ESTIMATING INDONESIA'S CORPORATE INCOME TAX POTENTIAL 2006-2010; AN ANALYSIS OF INPUT OUTPUT TABLE

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ABSTRACT

Indonesia's tax ratio is low compared to other countries. The importance of tax is unarguable. Currently, tax revenue contributes 70% of the state budget. It is necessary to know how large the tax potential from the Indonesian economy actually is. Since corporate income tax is the highest contributor of tax revenue, it is important to calculate the magnitude of potential corporate income tax. Researchers have calculated the tax potential using many different approaches. This study tries to give alternatives in estimating the corporate income tax potential by using Input-Output analyses. An operating surplus in the Input-Output Table is considered as a proxy of taxable income. By using impact analysis and the Leontief Inverse, the author forecasts an operating surplus for years 2006-2010 based the 2005 Input-Output Table. Another important tool is an adjustment on the effective tax rate, since it is unrealistic if using statutory tax. The result shows tax revenue below the tax potential based on Input-Output analysis. Furthermore, there are several main sectors that still have room for collecting taxes as follows: processing sectors, financial and real estate sectors, transportation and communication sectors, trade-hotel and restaurant sectors, non oil and gas mining sectors, and other services sectors. This study proposes that Indonesia has the potential to achieve a higher tax ratio in the near future.

Keywords : corporate income tax, Input-Output table, Leontief inverse, operating surplus.

INTRODUCTION

The Government of Indonesia has run a budget deficit since the crisis in 1998. There are three ways to fill this deficit: by increasing revenue, budget cuts, or a combination of the two. This study will focus on the revenue side, in which tax plays an important role. Contribution of tax to the state budget is around 70%. Income tax is the biggest portion, followed by value added tax. Formally, income tax consists of two types: non oil and gas income tax on one hand and oil and gas income tax on the other.

According to Uppal (2003), tax is very important for developing countries, since capital markets are not mature and it is difficult to sell government bonds to the domestic market to meet the state budget.

However, Indonesia's tax ratio is still considered low. The tax ratio is the proportion of tax revenue to GDP in a particular year. Basri (2009) argues that the tax potential is greater than actual revenue.

In the meantime, the Directorate General of Taxes (DGT) has made many efforts to collect taxes. One of the efforts is the sunset policy in order to increase the tax base. (Kompas, 2009).

The dependency of Government on tax to finance operations is urgent. Actually how big is the potential tax revenue? This study is to give an alternative approach estimating its potential by using the Input-Output (IO) Table. The scope of income tax covers only corporate income tax (CIT). Moreover, this study also tries to compare actual tax revenue to CIT potential.

Literature Review

As mentioned in the introduction, Basri (2009) argues that the tax potential is much greater than what has been collected so far. This view is based on his observations about many unsettled issues in taxation in Indonesia. These issues are:

- Low compliance of payment of taxes,
- Low quality service of tax office,
- Tax potential needs exploration,
- One of most corrupt institution,
- Unfinished tax reform.

The author asserts that if those five issues can be overcome, a higher tax potential might be achieved. Point number three, i.e., additional exploration on the tax potential, is urgently required and comes in line with this study.

Previous Research

Many researchers have already studied the tax potential. Some are officials from the Ministry of Finance who used an econometric method.1 Another researcher is Noveriyanto (2005) who used the Input-Output method. Noveriyanto found that the proportion of income tax to tax potential (tax coverage ratio) is 66.36% with the corporate income tax potential for year 2004 is Rp 89.29 trillion.

In 2005, Ikhsan, Trialdi, & Syahrial calculated tax potential by employing National Social Accounting Matrices (SAM)Ikhsan et al. found that the share ofcompany profits was relatively stable at 28.2%-30.0% of gross domestic product (GDP), and the corporate income tax potential was 6.24% of GDP or Rp 130.26 trillion. Panjaitan (2006) estimated the personal income tax potential by using Pareto distribution. Panjaitan found that potential personal income tax revenue equaled Rp 114.2 trillion and the compliance rate equaled 20.14%. Panjaitan also suggested that the agriculture sector has the potential to increase income tax revenue. Another researcher, Woroutami (2006), calculated tax potential using profit share from a sample of state-own enterprises and companies listed on the Jakarta stock exchange for year 2004-2005. Results showed that the corporate tax potential for year 2005 is Rp 182.56 trillion or 6.69% of GDP. Meanwhile, the income tax coverage ratio is 61.82%.

Furthermore, Herdianto (2009) uses the same portion of profit (28.9% of GDP) as Iksan et al. with novelty in the categorization of corporate size from small, medium, and large enterprises. Herdianto uses a number of companies for nine sectors, based on the data from Ministry of Cooperation and Small Medium Enterprises (MoCSME). After calculating the potential, the author separated the portion of corporate income tax from personal income tax (PIT), by using 77.11% for CIT and 22.89% of PIT. Herdianto found that percentage of potential CIT to GDP is around 6.54% in 2005 or Rp 178.55 trillion. This is pretty much the same as Ikhsan et al. for 2003 at around 6.24% of GDP.

However, there are gaps from previous studies which basically calculate revenue on an aggregate level. The econometric method has the advantage because it helps to identify elasticity of tax revenues by economic indicators. Meanwhile, it is important to focus on which sector needs to locate the tax potential. The more comprehensive portrait of economics is at the micro level or the economic sector.

This study offers to fill in the gaps by using the Input-Output method, adopted from Noveriyanto (2005). This study utilizes the latest data of the Input-Output Table for year 2005 and some modifications on the operating framework. This paper endeavors to estimate the tax potential for years 2006–2010.

Hypothetic of this study is that:

Indonesia's corporate income tax potential is bigger than tax revenue, this can be reflected from income tax coverage ratio which is tax revenue divided by tax potential; and

Input-Output table can be an alternative in estimating tax potential. Estimating tax potential by using Input-Output Table will help tax authority to determine priority and strategy which primary sectors to collect taxes in the future. In other words, it is believed that securing these primary sectors will make safe tax revenue in the future and will increase tax ratio.

Overview of Corporate Income Tax

James and Nobes in 2000 define tax as a compulsory levy made by government, and nothing is received directly in return. In other words, tax

is a compulsory transfer of resources from the private to the public sector, levied based on regulations and without receipt of specific benefit, in order to accomplish national economic and social objectives.

Uppal in 2000 contends that the objectives of taxes are no longer just raising adequate revenues. The objectives are also economic growth, full employment, economic stabilization, and reduction of inequality of distribution of income and wealth.

