seen in Table 3, the 37.50 percent increase in the price of jeepney and autocalesa operations would result to a 0.43 percent increase in the overall cost of production. Meanwhile, as a result of the 37.5% increase, household consumer prices are expected to increase by 0.64 percent in addition to the "normal" inflation rate. Among the Personal Consumption Expenditures components, households would experience higher prices in wholesale and retail trade by 0.09%, rice and corn milling by 0.005%, other non-banking services by 0.004%, slaughtering and meat packaging by 0.003% and restaurants, cafes and other eating and drinking places by 0.002%.

IV. Major Concerns on the Current System of Input-Output Accounts

The compilation of the I-O tables in the Philippines basically serves [4] the objectives of:

- a) Making available to planners a set of useful and effective analytical tools for comprehensive analysis of the economy;
- b) Ensuring consistency in the concepts and classification use in the national accounts; and
- c) Providing an effective means of validating existing statistics and identifying data gaps as well as inconsistencies within the statistical system.

Keeping these important objectives in mind, the NSCB as the main compiler of the I-O and the NSO, as the major partner and data producer of the Philippine Statistical System (PSS), face many challenges in the compilation, dissemination and promotion of the utilization of the I-O. Towards meeting these challenges, it is imperative that the following institutional and technical issues and concerns be addressed:

A. Institutional

1. On Data Support

The NSO's censuses and surveys provide the bulk of data support for the compilation of the I-O, both for the benchmark and the updates. However, these data sources have not been conducted on a regular basis; thus, the regularity of the compilation of the I-O suffers, contributing to the

underutilization of this important analytical tool. Among the main sources of data that have recently experienced irregularity of conduct are:

- The 1999 Census of Philippine Business and Industry (CPBI, formerly known as the Census of Establishment);
- The 2001 Input-Output Survey of Philippine Business and Industry (IOSPBI, formerly known as the Input-Output Survey of Establishments);
- The 2001 Annual Survey of Philippine Business and Industry (ASPBI, formerly known as the Annual Survey of Establishments);
- The 2002 Census of Agriculture ; and
- The 2002 Census of Fishery

Apart from irregularity of conduct, the actual release of the results from these censuses and surveys is another issue. For the compilation of the 2000 Benchmark I-O, only the 1999 CPBI results have been officially released by the NSO.

The NSCB has instituted several mechanisms to guide the PSS agencies towards best practices in information dissemination including the following:

- 1 In [8], one very important recommendation is that the preliminary results of periodic surveys and censuses should be released to the public before the conduct of the next round.
2. The SDS stipulates the time lag and the geographic disaggregation of the official statistics released by the PSS.
3. The Government Statistics Accessibility Program (GSAP)³ promotes the release of Advance Release Calendars (ARC) by PSS agencies to guide users on the dissemination dates of official statistics.

Unfortunately, the NSO and other PSS agencies have not been able to strictly abide by these policies and standards.

On the demand side, the main sources of data are:

- Family Income and Expenditure Survey (FIES)
- Foreign Trade Statistics
- Annual Financial Report of the Commission on Audit (COA)
- Tax Collection Report of the Bureau of Internal Revenue (BIR)

While the basic tables are available, they do not cover all the necessary data inputs for the desired level of I-O classifications by industry or by commodity, most evidently in the FIES and in the COA and BIR Reports. Under this scenario, proxy indicators are identified and used but

³ Under NSCB Board Resolutions No. 10 Series of 1997 and No. 7 Series of 2000, issued on 29 October 1997 and 4 December 2000, respectively.

the appropriateness of the indicators poses a problem. The conduct of necessary surveys will resolve this issue, but resource constraints remain a major stumbling block.

2. On Manpower Constraints

The compilation of the I-O is faced with severe technical manpower constraints. The few members of the NSCB staff who have been trained and have acquired expertise on the I-O have either retired or left the NSCB without seriously training those who were left behind. The limited manpower expertise in the PSS on I-O compilation has definitely contributed to the neglect of the I-O by the NSCB.

3. On Dissemination

Under the SDS, the compilation of the I-O is supposed to be done every five years for the benchmark I-Os, while the updates should be prepared in between benchmark years⁴. The release should be made one year after the release of the CPBI tables and its modules with a time lag of five years after the reference year. However, delays in the release of the CPBI have resulted in noncompliance with the dissemination requirements of the SDS.

The I-O publications are disseminated for free to selected government agencies in both hard and electronic copies. Outside of these agencies, and because of the limited resources made available to NSCB and NSO for printing its publications, the I-O tables are made available to the other stakeholders for a fee on a cost-recovery basis. Users can buy the 1994 I-O publication, at PhP 1,440.00 per copy. On the other hand, the electronic copy of the 229 x 229 Sector Tables is priced at PhP 1,000.00. For some users, they find these prices rather high and opt to do their research in the NSIC where the I-O publications are accessible to users. Since many data users in the Philippines have not fully appreciated the value of information and are not ready to pay for statistical outputs, the fees charged for I-O publications pose a problem in advocating for the popularization of the I-O as an economic tool.

4. On Limited Utilization

The potential of the I-O, as a powerful tool for economic analysis and for modeling purposes, has not been effectively mined for reasons already mentioned including lack of expertise, lack of data support and lack of resources. While a number of studies have been conducted using the Philippine I-O such as those by [3] and [14], its utilization and propagation by the NSCB in recent years have not significantly promoted the I-O as an analytical tool. Limited analyses have generally been

⁴ The NSCB Board approved NSCB Resolution No. 14, Series of 2003, which set 2000 as the next Benchmark Year for the IO.

conducted utilizing the I-O aside from the two Factsheets prepared by the NSCB [7].

B. Technical Issues

1. On Studying and Capturing Economic Structural Changes

Users have raised questions regarding the appropriateness of using the 1994 I-O model to study the present economic conditions. Parameters are already outdated for analyzing the current economic situation especially since they may have not captured fully the resolution of the energy crisis in 1993 and were estimated prior to the Asian financial crisis and the deregulation of the oil industry in 1997 as well as the succeeding People Power movements after 1986. .

2. On Comparability of Results Across Benchmark Years

The classifications and aggregations used for the different I-O tables vary as a result of the revisions and amendments of the Philippine Standard Industrial Classifications (PSIC) and the Philippine Standard Commodity Classification (PSCC). These revisions and amendments have changed the tabulation formats of the different surveys and censuses, which provide the data support to the I-O. Thus, comparing the results across benchmark years even if possible is extremely laborious.

3. On Valuing Output and Final Uses at Producer's Prices

Due to data constraints the 1994 I-O valued both output and final uses at producer's prices instead of the basic prices and purchaser's prices, respectively, as recommended in [11]. Valuation for output at basic prices is preferred since it essentially provides the most homogeneous valuation along the rows. It is also found to be most useful when a system of Value Added Tax or similar deductible tax is in operation. On the other hand, when recording the intermediate consumption and final uses, purchaser's prices are recommended to include the margins and taxes and deduct the subsidies on products except deductible taxes.

4. On the Use of Industry Technology Approach in the treatment of Secondary Products

The concepts of both the industry technology assumption and the commodity technology assumption present some limitations. Available data do not exactly support either of these assumptions, but operational assumptions are made which do not represent the "true" industry technology or "true" commodity technology.