According to Musgrave (1959)[1] taxation has an important role to play in three government economic functions: the first is to overcome the inefficiencies of the market system in the allocation of economic resources, the second is the redistribution of income and wealth in order to move more efficient distribution, and the third is the role of government in smoothing out cyclical fluctuations in the economy and ensuring a high level of employment and price stability.

Self-assessment

A distinct feature of Indonesia's tax laws is the self-assessment system coupled with the withholding scheme. The self-assessment system implies that taxpayers have the obligation of computing their tax liability (Uppal, 2000).

Certain types of income are subject to withholding, and they are governed by different provisions in the tax law. There are two types of withholding: creditable or not (final tax).

Corporate Income Tax (CIT)

Indonesia's income law adopts a residence principle with regard to domestic tax subjects. Both individuals and corporations are subject to tax on all income received or earned both from sources in Indonesia and abroad (worldwide income concept).

Statutory tax rates for CIT are 10%, 15%, and the maximum 30%. There is a new regulation making the statutory tax rate a flat tax rate of 28% for fiscal year 2009.

For comparison use, below are several tax rates of neighboring countries. Compared to Malaysia, Philippines, Vietnam, and China, Indonesia's tax rate is low, but it is the same as Thailand. It can be concluded that Indonesia's tax rate is fairly competitive in the region. Nowadays, the tax rate is even better since Indonesia newly adopted the single rate of 28%.

Table 1
Hasil Analisis

Country	Corporate Income Tax Rate
Indonesia	10% Rp 0-50,000,000 15% Rp 50,000,001- 100,000,000 30% Rp > Rp 100,000,001
Malaysia	Flat tax rate 28% Non oil 38% Oil
Philippines	32%
Thailand	30%
Vietnam	32% Domestic and branch office 25% Foreign 50% Oil and gas
Cambodia	20% 9% for investment incentives 30% Oil and gas
China	30% + 3% local surtax

Note. Panjaitan (2005).

[2]*See James et al. (2000).*

As seen in Figure 1, income tax and value added tax share almost the same portion of tax revenue. Of income tax, corporate income tax contributes the most to Indonesia tax revenue. For year 2008 corporate income tax amounted to 34% or Rp 90 trillion. Payroll tax, which is in second place, is only half of the corporate tax amount and contributes 18%.

Furthermore, Indonesia, as a developing country, relies heavily on corporate income tax. This is different from developed countries. Gordon and Li (2009) explain that in developing countries, corporate income tax is a much more important source of tax revenue. Less developed countries collect less tax revenue from personal taxpayers. From Figure 1 can be seen that personal income tax is only 1% of total income tax revenue.
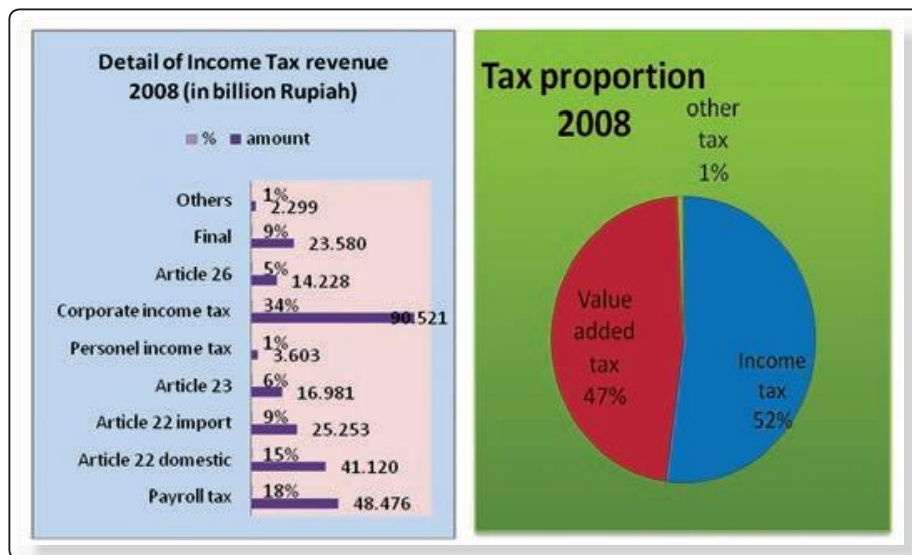

Figure 1
Tax Posture
Note. DGT.

Collection of Tax

In Indonesia, most tax resident companies, businesses, and permanent establishments are required to pay monthly tax installments (Article 25). These monthly installments are generally calculated with reference to the most recent corporate tax return.

Based on the self-assessment system, when submitting their yearly tax returns, taxpayers have to pay the amount of tax calculated in the annual tax return (Article 29) to the extent that this amount exceeds tax installments paid during the year (Article 25), tax withheld by third parties (Article 23), tax paid on imports (Article 22), tax paid or due overseas on income obtained overseas (Article 24) and fiscal exit tax.

Tax on the income of resident taxpayers subject to final tax is generally collected by designated withholders and treated as exempt income which is excluded from the annual tax return.

Business Profit

From Herdianto (2009), the taxable object is income and is defined as any increase in economic capability received or accrued by a taxpayer. Taxable

business profits are computed on the basis of normal accounting principles as modified by certain tax adjustments. (See Appendix 1 for list of business profit).

Generally, a deduction is allowed for all expenditures incurred to obtain, collect, and maintain taxable business profits. (See Appendix 2 for list of non deductible expenses).

Losses

Losses may be carried forward for a maximum of five years. A carry back of losses is not possible.

Strategy for Collecting Taxes

The tax revenue target charged from the state budget to DGT from year to year increases. This is not a trouble-free task, considering that the country's economic condition is still not yet fully recovered from the 1998 crisis.

The strategy to increase tax revenue is prepared based on the self-assessment system, where the taxpayer is trusted to apply, calculate, pay, and report the amount of payable tax. The role of DGT is to monitor the taxpayer obligation. Empirically, DGT faces many difficulties in monitoring the implementation, for instance lack of accessibility to compare data of the tax return to third parties.

Some constraints might be noted as follows:

- There is no access to the bank with the intention of identifying taxpayer's account, so it is difficult to know the amount of actual wealth of taxpayer;
- There is no access to foreign exchange traffic;
- There is no access to money laundering report;
- There is no access available amongst government institutions.

To resolve the problems above, DGT has conducted collection of tax revenue by performing extension and intensification.

Extension means trying to locate those who are actually capable of paying taxes, but who have not yet performed their taxation obligation. One way to implement this function is through canvassing. Intensification means locating listed taxpayers who have not yet performed their obligations completely and accurately, by utilizing comparative data that are already available at DGT.