To transfer outputs and associated inputs to purify the 1994 SIOT of the Philippines, however, a mathematical method based on industry technology assumption was used. This approach assumes that all

products (whether principal or secondary) produced by an industry have the same input structure. This assumption violates a fundamental premise in the construction of the I-O, that the products/commodities are properly classified to satisfy the homogeneity assumption. While this approach conforms with the Leontief material balance that total output equals the product of I-O coefficients and total output plus the final demand, the commodity technology assumption, which assumes that a product has the same input structure in whichever industry it is produced, makes a more valid economic argument. However, this assumption yields unacceptable results, specifically, negative technical coefficients. Adopting the industry technology assumption therefore, seemed to be the lesser evil

5. On the I-O Updates

The latest I-O available is the 1994 benchmark, which has remained unupdated. While not many developing countries can proudly claim to the timeliness of their I-Os, if any, the unavailability of I-O updates will not contribute to popularizing the I-O.

The methodology for updating the IO also needs to be studied. In the 1990 I-O update, the modified RAS method was used. As is generally known, updating the I-O produces negative entries/coefficients for various reasons including the invalidity of the technology assumption used and the transfer of unrecorded inputs of subsidiary production. Unrecorded inputs occur when the establishments report only the inputs to principal products. Thus, the problem of how to best address these negative entries arises. In addition, the availability of more data during the update years will minimize the problems associated with the updating process. The proper programming of the relevant surveys will therefore enhance the quality of the I-O updates when benchmark data are not available.

6. On Subnational IOs

At present, there is no existing framework for the compilation of the I-O at the subnational level. However, in recognition of the potential uses of subnational I-Os, there have been past attempts to compile inter-regional I-Os such as those done for Mindanao in [2] and for Metro Manila in [10]. But given the problems associated with IO compilation like data limitations and methodological issues, which haunt even the compilation of the Gross Regional Domestic Product and the Gross Regional Domestic Expenditure, These attempts were not expected to produce meaningful results beyond their contribution to academic research. So, while there may be some interest in the compilation of regional I-Os, the present capacity of the PSS and the resource constraints of the government will give low priority to this activity.

V. Strategies to Improve Compilation

A. On Data Support/Production

The NSO must have a regular program of conducting its surveys/censuses given the regular budget it gets. It must be transparent to the data users what it owes to the public given the resources it receives from government, no matter how little. It must define the public good that it should produce and disseminate. It must prioritize the surveys and censuses to be conducted specially under resource constraints but must commit the minimum statistical services that it owes the public in a transparent manner.

At present, the NSO conducts the Input-Output Survey of Philippine Business and Industries (IOSPBI), only on an adhoc basis. Its 2001 edition was a rider to the 2001 ASPBI. But the results of this survey are essential in establishing the cost and input structure of all the commodities/industries included in the I-O and unless this becomes part of the public good of the NSO, the I-O will continue to be an afterthought in the statistical program of the PSS.

The NSCB on the other hand, must issue statistical policies on data production that addressed not only the requirements of the data users but also the constraints of the data producers and the burden on the data providers. It must strengthen its coordination to create a statistical culture where the data producers, the data users and the data providers work as a team dedicated to the improvement of statistical products and services. In this regard, the NSCB has initiated the conduct of bilateral meetings between NSCB and other PSS agencies. The bilateral meetings with NSO started in March 2003 and have discussed issues related to the I-O. As a result of these meetings, the two agencies signed a Memorandum of Agreement (MOA) in August of this year. The MOA delineates their duties and responsibilities in the compilation of the 2000 I-O.

Another important development is the creation of the Task Force on Integrated Surveys of Establishment Inquiries (TFISE) to rationalize the conduct of establishment-based surveys in response to the requirements of stakeholders, both in the government and private sector, including those of the PSNA. Work of the TFISE is geared towards increasing the reliability of data generated from establishment-based surveys and maximizing the use of limited resources for statistical activities. The I-O, as an integral part of the PSNA, shall benefit from the TFISE proposal to prioritize certain industries each year in the conduct of surveys. Hence, more detailed information on costs and revenues can be expected which can address some of the technical issues earlier raised in the paper.

B. On Methodological Issues

First on the list of improvement efforts of the NSCB in the compilation of the 2000 Benchmark I-O is that of updating the sectoral classification taking into consideration the demands of our stakeholders and the recommendations

and reclassifications of commodities and industries based on the 1994 Rev. 3 of the PSIC, the 1993 PSCC and the 2002 Philippine Central Product Classification. Such improvement efforts should be consciously and regularly undertaken by the NSCB to make the I-O more useful to the public.

On the valuation aspect, since the present surveys and censuses are still unable to provide the recommended basic prices for outputs, the producer's prices would still be used. On the other hand, recording of both the intermediate consumptions and final uses would be at purchaser's price, an improvement over the 1994 I-O when producer's prices were used. Apart from this, the trade and transport margins and their corresponding matrices shall likewise be prepared.

C. On Data Dissemination

The scheduled release of the 2000 I-O in 2005 is not exactly praiseworthy. The time lag of the I-O definitely has to improve. Toward this end, the PSS agencies, particularly the NSO as the major data source for the I-O, must strictly abide by the dissemination policies and standards under the various PSS mechanisms put in place by the NSCB like the GSAP, the SDS and the ARCs. However, the NSCB should conduct a review of these policies to assess their relevance under the present conditions, and amend them accordingly. Part of this assessment should be a review of the desired periodicity of the surveys and censuses, given their benefits and their costs. For instance, lately, if the NSO cannot release the ASPBI on time, should it continue to conduct this survey on an annual basis?

In the compilation of the 1994 I-O, the trade and transport margins were compiled by the NSO, but these were not published. Given our limited resources, best efforts must be exerted to share such important statistical outputs with the public

The accessibility of the I-O should also be improved. It is difficult to popularize the use of the I-O if the major outputs of the PSS related to the I-O are accessible only for a fee. This aspect must be carefully studied to see if some I-O Tables can be provided as public goods or if the I-O Tables can be packaged so that subsets of the Tables can be accessed at lower prices. I-O-related products like Factsheets and Press Releases should be prepared more frequently and continue to be disseminated for free.

D. On Manpower Constraints

Currently, an I-O Team has been constituted in the NSCB to develop the expertise necessary for I-O compilation. This team must be strengthened and must commit to a work plan that guarantees the acquisition of the necessary expertise in the short term. Resources should be allocated for this purpose, both manpower and financial, and the proper priority must be accorded its activities.

Within the NSCB, discussion meetings on the I-O have been conducted since July 2002. The discussions focus more on the framework, basic concepts and definitions and the compilation methodology based on the I-O Handbook [12]. In February 2003, an in-house training/workshop on the I-O Compilation was conducted, which focused on the operationalization of the concepts and framework of the SIOT as well as its uses and applications. In these activities, the primary goal is to strengthen the technical capability of the NSCB in the actual compilation of the Benchmark I-O tables as a component of the 1993 SNA implementation. Apart from the in-house training, the NSCB Staff also participates in other training programs/workshops either as participant or resource speaker, offered or sponsored by other local organizations. These activities give the NSCB staff the opportunity to assess the current demands on the I-O analysis and share their knowledge and level of expertise with data users. Meanwhile, to keep the staff abreast with the development of I-O in the international community, participation in International I-O Conferences and Training is strongly encouraged by the NSCB Management. The NSCB actively participated in the ASEAN I-O Workshop held in Jakarta, Indonesia in April 2002, and conducted study visits to the Australian Bureau of Statistics in October of the same year for the SUT and I-O Compilation. The NSO is also presently collaborating with the Institute of Developing Economies of Japan on the project on Industrial Structure of the Asia-Pacific Region. This project, which primarily aims to compile the 2000 Asian International I-O Table, is a five-year project started in 2001.