Further achievement of DGT can be seen by looking at Table 2: from year 2005 to 2008, the number of taxpayers is increasing; unfortunately, however, the compliance rate, which is the number of tax returns submitted divided by the number of registered taxpayers, is decreasing.

Table 2
Compliance Rate of Corporate Income Taxpayers

Year	Registered Taxpayers	Tax Returns	Compliance Rate
2005	2,959,006	342,535	12%
2006	3,251,753	484,950	15%
2007	5,431,689	443,361	8%
2008	8,807,666	620,261	7%

Note. Annual Report DGT 2008.

According to Table 2, the compliance rate ratio, however, is still considered low. In other words, more than 80% of corporations did not file income tax returns, which is a percentage that is huge.

Formal and Informal Sectors

This part provides analysis of company profiles (based on the results of the economic census in 2006); 1.3 million, or around 10.25%, of companies are legal entities (formal). The remaining 89.75% operate without any form of legal entity/ business (informal sector).

Data in Table 3 show that the total number of businesses/corporations in all sectors in 2006 is 48,936,840. Compared to that number, the total registered corporate taxpayers is only 3,251,753 (around 6% covered). There is a lot of room for extension since the majority is small enterprises.

Table 3
Number of Small, Medium, and Large Enterprises by Economic Sector in 2006

Description	Small	Medium	Large	Total
Agriculture, livestock, fisheries and forestry	26,207,670	1,676	53	26,209,399
Mining and quarrying	265,676	617	120	266,413
Processing industry	3,200,620	16,886	2,555	3,220,061
Electricity, gas and water supply	14,497	963	213	15,673
Construction	162,135	3,757	318	166,210
Trade, hotels and restaurants	13,247,288	57,651	1,737	13,306,676
Transportation and communication	2,697,174	4,763	322	2,702,259
Financial intermediaries and business services	71,431	11,218	1,274	83,923
Services	2,956,434	9,180	612	2,966,226
Total	48,822,925	106,711	7,204	48,936,840

Note. BPS/ Ministry of Cooperation and SME's (MoCSME).

Data and Research Methodology

Input-Output Framework

Input-Output (I-O) analysis is a useful method in analyzing the economic relationship of linkages among major sectors of an economic system. First published by Wassily Leontief in 1936, the Input-Output Table describes the flow of goods and services between all sectors of a national economy over a certain period.

An Indonesia I-O table is compiled every five years. This happens because BPS-Statistics Indonesia believes the economic structure and technology used in the production process is necessary to be presented within the five years (BPS, p. 2).

In the case of an open and static I-O model, all of the transactions in the table have to satisfy three basic assumptions:

• Homogeneity: each sector

produces a single output with a single input structure, and there is no automatic substitution between the outputs of different sectors;

- Proportionality: use of input changes proportionally to the change of total output of that sector;
- Additivity: total effect in several sectors is the sum of the separate multiplier effects.

Basic Tables

There are three types of basic tables, which are:

- Total transaction tables at Purchaser's prices:
  The tables are valued based on purchaser's price and include trade margins and transport costs;
- Total transaction tables at producer's prices:
  This table shows all transactions valued at producer's prices, since trade margins and transport cost have been removed from transaction values;
- Domestic transaction tables at producer's price:
  The domestic tables at producer's price show the transactions of goods and services of domestically produced, excluding a trade and transport margin. Since total intermediate input remains unchanged, the import components, used as part of intermediate inputs, are lumped in one row.

Domestic transaction tables are useful for showing direct relationship between domestic producing sectors, free from the effects of import and margin of trade and transport.

Therefore, the technical coefficient derived from this table is analytically superior in the sense that the effect of any increase in demand on domestic production increase can be directly measured.

Analytical Tables

Two analytical tables are:

- Input coefficient table: This table is derived from basic tables by dividing the input cells to each total input of the sectors;
- Inverse matrix at producer's prices: This table is derived from input coefficient tables at producer's price. This is useful for impact analysis purposes.
  Domestic inverse matrix at producer's prices.

To measure the effect of changes on the output of domestic production, import value must first be subtracted from final demand.

The inverse matrix at producer's price is also called the interdependence coefficient matrix or the Leontief Inverse Matrix. This matrix shows the interdependence of each sector on all others. It reveals how the level of output in any sector is dependent upon the level of output in other sectors, the input requirements of each sector, and the level of its final demand.

The relationship between the Leontief Inverse Matrix and output and final demand might be written as follows:

where $(1-A)^{-1}$ is called the Leontief Inverse Matrix, X is the output matrix, and Y is the final demand matrix.

This model is to answer the question regarding the effect of an

$$X = (1-A)^{-1} Y$$

exogenous change on output in the economy. Exogenous changes are nothing other than changes in final demand components: this can be in the form of household consumption, corporate investment, government spending, exports, or imports (Nazara, 2005, p. 16).

Analogy of the above model is the same as the macroeconomic model by Keynes, while output Y = 1/(1-c) (Co + Io + Go). When k = 1/(1-c) is often referred to as exogenous spending multiplier. If it is assumed that exogenous spending multiplier or k equal 5, it means that each one dollar increase in exogenous spending (whether from consumption, investment, or government spending) would increase the national income in the amount of five dollars.

Miller and Blair (2009) explain that one of the major uses of information in an input-output model is to assess the effect on an economy of changes in elements that are exogenous to the model of that economy.

For example: Leontief input-output economies derive their significance largely from the fact that output multipliers measuring the combined effects of the direct and indirect repercussions of a change in final demand are readily calculated (Stenge, 1990, p. 377 in Miller (2009) p. 243).

The author goes on to say that, when longer term and broader changes are examined, we are dealing with projections and forecasting. As the period of projections lengthens, the accuracy of such an exercise tends to decrease, both because our ability to forecast the new final demands accurately will diminish and also because of the coefficient matrix—the elements of A and L—may have become outdated (Miller and Blair, 2009).

Output Multiplier

The Leontief multiplier is an output multiplier. Generally, an analyst is more likely to be concerned with the economic impact of new final demand as measured by jobs created, increased household income, etc., rather than simply gross output by sectors.■

Data

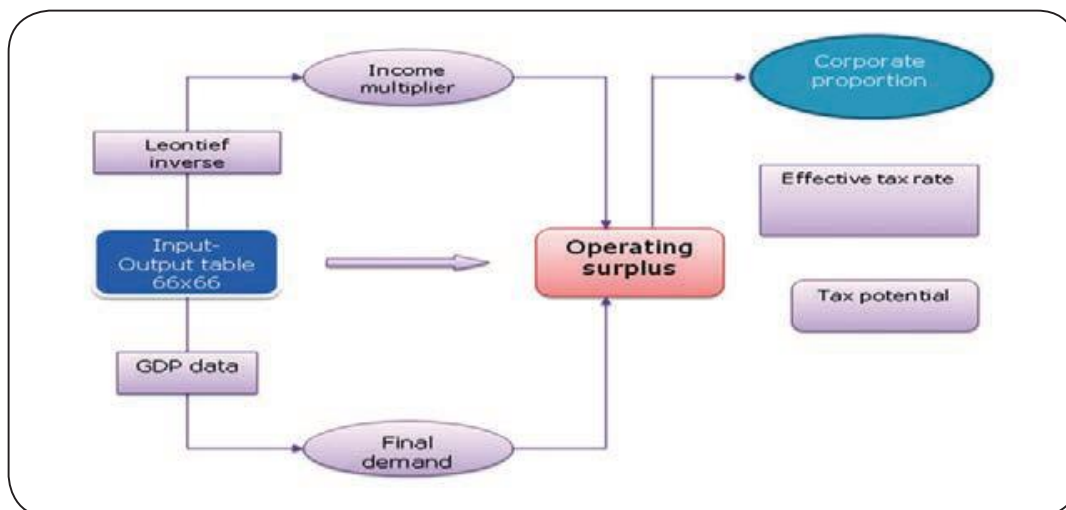This study uses a 66-sector IO table for Indonesia for year 2005 published by BPS/Statistics Indonesia.

Figure 1
Framework for Estimating Tax Potential
Note. author.

For the next part, I will analyze three important terminologies in this study, namely:
- Operating Surplus in Input-Output Table
- Effective Tax Rate
- Tax Gap Concept

Operating Surplus in Input Output Table

Operating surplus in the IO table is an operating surplus of all economic activity by either business or legal entity. Operating surplus can be viewed as a proxy of taxable income. In an early study conducted in 2004, Amusa suggested that operating surplus of the entire economy can be calculated as the tax base of capital. This was subsequently supported by Poirson (2006) noting that operating surplus of the economy from the national account is used as a potential tax base.

Effective Tax Rate

To calculate the ratio of income taxes, information about the company's income statement is required. Gaetan (2007) calculates effective tax rate by using the ratio of tax on a gross profit, as shown in formula below:

τ = **T/GOP**
τ = effective tax rate
T = CIT paid
GOP = Gross Operating Profit

This approach is most relevant, since it uses information on the gross profit before depreciation. This effective tax rate is expected to

capture all the statutory tax and tax brackets in accordance with applicable regulations. However, in this study, we will use operating surplus from the Input-Output Table as a proxy of GOP.

Tax Gap Concept

Brondolo et al. (2008) define the tax gap as the difference between tax potential and tax paid. There are three main components: nonfiling, underreporting, and underpayment. The nonfiling gap represents the amount of taxes not paid by taxpayers who have an obligation but who do not file the tax return on schedule. The underreporting gap is taxpayers who do not report the full amount of tax liability. The underpayment gap is taxpayers who fail to pay fully the tax owed.

Mazur and Plumley (2007) defined the tax gap as the difference between the amount of tax imposed by the tax code and the amount that is reported and paid with returns filed in a timely way.

The author goes on to say that the tax gap is due only to legal activity. The tax from illegal activities is not included in this definition. For instance, an underground economy like gambling, prostitution, or drug dealing is not included. They argue that it is extremely difficult to estimate the amount of taxable income from illegal activities. However, this study would like to employ this definition and will not estimate the so-called underground economy potential.

Revenue Potential Analysis; *Economic Profile.*

Compared with other countries, Indonesia's tax ratio is considered low. By looking at the economic characteristics in Table 4, it can be said that a country dominated by industrial and service sectors but with a low tax ratio may indicate that the taxation level is low; in other words tax collection is not effective.

Table 4
Economic Profile of Neighboring Countries (2002)

Country	GDP Composition (%)			Export	GNP/CAP	Tax Ratio
	Agriculture	Manufacturing	Service	% of GDP	(USD)	%
Philippines	14.7	22.7	52.8	44.1	1033.7	12.3
Cambodia	35.6	20.2	36.4	44.1	303.1	8.2
China	14.5	44.8	33.7	26.3	951.5	17.2
Malaysia	9.1	30.7	46.4	98.1	3609.5	18.5
Thailand	9	33.8	48.5	52.9	1960	14.5
Vietnam	25	20.6	38.5	46	409.8	15.3
Indonesia	17.5	25	38.1	33.5	779.7	13.1
Average	17.6	28.3	42.1	49.3	1292.5	14.2
The highest	35.6	44.8	52.8	98.1	3609.5	18.5
The lowest	9	20.2	33.7	26.3	303.1	8.2

Note. Panjaitan (2005).

In the Indonesian I-O table, all of the economic activities in Indonesia are covered, especially the transactions of goods and services between economic sectors. Some macroeconomic measures will be observed in this part, such as gross value added, GDP expenditure, and final demand.

As seen in Table 5, the GDP of Indonesia in 2005 was Rp 2,876,891.6 billion. The largest contribution is from the manufacturing industry sector. The gross value added of this sector was Rp 795,680.8 billion or 27.7% of GDP. The gross value added of other sectors were as follows: trade, hotel and restaurant sector amounted to Rp 433,185.6 billion (15.1%); agriculture sector amounted to Rp 375,614.9 billion (13.1%); mining and quarrying sector was Rp 317,169.6 billion (11.0%); services sector amounted to Rp 287,653.8 billion (10%); financial real estate and business sector was Rp 239,391.5 billion (8.3%); construction sector was Rp 206,862.2 billion (7.2%); transport and communication sector amounted to Rp 194,422.5 billion (6.7%); and electricity gas and water amounted to Rp 26,910.7 billion (0.9%).