E. On Limited Utilization

The NSCB and the NSO should hold more fora on the I-O to promote its use and to enhance the appreciation and knowledge of data users about the I-O. In addition, collaboration with researchers and the academic community as well as with relevant government departments and users from the industry should be strengthened to widen the clientele of the IO. The Statistical Research and Training Center should also include in its research and training agendas the I-O to enhance the exposure of the statistical community to the I-O.

VI. Future Plans and Concluding Remarks

With the strategies to improve its compilation in mind, activities on the compilation of the 2000 I-O benchmark are ongoing through the collaborative efforts of the NSCB and the NSO. Based on the bilateral meetings, the 2000 I-O Accounts of the Philippines publication shall be released in September 2005 and presented to the stakeholders thru the conduct of the Users' Forum also in September. Prior to its scheduled release, consultation with experts shall be held in July 2005 to solicit comments on the initial matrices generated and to validate the results. In addition to the hard and electronic copies of the I-O publication, dissemination of results shall be made through press and web releases. As with the 1994 I-O, the basic 2000 I-O tables shall be uploaded

on the NSCB website at <http://www.nscb.gov.ph> while the more detailed tables shall be made available in electronic format.

While we cannot guarantee the optimal utilization of the I-O tables by our stakeholders at this point, the NSCB has programmed the release starting 2004, of at least four analytical studies using the I-O. Two (2) of these are included in the paper, while the other two (2) are scheduled for release during the third and fourth quarter of 2004. This shall form part of the advocacy work of the NSCB to again highlight the importance of the I-O as an important economic tool.

To sustain this awareness especially after the release of the 2000 Benchmark I-O in September 2005, continuous collaboration and exchange of ideas between the NSCB, the data producers and stakeholders shall be encouraged thru the conduct of discussion fora at least once a year on economic profiling using the I-O as tool. Thru these fora, we hope to gain insights on the extent of utilization of the I-O and solicit suggestions towards improving the compilation of the I-O and make it more relevant to our stakeholders.

The NSCB continues to affirm its commitment to deliver the best statistical products and services possible, given our resource constraints. But we also challenge the data users, especially the planners and decision makers, in government as well as in the private sector, to gain greater appreciation that the production and dissemination of statistics requires resources. If we do not muster the political will to prioritize statistical activities in the allocation of decidedly meager resources, the exciting opportunities of the Third Millennium will pass us by.

ACRONYMS

ARC	ADVANCE RELEASE CALENDAR
ASPBI	ANNUAL SURVEY OF PHILIPPINE BUSINESS & INDUSTRY
BIR	BUREAU OF INTERNAL REVENUE
COA	COMMISSION ON AUDIT
CPBI	CENSUS OF PHILIPPINE BUSINESS & INDUSTRY
FIES	FAMILY INCOME & EXPENDITURES SURVEY
GSAP	GOVERNMENT STATISTICS ACCESSIBILITY PROGRAM
I-O	INPUT-OUTPUT
IOSPBI	INPUT-OUTPUT SURVEY OF PHILIPPINE BUSINESS & INDUSTRY
MOA	MEMORANDUM OF AGREEMENT
NSCB	NATIONAL STATISTICAL COORDINATION BOARD
NSIC	NATIONAL STATISTICAL INFORMATION CENTER
NSO	NATIONAL STATISTICS OFFICE
PSCC	PHILIPPINE STANDARD COMMODITY CLASSIFICATION
PSIC	PHILIPPINE STANDARD INDUSTRIAL CLASSIFICATION
PSNA	PHILIPPINE SYSTEM OF NATIONAL ACCOUNTS
PSS	PHILIPPINE STATISTICAL SYSTEM
SDS	SYSTEM OF DESIGNATED STATISTICS

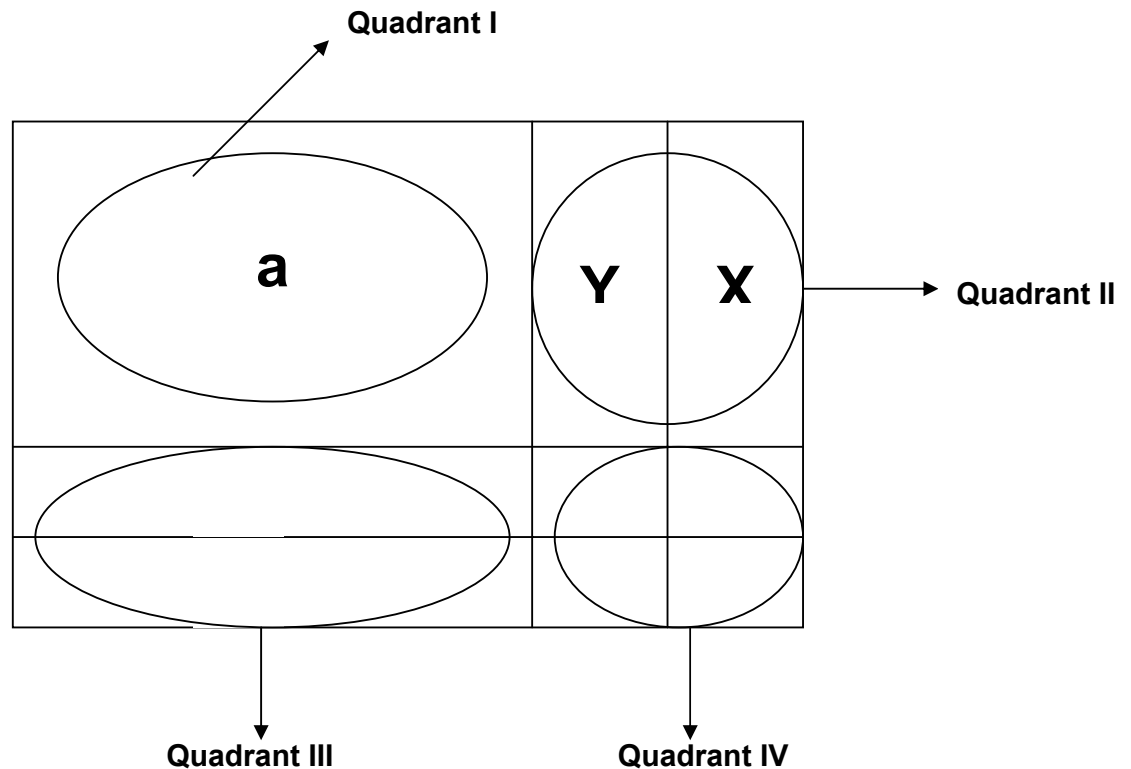
SIOT	SYMMETRIC INPUT-OUTPUT TABLE
SNA	SYSTEM OF NATIONAL ACCOUNTS
SUT	SUPPLY AND USE TABLE
TC	TECHNICAL COEFFICIENTS
TFISEI	TASK FORCE ON INTEGRATED SURVEYS OF ESTABLISHMENTS INQUIRIES