Table 5
2005 I-O Table Data on Sectoral Gross Value Added and Final Demand

Sectors	Value Added (Billion Rp)	Distribution %	Final Demand (Billion Rp)	Distribution %
1. Agriculture	375,614.9	13%	202,706.8	5%
2. Mining and quarrying	317,169.6	11%	198,009.7	5%
3. Manufacturing industry	795,680.8	28%	1,440,064.5	39%
4. Electricity, gas and water supply	26,910.7	1%	27,552.7	1%
5. Construction	206,862.2	7%	528,981.3	14%
6. Trade, hotel, and restaurant	433,185.6	15%	487,639.1	13%
7. Transportation and communication	194,422.5	7%	249,858.1	7%
8. Financial, real estate & business services	239,391.5	8%	137,774.4	4%
9. Services	287,653.8	10%	444,436.6	12%
Total	**2,876,891.6**	**100%**	**3,717,023.2**	**100%**

Note. BPS, 2005 I-O data (2007)

Besides the share of the sector value added, GDP can be examined also by the components of expenditure. In Table 6 it is shown that the highest expenditure in 2005 was household consumption expenditure Rp 1,785,591 billion or 62.1% of GDP. The other expenditure components were gross domestic fixed capital formation at Rp 693,056.9 billion (24.1%); government consumption expenditure at Rp 224,980.6 billion (7.8%); net export of goods and services at Rp 136,973.9 billion (4.7%); and change in inventory at Rp 36,289.2 billion (1.3%).

Table 6
Expenditure of GDP based on the 2005 I-O Table

Components	Value	Distribution
	(Billion Rp)	%
Household Consumption	1,785,591.0	62%
Government Consumption	224,980.6	8%
Gross Domestic Fixed Capital Formation	693,056.9	24%
Change in Inventory	36,289.2	1%
Net Export of Goods and Services	136,973.9	5%
GDP	2,876,891.6	100%

Note. BPS, 2005 I-O data (2007)

Final Demand

Basically, final demand components are the same as the expenditure without import components. Total amount of final demand in 2005 was Rp 3,717,023.2 billion. The manufacturing industry sector was the largest in 2005 at Rp 1,440,064.5 billion (38.7% of total final demand). Amounts of final demand in other sector were as follows: construction sector was Rp 528,981.3 billion (14.2%); trade hotel and restaurant sector was Rp 487,639.1 billion (13.1%); services sector was Rp 444,436.6 billion (12%); transportation and communication sector was Rp 249,858.1 billion (6.7%); agriculture was Rp 202,706.8 billion (5.5%); mining and quarrying sector was Rp 198,009.7 billion (5.3%); financial services was Rp 137,774.4 billion (3.7%); and electricity, gas and water was Rp 27,552.7 billion (0.8%).

Corporate Income Tax Revenue in Indonesia

In the period 2005-2008, average corporate income tax increased to 27.4%. Meanwhile, based on a financial memorandum and state budget for 2010, despite a decrease in tariff on corporate income tax in 2009, the revenue is planned to increase by 16%. This increase is mainly derived from extension and intensification programs (Financial memorandum, p. III-13).

In the years 2005-2008, revenue from corporate income tax (Article 25) is dominated by the financial sector, real estate and business services, and processing industry sectors (manufacturing). Corporate income tax revenue (Article 25) from the finance sector increased from Rp 14.1 trillion in year 2005 to Rp 26.9 trillion in year 2008, while revenues from the manufacturing industry sector increased from Rp 9.14 trillion 2005 to Rp 26.1 trillion in the year 2008.

Figure 1
Corporate Income Tax Revenue
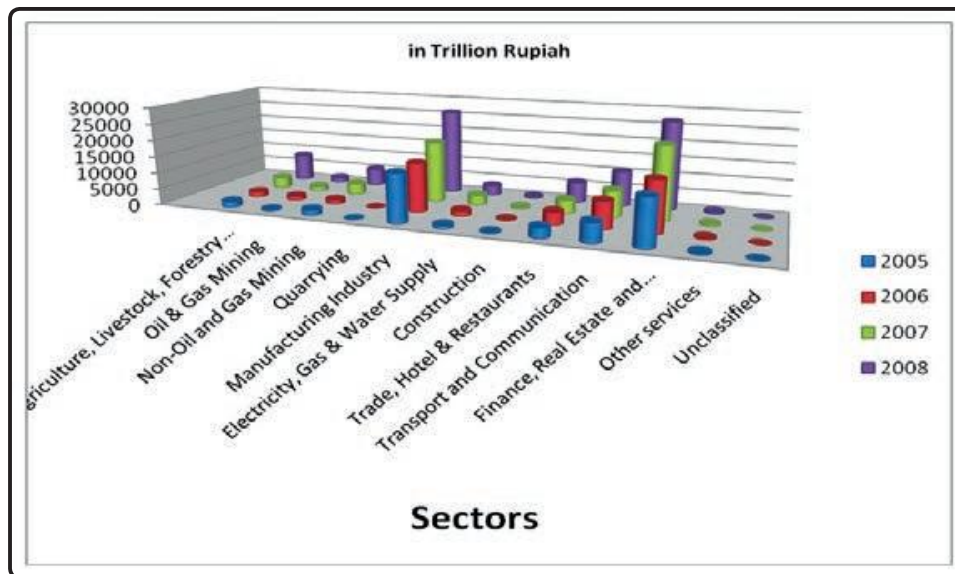
Source: DGT.

Data shows revenue increase in the financial sector. This comes especially from subsector banking, due to increased profit from high interest during economic crises. In the meantime, revenue in the agriculture sector also increased and mainly derives from intensification on booming commodities such as palm oil and its derivatives.

Estimating Corporate Income Tax Potential
Estimation of Operating Surplus

1. Estimate income multiplier/

$$H_j = \Sigma\,{}^{66}_{i=1}\; V_i/X_i\; (I - A)^{-1}$$

operating surplus multiplier every sector
where
H_j = income multiplier sector j

V_i = operating surplus sector i
X_i = output sector i
$(I - A)^{-1}$ = Leontief Inverse

2. Estimate final demand for year 2006-2010;
3. Find operating surplus, by multiplying income multiplier with final demand;
4. Calculate with average effective tax rate;
5. Calculate tax gap and income coverage ratio (ICR)= Tax revenue/ Tax potential.

The process of calculating the potential income tax by using I-O table approach, starting from operating surplus projection for each sector until several years into the future by using the income multiplier, is multiplied by final demand. The Noveriyanto's method does not

include the agriculture sector in calculations.

The author maintains that the operating surplus from the agriculture sector is not entirely the object of income tax. However, in this calculation, not everything in the agriculture sector will be separated. Furthermore, in order to separate operating surplus, the author will use other source of data as a benchmark such as using economic census from BPS-Statistic Indonesia. Then, based on data on operating surplus projections, the calculation of potential income tax is done by multiplying the average effective tariff for each sector by a projected operating surplus for each sector.

Step 1: Leontief Inverse

Firstly, find the Leontief Inverse from the Input-Output Table for year 2005.