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APPENDIX I

The basic table of the input-output system is known as the transactions table in which various economic flows within the economy during a particular base year are entered in value terms. The table is divided into four quadrants. The first quadrant shows the flows of goods and services, which are both produced and consumed in the process of current production. These are usually referred to as inter-industry flows or Intermediate Demand. The second quadrant shows the various elements of Final Demand for the output of each producing sector. It consists of personal consumption expenditure, government expenditure, gross fixed capital formation, changes in stocks, exports and imports. The third quadrant shows what are called Primary Inputs, to the productive sectors. These inputs are described as primary because they are not part of the output of current production. The fourth quadrant shows the Primary Inputs, which go directly to the final demand sectors. A schematic layout of a transaction table is as follows:



In Matrix Form:

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} \begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix} + \begin{pmatrix} Y_1 \\ Y_2 \\ Y_3 \end{pmatrix} = \begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix}$$

Since there is a structural relationship between the production units of an economy, a change in final demand for the products of a sector generates indirect effects as well as direct effects on the economy as a whole. The relationship between the initial spending and the total effects generated by the spending is known as the impact analysis. It also projects the sectoral output given a specified bill of final demand using the equation for output projection:

$$X - AX = Y \quad (1)$$

$$(I-A)X = Y \quad (2)$$

$$(I-A)^{-1} Y = X \quad (3)$$

where:

X	=	output vector
(I-A)⁻¹	=	inverse matrix
Y	=	final demand vector

In input-output analysis, the vector Y or the vector of final demand is usually assumed to be exogenous or given, and the problem is to determine the vector of output, the X's. Following equation (2), the value of X would be obtained using matrix algebra by multiplying both sides of Equation (2) by (I-A)⁻¹ producing Equation (3).

APPENDIX 2

The system of price equations is indicated below. Its basic feature is that the model is static, in which time is not explicitly represented. The relationship within the model is simple proportionalities and economies of scale is not represented. Another feature is that the supply and demand factors cannot be handled simultaneously; no price-induced substitution of inputs; it is exclusively a flow model; stocks are not represented and lastly, the model presents economic relations in disaggregated form.

System of Price Equations:

1.
$$(1) P_j = \sum_{i=1}^n a_{ij} p_i + v_j$$
⁵
- 2.
- 3.
4. = $[a_{1j} p_1 + a_{2j} p_2 + a_{3j} p_3 + \dots a_{nj} p_n] + v_j$, for $j = 1, 2, \dots, n$.
- 5.

Where:

- P_j = price of the output or of a factor input
- a_{ij} = quantity of output of sector i consumed in the production of one unit of sector j 's output
- p_i = price of output of sector i
- v_j = $p_l l_j + p_k k_j + (p_m m_j)$ ⁶ + t_j
- l_j = quantity of labor absorbed per unit of sector j 's output.
- k_j = quantity of capital absorbed per unit of sector j 's output.
- m_j = quantity of imports absorbed per unit of sector j 's output.

⁵ It states that the unit price of any commodity is a linear combination of input prices namely, intermediate commodities, - both domestically produced and imported, and primary inputs.

⁶ When using a competitive table, this item should be deleted since a_{ij} = local + imported

In matrix form:

$$\begin{pmatrix} P_1 \\ P_1 \\ (5) \\ \cdot \\ \cdot \\ \cdot \\ P_n \end{pmatrix} = \begin{pmatrix} a_{11} & a_{21} & \dots & a_{n1} \\ a_{12} & a_{22} & \dots & a_{n2} \\ \cdot & \cdot & & \cdot \\ \cdot & \cdot & & \cdot \\ \cdot & \cdot & & \cdot \\ a_{1n} & a_{2n} & \dots & a_{nn} \end{pmatrix} \begin{pmatrix} p_1 \\ p_2 \\ \cdot \\ \cdot \\ \cdot \\ p_n \end{pmatrix} + \begin{pmatrix} v_1 \\ v_2 \\ \cdot \\ \cdot \\ \cdot \\ v_n \end{pmatrix}$$

$$P = A^T P + V$$

Where:

$$A^T = \text{transposed matrix of technical coefficients}$$

In incremental mode:

$$\Delta P = [A^T \Delta P] + \Delta V \quad (6)$$

To solve for ΔP :

$$\Delta P = [A^T \Delta P] + \Delta V \quad (7)$$

$$\Delta P (1 - A^T) = \Delta V \quad (8)$$

$$\Delta P = [(1 - A)^{-1}]^T \Delta V \quad (9)$$

Change in P is the column vector of output price changes and the change in V is a transposed row vector of primary inputs (i.e. written as column vector) after the postulated changes have been applied. $(1 - A)^{-1 T}$ is the transposed inverse matrix, i.e. the inverse matrix with its rows written as columns and the cell entries represent multipliers indicating the degree of interdependence of industries with one another in the economy. From Equation (6), we can therefore conclude that each sector increases the price of its output ΔP , by the increment in the prices of its primary inputs, ΔV , plus the rise in the price of inputs purchased from the other industries, $A^T \Delta P$.

**Table 1. Personal Consumption Expenditures (PCE) By Industry
1991, 1992, 1997 and 1998
Levels in Million Pesos**

INDUSTRIES	1991	1992	1997	1998	Growth Rates (In %)		
					1991-1992	1997-1998	Average of (a) & (b)
					(a)	(b)	
Food	404,643	434,044	689,084	774,355	7.3	12.4	9.8
Printing and Publishing	3,312	3,713	5,510	5,688	12.1	3.2	7.7
Textile	12,796	12,464	13,144	14,606	-2.6	11.1	4.3
Wearing Apparel	19,997	21,354	29,429	35,607	6.8	21.0	13.9
Transportation	51,054	51,980	79,258	79,807	1.8	0.7	1.3
Communication	6,990	7,615	15,231	20,832	8.9	36.8	22.9
Hotels & Restaurants	19,927	22,716	48,742	53,581	14.0	9.9	12.0
Advertising Services	-	-	-	-	0.0	0.0	0.0
Radio and TV Programming	636	672	1,135	1,394	5.6	22.8	14.2

Source of Basic Data : Unpublished results of the PAGF Project

Table 2. Effects of the Increase in Consumption of Election-Related Industries to Output ¹

VII. By Industry

A. In Percent

IO Code	Description	Increase in Output
037	Other non-metallic mining and quarrying	120.13
034	Crude petroleum and natural gas	85.43
060	Mfr of starch & starch prods	18.37
040	Milk processing	16.64
069	Textile, spinning, weaving, texturizing and finishing	15.37
058	Coffee roasting and processing	13.89
041	Butter and cheese manufacturing	13.22
070	Fabric knitting mills	12.98
043	Other dairy products	11.77
039	Meat & meat products processing	11.73
062	Miscellaneous food products	11.55
014	Other fiber crops	10.41
078	Custom tailoring & dressmaking shops	10.20
102	Mfr of basic ind'l chemicals	9.93
104	Mfr of synthetic resins , plastic materials & other man-made fibers exc glass	9.90
061	Mfr of flavoring extracts, mayonnaise and food coloring products	9.81
053	Noodles mfg	9.79
050	Rice and corn milling	9.75
052	Mfr of bakery prods exc noodles	9.66
055	Mfr of cocoa, chocolate and sugar confectionery	9.61
051	Flour, cassava & other grains milling	9.57
042	Ice cream, sherberts & other flavored ices	9.51
001	Palay	9.30
038	Slaughtering & meat packing	9.26
082	Tanneries and leather finishing	8.53
129	Cutlery, handtools, general hardware	8.08
015	Coffee	8.02
168	Mfr of stationers', artists' and office supplies	7.99
103	Mfr of fertilizer	7.78
080	Embroidery establishments	7.65
099	Newspapers and periodicals	7.60
011	Sugarcane	7.47
002	Corn	7.43
054	Sugar milling and refining	7.26
128	Non-ferrous foundries	7.20
190	Postal, Messengerial and other comm services, n.e.c.	7.12
048	Other crude vegetable oil exc coconut oil, fish and other marine oils and fats	7.06
224	Restaurants, cafes & other eating and drinking places	6.78
105	Mfr of pesticides, insecticides, etc	6.40
045	Fish canning	6.38
044	Canning & preserving of fruits and vegetables	6.33

Table 2 continued...