The next step is to find the coefficient of the operating surplus.

After identifying the coefficient of operating surplus, the next step is to put it in diagonal form in the matrix;

the rest are zero.

The next step is to find the income multiplier by multiplying the Leontief Inverse with the diagonal matrix of coefficients of operating surplus.

Step 2: Estimate Final Demand

Data of final demand is the same as the GDP (for domestic transactions). Data is taken from BPS Statistics-Indonesia. Then it being proportionate by following proportion of GDP. The proportion is taken from I-O table 2005.

Step 3: Multiply income multiplier with final demand.

By the same token, for 2006-2010 the result will be as follows for the operating surplus.

Step 4: Average effective tax rate

There are difficulties since the sectors in the Input-Output Table are not the same as the sectors from the tax authority. It needs some adjustment by compiling similar sectors to reduce the number (aggregation). It turns out to total 35 sectors from 66 sectors of

Table 7

Effective Tax Rate of 35 Sectors

No.	Description	Operating Surplus	Tax Revenue	Effective Tax Rate
1	Agriculture and livestock	78,546,583	2,084,732.52	2.65%
2	Forestry	15,693,429	114,090	0.73%
3	Fisheries	45,504,372	29,984	0.07%
4	Coal and metal mining	73,831,508	4,904,175	6.64%
5	Crude oil, natural gas, and geothermal mining	155,108,177	6,950,603	4.48%
.	.	.	.	.
.	.	.	.	.
34	Social and community service	15,311,550	2,523,979	16.48%
35	Unspecified sector	907,664	55,483	6.11%

Note. DGT and 2005 I-O Table from BPS-Statistic Indonesia

the IO Table (see Table 7). The average effective tax rate is the actual tax revenue in 2005 divided by operating surplus of the IO Table 2005.

As noted, not all operating surplus is the basis for the corporate taxpayer or enterprise; there are also some that are individuals or entrepreneurs. One proxy is from other sources of data from the Ministry of Cooperation and Small Medium Enterprises (MoCSME). It is considered that medium and large enterprises are corporate taxpayers (see Table 8). The table shows the portion of small, medium, and large enterprises for nine main sectors.

Table 8
Proportion from GDP of Small, Medium and Large Enterprises

Sectors	Small	Medium and large enterprise
Agriculture, Livestock, Forestry and Fisheries	87%	13%
Mining	7%	93%
Processing industry	13%	87%
Electricity, gas and water supply	1%	99%
Building	44%	56%
Trade, hotels and restaurant	76%	24%
Transportation and communication	29%	71%
Finance, leasing & business service	17%	83%
Services	41%	59%

Note. MOCSME

The percentage from Table 8 will be utilized in separating operating surplus, as can be seen in Table 9.

Table 9
Taxable Income from Corporate Taxpayers

No	Sectors	Operating Surplus 2005	Medium and large enterprise portion	Taxable Income
1	Agriculture and livestock	78,546,583.00	13%	10,211,055.79
2	Forestry	15,693,429.00	13%	2,040,145.77
3	Fisheries	45,504,372.00	13%	5,915,568.36
4	Coal and metal ore mining	73,831,508.00	93%	68,663,302.44
.	.	.	.	.
.	.	.	.	.
34	Social and community service	15,311,550.00	59%	9,033,814.50
35	Unspecified sectors	907,664.00	59%	535,521.76

Note. Author's calculation by using MoCSME data and I-O Table BPS (2007).

Step 5: Calculate taxable income with average effective tax rate.

This can be seen in Table 10.

Table 10
Tax Potential based on IO (in million Rupiah)

No	Description	Taxable Income	Effective Tax Rate	Tax potential
1	Agriculture and livestock*	10,211,055.79	2.65%	271,015.23
2	Forestry	2,040,145.77	0.73%	14,831.78
3	Fisheries	5,915,568.36	0.07%	3,897.94
4	Coal and metal ore mining	68,663,302.44	6.64%	4,560,883.21
5	Crude oil, natural gas, and geothermal mining	144,250,604.61	4.48%	6,464,061.65
.	.	.	.	.
.	.	.	.	.
33	General government and defense	-		-
34	Social and community service	9,033,814.50	16.48%	1,489,148.03
35	Unspecified sector	535,521.76	6.11%	32,735.17

Note. Author's calculation by using MoCSME data and I-O Table BPS (2007).

Revenue Potential

Table 11 describes the result of potential tax revenue for year 2005 compared to tax revenue actually collected in the same year. From the result it can be stated that Indonesia's tax coverage rate is low. The tax revenue covers only 59% of the potential value. There is still extensive space for increasing the revenue.

Table 11
Tax Potential and Revenue 2005 (in million Rupiah

Sector	Description	Potential 2005	Revenue 2005	Tax gap 2005	ICR (%)
1	Agriculture, livestock, forestry and fisheries	3,723,039.09	1,822,560.00	1,900,479.09	49%
2	Oil and gas mining (mining services and oil and gas)		483,790.00	(483,790.00)	
3	Non oil and gas mining	4,560,883.21	1,648,380.00	2,912,503.21	36%
4	Quarrying	65,797.88	4,430.00	61,367.88	7%
5	Processing industry	24,116,680.45	14,955,880.00	9,160,800.45	62%
6	Electricity, gas and water supply	2,559,622.36	1,061,640.00	1,497,982.36	41%
7	Construction	984,831.87	375,160.00	609,671.87	38%
8	Trade, hotel and restaurant	6,612,660.05	3,319,470.00	3,293,190.05	50%
9	Transportation and communication	6,859,086.86	5,950,010.00	909,076.86	87%
10	Financial, real estate and service company	20,911,174.99	13,092,870.00	7,818,304.99	63%
11	other services	4,263,366.04	1,618,820.00	2,644,546.04	38%
12	Activity undefined	32,735.17	70,670.00	(37,934.83)	216%
	Total	**74,689,877.98**	**44,403,680,00**	**30,286,197.98**	**59%**

Note. Author's calculation.

Income Coverage Ratio

Moreover, for years 2006-2008, see appendix 1, corporate income tax revenue is still below potential. From an income coverage ratio perspective, the realization of revenue for years 2006-2008 reached an average of 60%. The slight increase in ICR illustrates that tax revenue is more optimal from year to year.

Tax Potential per Sector

As can be seen in Table 12, there is tax potential for year 2009-2010 from 12 sectors. The largest is the processing industry which contributes 33% of the total potential, and the smallest is from activity undefined. Meanwhile, oil and gas mining is not an object of corporate income tax since it has special account in oil and gas income tax. There are limitations in this study as other factors outside of final demand are considered constant. This is also limitation of Input-Output as a tool of analysis.