IO Code	Description	Increase in Output
131	Mfr of metal containers	6.26
126	Iron and steel foundries	6.08
096	Pulp, paper and paperboard	6.07
057	Mfr of ice exc dry ice	6.04
049	Manufacture of refined coconut and vegetable oil	5.89
188	Telephone	5.78
046	Fish drying, smoking & mfg of other seafood products	5.71
138	Mfr of metal and wood-working machinery	5.36
076	Mfr of artificial leather and impregnated & coated fabrics	5.11
079	Mfr of ready-made clothing	5.11
024		4.99
100	Printing and publishing of books and pamphlets	4.95
084	Mfr of leather footwear & footwear parts	4.86
023	Other poultry and poultry products	4.81
155	Mfr of motor vehicles parts and accessories	4.74
019	Hog	4.61
157	Mfr, assembly, rebuilding & major alteration of railroad equipment, aircraft, and animal and hand-drawn vehicle	4.50
016	Cacao	4.27
189	Telegraph service	4.25
033	Coal mining	4.08
018	Other agricultural production, n.e.c.	4.05
021	Chicken	4.04
097	Paper and paperboard containers	4.01
006	Pineapple	3.81
032	Other metal mining	3.73
007	Mango	3.70
098	Mfr of articles of paper and paperboard	3.66
059	Mfr of animal feeds	3.59
073	Mfr of carpets and rugs	3.53
215	Radio and TV programming	3.50
071	Hosiery, underwear & outerwear knitting	3.31
072	Mfr of made-up textile goods exc. wearing apparel	3.27
112	Mfr of asphalt, lubricants and misc prods of petroleum and coal	2.92
119	Mfr of glass container	2.85
142	Machine shops & mfr of non-electrical mach'y and eq. n.e.c.	2.78
180	Road freight transport & supporting services to land transport	2.74
008	Citrus fruits	2.59
110	Mfr of misc chemical products	2.55
075	Mfr of articles made of native materials	2.55
202	Advertising services	2.55
171	Electricity	2.49
172	Steam	2.49
013	Abaca	2.45
022	Hen's egg	2.45

Table 2 continued...

IO Code	Description	Increase in Output
133	Mfr of wire nails	2.38
136	Mfr of fabricated metal prods exc machinery & equipment	2.37
201	Engineering, architectural & technical services	2.37
025	Ocean, coastal and inland fishing	2.36
124	Mfr of other non-metallic mineral prods, n.e.c.	2.35
074	Cordage, rope, twine and net mfg	2.34
182	Interisland shipping including inland water	2.32
158	Mfr of professional, scientific measuring a & controlling eq	2.28
003	Vegetables	2.26
134	Mfr of other fabricated wire & cable prods exc insulated wire & cable	2.26
092	Mfr of misc wood, cork & cane prods.	2.22
175	Railway transport services	2.20
143	Mfr of electrical ind'l mach'y and apparatus	2.18
004	Roots and tubers	2.15
020	Cattle and other livestock	2.11
125	Blast furnace and steel making furnace, steel works and rolling mills	2.08
113	Rubber tire & tube mfg	2.07
111	Petroleum refineries	2.03
187	Storage & warehousing	1.97
116	Mfr of plastic furniture, plastic footwear & other fabricated plastic products	1.94
181	Ocean passenger and freight transport	1.87
101	Commercial & job printing & other allied industries	1.82
204	Employment/recruitment agencies	1.81
139	Mfr of engines and turbines exc. for transport eq. & special ind. mach'y and equipment	1.80
195	Non-life and other insurance activities	1.79
120	Mfr of other glass and glass products	1.78
017	Rubber	1.75
077	Mfr of fiber batting, padding, upholstery fillings incl. coir, linoleum and other hard surfaced floor coverings	1.68
203	Machinery and equipment renting and leasing	1.67
200	Bookkeeping, acctg., and auditing services	1.63
010	Coconut	1.55
081	Mfr of other wearing apparel exc footwear	1.55
205	Business mgt & consultancy and market research services	1.50
009	Fruits and nuts exc. coconut	1.47
183	Stevedoring & other supporting services to water transport	1.47
083	Mfr of prods of leather and leather substitutes, exc footwear and wearing apparel	1.45
192	Investment, financing & other non-banking services exc. pawnshops	1.42
218	Repair shops for motor vehicles	1.41
225	Hotels and motels	1.40
226	Other lodging places	1.31

Table 2 continued...

IO Code	Description	Increase in Output
197	Letting, operating real estate, residential or non-residential, other real estate activities	1.30
107	Mfr of drugs and medicines	1.27
207	Other business services, n.e.c.	1.25
199	Legal services	1.21
118	Mfr of flat glass	1.20
027	Forestry	1.19
036	Salt mining	1.17
148	Mfr of primary cells and batteries and electric accumulators	1.16
176	Busline operators	1.15
178	Jeepney and autocalesa operation, tricycle and other road transport operation	1.12
005	Banana	1.08
184	Air transport	1.08
047	Prod'n of crude coconut oil, copra cake and meal	1.05
169	Miscellaneous mfg	1.03
206	Detective & protective services	1.03
177	Public utility cars and taxicab operation	1.02
219	Other repair shops, n.e.c.	1.01
141	Mfr of pumps, compressors, blowers and airconditioners	1.01
115	Mfr of other rubber products, n.e.c	1.00
151	Mfr of electrical lamps, fluorescent tubes and other electrical apparatus & supplies, n.e.c.	1.00
137	Mfr of agricultural machinery and equipment	0.98
090	Mfr of wooden and cane containers and small cane wares	0.91
056	Mfr of desiccated coconut	0.86
208	Sanitary and similar services	0.85
159	Mfr of photographic and optical instruments	0.83
165	Mfr of surgical, dental, medical and orthopedic supplies	0.82
174	Wholesale & retail trade	0.76
191	Banking	0.75
106	Mfr. of paints, varnish & lacquers	0.74
173	Water	0.71
154	Rebuilding & major alteration of motor vehicles	0.70
132	Metal stamping, coating, engraving mills	0.63
196	Real estate development	0.57
166	Mfr of ophthalmic goods	0.56
222	Photographic studios including commercial photography and related services	0.54
095	Mfr and repair of other furnitures and fixtures, n.e.c.	0.53
029	Copper mining	0.48
150	Mfr of current-carrying wiring devices, conduits & fittings	0.45
211	Private medical, dental, veterinary & other health clinics and laboratories	0.44

Table 2 continued...