Table 12
Tax Potential for Year 2009-2010

No	Description	Potential 2009	Potential 2010	%
1	Processing industry	45,781,417.16	49,786,191.98	33%
2	Financial, real estate and service company	39,696,310.37	43,168,784.45	29%
3	Transportation and communication	13,020,810.24	14,159,818.52	9%
4	Trade, hotel and restaurant	12,553,010.78	13,651,097.84	9%
5	Non oil and gas mining	8,658,061.31	9,415,433.81	6%
6	other services	8,093,275.47	8,801,242.76	6%
7	Agriculture, livestock, forestry and fisheries	7,067,556.95	7,685,798.50	5%
8	Electricity, gas and water supply	4,859,007.62	5,284,054.13	4%
9	Construction	1,869,535.85	2,033,075.35	1%
10	Quarrying	124,906.10	135,832.38	0%
11	Activity undefined	62,142.13	67,578.08	0%
12	Oil and gas mining (mining services and oil and gas)			
	Total	137,981,010.31	150,051,035.90	100%

Note. Author's calculation.

Meanwhile, for years 2009 and 2010, there are six big sectors for tax potential as follows:

- Processing industries
- Financial, real estate, and services companies
- Transportation and communication
- Trade, hotel and restaurant
- Non oil and gas mining
- Other services

Together the "big six" will cover 93% of revenue. It is believed that securing these sectors will make safe tax revenue in the future and will increase tax ratio.

Meanwhile, processing industries can be broken down to the big six as well, as follows:
- Manufacture of transport equipment and its repair
- Manufacture of chemicals

- Manufacture of food processing and preserving
- Manufacture of cigarettes
- Manufacture of paper, paper products, and cardboard
- Manufacture of machine, electrical machinery and apparatus
  For details see Appendix 2.

Conclusion and Recommendation

Conclusion

From data processing it can be concluded as follows:

It can be stated that the coverage rate of corporate income tax in Indonesia is low. It varies between 59-70%. Sectors that have the biggest potential for corporate income tax for years 2005–2008 are:

- Processing industries
- Financial, real estate and services companies
- Transportation and communication
- Trade, hotel and restaurant
- Non oil and gas mining
- Other services

These industries can become major contributors to collections of corporate income tax. The estimated potential of the six sectors can be aggregated if the contributions amount to more than 93% of the total estimated revenue potential.

The figure of the coverage ratio of income tax has fluctuated each year. However there is an average of 40% more potential income tax that has not been collected by the tax authority.

The number of registered corporate taxpayers of around 8 million is much lower than about 48 million estimated business units in Indonesia. A dominant 89.75% of Indonesia business units are micro and small enterprises of which the majority is not legal entities; hence they are not registered taxpaying companies.

Recommendations

The tax authority might make improvements as follows:

First, optimize the effort for tax collection because there is still indication of the wide of coverage ratio gap based on the Input-Output analysis. This optimization effort can be made through the expansion of the tax base and socialization of taxation to a broader community that eventually to increases tax revenue.

Second, improve the system of taxpayer information to collect data so that intercompany transactions may be known

Last but not least, in calculating tax potential, the tax authority not only utilizes internal data, but also analyzes economic data of which the Input-Output Table can be one alternative.

References

Amusa, A. 2004. A macroeconomic approach to estimating effective tax rates in South Africa. South African Journal of Economic and Management Sciences, 7(1), 117-131. Retrieved April 23, 2010, from http://www.up.ac.za/dspace/bitstream/2263/3117/1/Amusa-Macroeconomics (2004).pdf

Bahl, R.W., & Bird, R.M. 2008. Tax policy in developing countries: Looking back-and forward. National Tax Journal, 41(2), 279-301.

Basri, Faisal. 2009. Economic notes on one decade after crisis [in Bahasa Indonesia]. Edisi Pertama. Jakarta: Erlangga Press.

Biro Pusat Statistik. 1999. Theory framework and analysis input output table. [in Bahasa Indonesia]. Edisi Kedua. Jakarta.

Biro Pusat Statistik. 2007. 2005 Indonesian input output table [in Bahasa Indonesia].. Jakarta.

Biro Pusat Statistik. 2007. Profile analysis of company / business registration: Results of the Indonesian 2006 economic census [in Bahasa Indonesia]. Jakarta.

Badan Pusat Statistik 2010. Gross domestic product at current market prices by industrial origin (billion Rupiahs). Retrieved May 18, 2010 from http://dds.bps.go.id/eng/tab_sub/view.php?tabel=1&daftar=1&id_subyek=11&notab=1

Brondolo,J., Silvani, C., Borgne, E. L., & Bosch, F. 2008. Tax administration reform and fiscal adjustment: The case of Indonesia (2001-07) (IMF Working Paper 08/129). Washington, DC: IMF. Retrieved May 29, 2010, from http://www.imf.org/external/pubs

Clausing, K.A. 2007. Corporate tax revenues in OECD countries. International Tax and Public Finance, 14(2), 115-133.

DGT hunts for new 17 million Tax Identification number [in Bahasa Indonesia]. Kompas Senin, January 19, 2009.

DJP. 2009. Laporan tahunan 2008. [Annual report of DGT for year 2008] (in Bahasa Indonesia). [Sunset policy]. Retrieved May 29, 2010, from http://www.pajak.go.id

Gaetan, N. 2001. Computing effective corporate tax rates: Comparisons and results (Munich Personal Repec Archive Paper No. 3808). MPRA: Munich. Retrieved May 11, 2010, from http://mpra.ub.uni-mueanchen.de/3808/

Gordon, R., & Li, W. 2009. Tax structures in developing countries: Many puzzles and a possible explanation. Journal of Public Economics, 93(7-8), 855-866

Herdianto, W. N. 2009. Indonesia's potential corporate income tax (Policy paper). National Graduate Institute for Policy Studies (GRIPS), Tokyo, Japan

Ikhsan, M., Triadi, L., & Syahrial, S. 2005. Indonesia's new tax reform: Potential and direction. Journal of Asian Economics, 16, 1029-1046.

James, S., & Nobes, C. 2000. The economics of taxation (7th ed). Harlow: Prentice Hall.

Mazur, M. J., & Plumley, A. H. 2007. Understanding the tax gap. National Tax Journal, 60(3), 569-576.