IO Code	Description	Increase in Output
146	Mfr of parts and supplies for radio, TV & communication (semi-conductors)	0.42
065	Softdrinks & carbonated water	0.41
026	Aquaculture and other fishery activities	0.41
130	Structural metal prods	0.38
127	Non-ferrous smelting & refining plants, rolling, drawing and extrusion mills	0.38
186	Customs brokers and other services allied to transport	0.35
085	Sawmills and planing mills	0.34
064	Malt and malt liquors	0.33
147	Mfr of appliances and housewares	0.31
140	Mfr, assembly & repair of office, computing and acctg machines	0.26
179	Operation of tourist bus and cars and rent-a-car services	0.26
028	Gold and silver mining	0.24
135	Mfr of non-electric lighting and heating fixtures	0.19
012	Tobacco	0.18
035	Stone quarrying, clay and sandpits	0.17
123	Mfr of structural concrete prods	0.17
087	Mfr of hardboard and particle board	0.16
109	Mfr of perfumes, cosmetics & other toilet preparations	0.16
149	Insulated wires and cables	0.16
121	Cement mfr	0.16
086	Mfr of veneer and plywood	0.15
088	Wood drying and preserving plants	0.14
185	Tour and travel agencies	0.14
122	Mfr of structural clay products	0.14
063	Alcoholic liquors and wine	0.13
117	Manufacture of pottery, china & earthenware	0.13
108	Mfr of soap and detergents	0.12
213	Motion picture production	0.10
214	Motion picture distribution and projection	0.09
170	Construction	0.09
160	Mfr of watches and clocks	0.08
153	Mfr and assembly of motor vehicles	0.07
223	Other personal services, n.e.c.	0.05
220	Laundry, dry cleaning and dyeing plants	0.05
161	Mfr & repair of furniture & fixtures, made primarily of metal	0.05
094	Mfr and repair of rattan furniture incl upholstery	0.04
164	Mfr of sporting and athletic goods	0.04
091	Mfr of wood carvings	0.04
210	Private hospitals, sanitaria & similar institutions	0.03
068	Tobacco leaf flue-curing and redrying	0.02
093	Mfr and repair of wooden furniture incl upholstery	0.02
144	Mfr of radio and TV receiving sets, sound recording & reproducing eq. incl records and tapes	0.01

Table 2 continued...

IO Code	Description	Increase in Output
145	Mfr of communication and detection equipment	0.01
212	Other social and related community services	0.01
089	Millwork plants	0.01
209	Private education services	0.01
216	Theatrical production and entertainment	0.01
217	Other recreational and cultural services	0.01
066	Cigarette mfg	0.01
163	Mfr of musical instruments	0.00
162	Mfr of jewelry & related articles	0.00
114	Mfr of rubber footwear	0.00
193	Pawnshops	0.00
152	Shipyards and boatyards	0.00
156	Mfr, assembly of motorcycles & bicycles	0.00
030	Nickel mining	0.00
031	Chromite mining	0.00
067	Cigar, chewing & smoking tobacco	0.00
167	Mfr of toys and dolls exc. rubber and plastic toys	0.00
194	Life insurance	0.00
198	Ownership of dwellings	0.00
221	Barber and beauty shops	0.00
227	Public education services	0.00
228	Public health services	0.00
229	Public administration and defense	0.00
	TOTAL	2.81

¹ Ranked based on increase in total output

**Table 3. Effects of the 37.5 Percent Increase in Jeepney Fare ¹
By Industry
In Percent**

IO Code	Description	Change in Industry/Commodity Price	Increase in Household Consumer Prices	Increase in Total Cost of Production
178	Jeepney and autocalesa operation, tricycle and other road transport operation	37.50	0.4913	0.2806
174	Wholesale & retail trade	0.68	0.0936	0.0783
050	Rice and corn milling	0.05	0.0051	0.0020
192	Investment, financing & other non-banking services exc. pawnshops	0.82	0.0040	0.0074
038	Slaughtering & meat packing	0.06	0.0029	0.0015
224	Restaurants, cafes & other eating and drinking places	0.07	0.0019	0.0014
212	Other social and related community services	0.48	0.0018	0.0007
079	Mfr of ready-made clothing	0.09	0.0016	0.0019
196	Real estate development	0.16	0.0015	0.0009
111	Petroleum refineries	0.11	0.0015	0.0035
194	Life insurance	0.13	0.0015	0.0006
065	Softdrinks & carbonated water	0.08	0.0014	0.0006
052	Mfr of bakery prods exc noodles	0.07	0.0012	0.0005
066	Cigarette mfg	0.06	0.0012	0.0005
107	Mfr of drugs and medicines	0.09	0.0010	0.0006
209	Private education services	0.05	0.0010	0.0004
191	Banking	0.05	0.0009	0.0009
108	Mfr of soap and detergents	0.07	0.0009	0.0004
109	Mfr of perfumes, cosmetics & other toilet preparations	0.09	0.0009	0.0002
064	Malt and malt liquors	0.06	0.0009	0.0004
210	Private hospitals, sanitarium & similar institutions	0.08	0.0008	0.0003
171	Electricity	0.08	0.0008	0.0019
211	Private medical, dental, veterinary & other health clinics and laboratories	0.12	0.0008	0.0004
153	Mfr and assembly of motor vehicles	0.13	0.0008	0.0023
019	Hog	0.05	0.0008	0.0007
021	Chicken	0.06	0.0008	0.0007
198	Ownership of dwellings	0.01	0.0008	0.0003
054	Sugar milling and refining	0.07	0.0007	0.0005
176	Busline operators	0.10	0.0007	0.0005
058	Coffee roasting and processing	0.08	0.0007	0.0002
025	Ocean, coastal and inland fishing	0.04	0.0007	0.0005

Table 3 continued...

IO Code	Description	Change in Industry/Commodity Price	Increase in Household Consumer Prices	Increase in Total Cost of Production
044	Canning & preserving of fruits and vegetables	0.06	0.0007	0.0005
039	Meat & meat products processing	0.07	0.0006	0.0002
195	Non-life and other insurance activities	0.26	0.0006	0.0014
197	Letting, operating real estate, residential or non-residential, other real estate activities	0.13	0.0006	0.0007
026	Aquaculture and other fishery activities	0.04	0.0005	0.0004
144	Mfr of radio and TV receiving sets, sound recording & reproducing eq. incl records and tapes	0.12	0.0005	0.0006
009	Fruits and nuts exc. coconut	0.05	0.0005	0.0002
063	Alcoholic liquors and wine	0.11	0.0004	0.0002
220	Laundry, dry cleaning and dyeing plants	0.08	0.0004	0.0002
045	Fish canning	0.06	0.0004	0.0002
097	Paper and paperboard containers	0.12	0.0004	0.0002
022	Hen's egg	0.06	0.0004	0.0002
093	Mfr and repair of wooden furniture incl upholstery	0.08	0.0004	0.0003
223	Other personal services, n.e.c.	0.05	0.0004	0.0002
170	Construction	0.12	0.0004	0.0062
099	Newspapers and periodicals	0.11	0.0004	0.0001
046	Fish drying, smoking & mfg of other seafood products	0.05	0.0003	0.0002
078	Custom tailoring & dressmaking shops	0.06	0.0003	0.0002
184	Air transport	0.10	0.0003	0.0008
040	Milk processing	0.09	0.0003	0.0002
177	Public utility cars and taxicab operation	0.07	0.0003	0.0002
217	Other recreational and cultural services	0.08	0.0003	0.0004
219	Other repair shops, n.e.c.	0.07	0.0003	0.0004
221	Barber and beauty shops	0.04	0.0003	0.0001
005	Banana	0.10	0.0003	0.0004
062	Miscellaneous food products	0.08	0.0003	0.0001
117	Manufacture of pottery, china & earthenware	0.28	0.0003	0.0003
043	Other dairy products	0.06	0.0003	0.0001
116	Mfr of plastic furniture, plastic footwear & other fabricated plastic products	0.11	0.0003	0.0006
069	Textile, spinning, weaving, texturizing and finishing	0.09	0.0003	0.0005
114	Mfr of rubber footwear	0.11	0.0002	0.0001
214	Motion picture distribution and projection	0.06	0.0002	0.0001
003	Vegetables	0.03	0.0002	0.0002
193	Pawnshops	0.11	0.0002	0.0001
110	Mfr of misc chemical products	0.10	0.0002	0.0002

Table 3 continued...

IO Code	Description	Change in Industry/Commodity Price	Increase in Household Consumer Prices	Increase in Total Cost of Production
182	Interisland shipping including inland water	0.08	0.0002	0.0002
061	Mfr of flavoring extracts, mayonnaise and food coloring products	0.08	0.0002	0.0001
148	Mfr of primary cells and batteries and electric accumulators	0.11	0.0002	0.0001
098	Mfr of articles of paper and paperboard	0.10	0.0002	0.0001
041	Butter and cheese manufacturing	0.08	0.0002	0.0001
070	Fabric knitting mills	0.08	0.0002	0.0001
020	Cattle and other livestock	0.04	0.0002	0.0003
218	Repair shops for motor vehicles	0.09	0.0002	0.0004
156	Mfr, assembly of motorcycles & bicycles	0.09	0.0002	0.0002
115	Mfr of other rubber products, n.e.c	0.11	0.0002	0.0001
042	Ice cream, sherberts & other flavored ices	0.06	0.0002	0.0001
055	Mfr of cocoa, chocolate and sugar confectionery	0.08	0.0002	0.0001
147	Mfr of appliances and housewares	0.11	0.0002	0.0002
162	Mfr of jewelry & related articles	0.09	0.0002	0.0001
006	Pineapple	0.13	0.0002	0.0002
188	Telephone	0.03	0.0002	0.0003
154	Rebuilding & major alteration of motor vehicles	0.11	0.0002	0.0001
146	Mfr of parts and supplies for radio, TV & communication (semi-conductors)	0.11	0.0001	0.0014
004	Roots and tubers	0.03	0.0001	0.0001
071	Hosiery, underwear & outerwear knitting	0.08	0.0001	0.0001
049	Manufacture of refined coconut and vegetable oil	0.07	0.0001	0.0001
103	Mfr of fertilizer	0.59	0.0001	0.0012
155	Mfr of motor vehicles parts and accessories	0.14	0.0001	0.0003
018	Other agricultural production, n.e.c.	0.04	0.0001	0.0002
222	Photographic studios including commercial photography and related services	0.07	0.0001	0.0001
151	Mfr of electrical lamps, fluorescent tubes and other electrical apparatus & supplies, n.e.c.	0.11	0.0001	0.0001
008	Citrus fruits	0.07	0.0001	0.0001
053	Noodles mfg	0.07	0.0001	0.0001
105	Mfr of pesticides, insecticides, etc	0.11	0.0001	0.0001
145	Mfr of communication and detection equipment	0.12	0.0001	0.0004
084	Mfr of leather footwear & footwear parts	0.09	0.0001	0.0001
150	Mfr of current-carrying wiring devices, conduits & fittings	0.11	0.0001	0.0003
015	Coffee	0.04	0.0001	0.0001

Table 3 continued...

IO Code	Description	Change in Industry/Commodity Price	Increase in Household Consumer Prices	Increase in Total Cost of Production
204	Employment/recruitment agencies	0.10	0.0001	0.0002
199	Legal services	0.14	0.0001	0.0001
073	Mfr of carpets and rugs	0.09	0.0001	0.0000
002	Corn	0.04	0.0001	0.0003
007	Mango	0.04	0.0001	0.0001
169	Miscellaneous mfg	0.08	0.0001	0.0001
075	Mfr of articles made of native materials	0.07	0.0001	0.0000
094	Mfr and repair of rattan furniture incl upholstery	0.08	0.0001	0.0001
091	Mfr of wood carvings	0.09	0.0001	0.0001
083	Mfr of prods of leather and leather substitutes, excl. footwear and wearing apparel	0.12	0.0001	0.0001
051	Flour, cassava & other grains milling	0.08	0.0001	0.0002
100	Printing and publishing of books and pamphlets	0.09	0.0001	0.0000
010	Coconut	0.03	0.0001	0.0002
072	Mfr of made-up textile goods exc. wearing apparel	0.10	0.0001	0.0001
113	Rubber tire & tube mfg	0.09	0.0001	0.0002
121	Cement mfr	0.09	0.0001	0.0005
173	Water	0.03	0.0001	0.0001
060	Mfr of starch & starch prods	0.07	0.0001	0.0000
225	Hotels and motels	0.07	0.0001	0.0002
106	Mfr. of paints, varnish & lacquers	0.12	0.0001	0.0002
048	Other crude vegetable oil exc coconut oil, fish and other marine oils and fats	0.06	0.0001	0.0000
186	Customs brokers and other services allied to transport	0.07	0.0000	0.0001
023	Other poultry and poultry products	0.03	0.0000	0.0000
181	Ocean passenger and freight transport	0.07	0.0000	0.0002
080	Embroidery establishments	0.06	0.0000	0.0000
190	Postal, Messengerial and other comm services, n.e.c.	0.04	0.0000	0.0001
215	Radio and TV programming	0.05	0.0000	0.0001
129	Cutlery, handtools, general hardware	0.10	0.0000	0.0001
206	Detective & protective services	0.21	0.0000	0.0003
189	Telegraph service	0.07	0.0000	0.0001
095	Mfr and repair of other furnitures and fixtures, n.e.c.	0.10	0.0000	0.0000
152	Shipyards and boatyards	0.13	0.0000	0.0001
142	Machine shops & mfr of non-electrical mach'y and eq. n.e.c.	0.09	0.0000	0.0001
160	Mfr of watches and clocks	0.04	0.0000	0.0000

Table 3 continued...