Ministry of Finance. 2009. Indonesian state budget. Retrieved November 24, 2009, from http://www.fiskal.depkeu.go.id/webbkf/apbn/

Miller R. E., & Blair P. D. 2009. Input-output analysis. [Foundation and extension.] (2nd ed.) Cambridge: Cambridge University Press.

MoCSME Indonesia. 2009. Gross domestic product at current market prices by small, medium and large enterprise. (billion Rupiahs).

Nazara, S. 2005. Input-output analysis (2nd ed.) [in Bahasa Indonesia]. Jakarta: LP FE UI.

Nota keuangan perubahan [States memo on fiscal matter] 2010. Retrieved May 25, 2010 from: http://www.anggaran.depkeu.go.id/Content/10-03-08,%20 Nota%20Keuangan%20dan%20RAPBN-P%202010.pdf

Noveriyanto, I. 2005. Estimating non-oil and gas income tax I-O table [in Bahasa Indonesia] (Master's thesis). Universitas Indonesia, Jakarta.

Panjaitan, F. P. 2005. An analysis of personal income tax compliance rate in Indonesia for the year 1996-2004 (Master's thesis). Hitotsubashi University, Tokyo.

Poirson, H. 2006. The tax system in India: Could reform spur growth? (IMF Working Paper WP/06/93). Retrieved on April 23, 2010, from www.imf.org/ external/pubs/ft/wp/2006/wp0693.pdf

Rosen, H., & Gayer, T. 2008. Public finance (8th ed.,international edition). Boston: McGraw Hill.

Setiyaji, G., & Amir, H. 2005. Evaluasi kinerja system perpajakan Indonesia [Evaluation of Indonesia tax performance]. Jurnal ekonomi universitas indonusa esa unggul. Indonusa esa unggul. Retrieved June 23, 2010, from http://gsetiyaji.files.wordpress.com/2007/09/jurnal-ekonomi-indonusa.pdf

Uppal, J. S. 2000. Taxation in Indonesia (2nd ed.). Yogyakarta: Gadjah Mada University Press.

Uppal, J. S. 2003. Tax reform in Indonesia. Yogyakarta: Gadjah Mada University Press.

Woroutami, A. D. 2006. Penghitungan potensi penerimaan pajak penghasilan (PPh) di Indonesia [Calculating Indonesia's Income tax]. Jurnal Kebijakan Ekonomi,

Appendices

Appendix 1
Tax Potential and Tax Revenue 2006-2008

Tax Potential and Tax Revenue 2006

Sector	Description	Potential 2006	Revenue 2006	Tax gap 2006	ICR (%)
1	Agriculture, livestock, forestry and fisheries	4,321,709.37	1,720,310.00	2,601,399.37	40%
2	Oil and gas mining (mining services and oil and gas)		1,393,970.00	(1,393,970.00)	
3	Non oil and gas mining	5,294,279.90	1,469,000.00	3,825,279.90	28%
4	Quarrying	76,378.28	13,250.00	63,128.28	17%
5	Processing industry	27,994,677.78	14,890,420.00	13,104,257.78	53%
6	Electricity, gas and water supply	2,971,213.24	1,714,790.00	1,256,423.24	58%
7	Construction	1,143,194.27	384,570.00	758,624.27	34%
8	Trade, hotel and restaurant	7,675,985.45	3,978,840.00	3,697,145.45	52%
9	Transportation and communication	7,962,038.09	7,299,610.00	662,428.09	92%
10	Financial, real estate and service company	24,273,722.54	14,727,670.00	9,546,052.54	61%
11	Other services	4,948,921.48	1,404,030.00	3,544,891.48	28%
12	Activity undefined	37,999.02	55,730.00	(17,730.98)	147%
	Total	**86,700,119.42**	**49,052,190.00**	**37,647,929.42**	**57%**

Tax Potential and Tax Revenue 2007

Sector	Description	Potential 2007	Revenue 2007	Tax gap 2007	ICR (%)
1	Agriculture, livestock, forestry and fisheries	5,110,862.95	3,424,630.00	1,686,232.95	67%
2	Oil and gas mining (mining services and oil and gas)		1,477,310.00	(1,477,310.00)	
3	Non oil and gas mining	6,261,026.98	3,460,290.00	2,800,736.98	55%
4	Quarrying	90,325.12	61,960.00	28,365.12	69%
5	Processing industry	33,106,567.14	18,698,030.00	14,408,537.14	56%
6	Electricity, gas and water supply	3,513,763.27	3,116,730.00	397,033.27	89%
7	Construction	1,351,944.04	579,040.00	772,904.04	43%
8	Trade, hotel and restaurant	9,077,637.17	4,088,090.00	4,989,547.17	45%
9	Transportation and communication	9,415,923.65	7,585,530.00	1,830,393.65	81%
10	Financial, real estate and service company	28,706,157.34	21,354,220.00	7,351,937.34	74%
11	Other services	5,852,605.36	1,611,490.00	4,241,115.36	28%
12	Activity undefined	44,937.72	48,760.00	(3,822.28)	109%
	Total	**102,531,750.75**	**65,506,080.00**	**37,025,670.75**	**64%**

Appendix 2

Table 1
Breakdown of Processing Industries sectors' Tax Potential for year 2009-2010

Breakdown of Processing Industries

No	Description	Tax potential 2009	Tax potential 2010	%
1	Manufacture of transport equipment and its repair	12,260,744.66	13,333,265.44	27%
2	Manufacture of chemicals	7,935,140.39	8,629,274.65	17%
3	Manufacture of food processing and preserving	6,498,826.59	7,067,317.88	14%
4	Manufacture of cigarettes	4,483,810.52	4,876,036.29	10%
5	Manufacture of paper, paper products and cardboard	2,811,852.71	3,057,822.31	6%
6	Manufacture of machine, electrical machinery and apparatus	2,772,850.15	3,015,407.97	6%
7	Manufacture of rubber and plastic wares	2,003,565.32	2,178,829.18	4%
8	Manufacture of textile, wearing apparel and leather	1,700,731.78	1,849,504.98	4%
9	Manufacture of non ferrous basic metals	1,608,449.81	1,749,150.55	4%
10	Manufacture of basic iron and steel	1,462,035.26	1,589,928.24	3%
11	Manufacture of furniture	767,455.70	834,589.64	2%
12	Manufacture of fabricated metal products	742,477.58	807,426.54	2%
13	Manufacture of bamboo, wood, and rattan products	625,838.32	680,584.15	1%
14	Coal industry and oil refinery	107,638.38	117,054.16	0%
		45,781,417.16	49,786,191.98	100%