IO Code	Description	Change in Industry/Commodity Price	Increase in Household Consumer Prices	Increase in Total Cost of Production
090	Mfr of wooden and cane containers and small cane wares	0.10	0.0000	0.0001
175	Railway transport services	0.08	0.0000	0.0000
161	Mfr & repair of furniture & fixtures, made primarily of metal	0.11	0.0000	0.0000
059	Mfr of animal feeds	0.07	0.0000	0.0005
067	Cigar, chewing & smoking tobacco	0.06	0.0000	0.0000
159	Mfr of photographic and optical instruments	0.12	0.0000	0.0000
180	Road freight transport & supporting services to land transport	0.09	0.0000	0.0010
057	Mfr of ice exc dry ice	0.05	0.0000	0.0000
118	Mfr of flat glass	0.23	0.0000	0.0002
216	Theatrical production and entertainment	0.08	0.0000	0.0000
187	Storage & warehousing	0.07	0.0000	0.0001
122	Mfr of structural clay products	0.22	0.0000	0.0001
119	Mfr of glass container	0.13	0.0000	0.0001
047	Prod'n of crude coconut oil, copra cake and meal	0.07	0.0000	0.0003
036	Salt mining	0.02	0.0000	0.0000
166	Mfr of ophthalmic goods	0.10	0.0000	0.0000
143	Mfr of electrical ind'l mach'y and apparatus	0.10	0.0000	0.0001
101	Commercial & job printing & other allied industries	0.10	0.0000	0.0002
228	Public health services	0.06	0.0000	0.0002
185	Tour and travel agencies	0.06	0.0000	0.0000
124	Mfr of other non-metallic mineral prods, n.e.c.	0.28	0.0000	0.0001
074	Cordage, rope, twine and net mfg	0.08	0.0000	0.0001
081	Mfr of other wearing apparel exc footwear	0.10	0.0000	0.0000
179	Operation of tourist bus and cars and rent-a-car services	0.07	0.0000	0.0000
085	Sawmills and planing mills	0.08	0.0000	0.0002
168	Mfr of stationers', artists' and office supplies	0.11	0.0000	0.0000
131	Mfr of metal containers	0.13	0.0000	0.0002
035	Stone quarrying, clay and sandpits	0.06	0.0000	0.0001
086	Mfr of veneer and plywood	0.08	0.0000	0.0001
183	Stevedoring & other supporting services to water transport	0.38	0.0000	0.0005
112	Mfr of asphalt, lubricants and misc prods of petroleum and coal	0.08	0.0000	0.0001
227	Public education services	0.04	0.0000	0.0005
016	Cacao	0.06	0.0000	0.0000
208	Sanitary and similar services	0.18	0.0000	0.0001
164	Mfr of sporting and athletic goods	0.11	0.0000	0.0001

Table 3 continued...

IO Code	Description	Change in Industry/Commodity Price	Increase in Household Consumer Prices	Increase in Total Cost of Production
120	Mfr of other glass and glass products	0.13	0.0000	0.0000
167	Mfr of toys and dolls exc. rubber and plastic toys	0.07	0.0000	0.0000
126	Iron and steel foundries	0.14	0.0000	0.0002
092	Mfr of misc wood, cork & cane prods.	0.08	0.0000	0.0000
157	Mfr, assembly, rebuilding & major alteration of railroad equipment, aircraft, and animal and hand-drawn vehicle	0.09	0.0000	0.0000
132	Metal stamping, coating, engraving mills	0.14	0.0000	0.0002
201	Engineering, architectural & technical services	0.07	0.0000	0.0001
140	Mfr, assembly & repair of office, computing and acctg machines	0.16	0.0000	0.0004
135	Mfr of non-electric lighting and heating fixtures	0.12	0.0000	0.0000
077	Mfr of fiber batting, padding, upholstery fillings incl. coir, linoleum and other hard surfaced floor coverings	0.09	0.0000	0.0000
012	Tobacco	0.07	0.0000	0.0000
163	Mfr of musical instruments	0.08	0.0000	0.0000
089	Millwork plants	0.09	0.0000	0.0000
203	Machinery and equipment renting and leasing	0.04	0.0000	0.0000
133	Mfr of wire nails	0.14	0.0000	0.0000
087	Mfr of hardboard and particle board	0.09	0.0000	0.0000
226	Other lodging places	0.03	0.0000	0.0000
011	Sugarcane	0.07	0.0000	0.0003
088	Wood drying and preserving plants	0.10	0.0000	0.0000
125	Blast furnace and steel making furnace, steel works and rolling mills	0.15	0.0000	0.0012
068	Tobacco leaf flue-curing and redrying	0.07	0.0000	0.0000
056	Mfr of desiccated coconut	0.06	0.0000	0.0000
076	Mfr of artificial leather and impregnated & coated fabrics	0.09	0.0000	0.0000
165	Mfr of surgical, dental, medical and orthopedic supplies	0.07	0.0000	0.0000
229	Public administration and defense	0.04	0.0000	0.0015
001	Palay	0.04	0.0000	0.0007
024	Agricultural services	0.03	0.0000	0.0002
127	Non-ferrous smelting & refining plants, rolling, drawing and extrusion mills	0.10	0.0000	0.0006
028	Gold and silver mining	0.06	0.0000	0.0003
102	Mfr of basic ind'l chemicals	0.09	0.0000	0.0003
096	Pulp, paper and paperboard	0.11	0.0000	0.0003

Table 3 continued...

IO Code	Description	Change in Industry/Commodity Price	Increase in Household Consumer Prices	Increase in Total Cost of Production
149	Insulated wires and cables	0.12	0.0000	0.0003
205	Business mgt & consultancy and market research services	0.22	0.0000	0.0005
202	Advertising services	0.10	0.0000	0.0002
027	Forestry	0.04	0.0000	0.0001
123	Mfr of structural concrete prods	0.09	0.0000	0.0002
029	Copper mining	0.06	0.0000	0.0001
130	Structural metal prods	0.13	0.0000	0.0002
104	Mfr of synthetic resins , plastic materials & other man-made fibers exc glass	0.10	0.0000	0.0002
207	Other business services, n.e.c.	0.10	0.0000	0.0001
172	Steam	0.02	0.0000	0.0000
200	Bookkeeping, acctg., and auditing services	0.10	0.0000	0.0001
033	Coal mining	0.07	0.0000	0.0000
013	Abaca	0.11	0.0000	0.0001
128	Non-ferrous foundries	0.09	0.0000	0.0000
017	Rubber	0.03	0.0000	0.0000
213	Motion picture production	0.11	0.0000	0.0000
134	Mfr of other fabricated wire & cable prods exc insulated wire & cable	0.14	0.0000	0.0000
034	Crude petroleum and natural gas	0.04	0.0000	0.0000
014	Other fiber crops	0.04	0.0000	0.0000
082	Tanneries and leather finishing	0.12	0.0000	0.0000
139	Mfr of engines nd turbines exc. for transport eq. & special ind. mach'y and equipment	0.10	0.0000	0.0000
158	Mfr of professional, scientific measuring a & controlling eq	0.10	0.0000	0.0000
136	Mfr of fabricated metal prods exc machinery & equipment	0.10	0.0000	0.0000
030	Nickel mining	0.07	0.0000	0.0000
138	Mfr of metal and wood-working machinery	0.10	0.0000	0.0000
141	Mfr of pumps, compressors, blowers and airconditioners	0.09	0.0000	0.0000
031	Chromite mining	0.07	0.0000	0.0000
032	Other metal mining	0.05	0.0000	0.0000
137	Mfr of agricultural machinery and equipment	0.13	0.0000	0.0000
037	Other non-metallic mining and quarrying	1.70	0.0000	0.0001
	TOTAL		0.645	0.435

¹ Ranked based on increase in household consumer prices