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Quarterly Gross Domestic Product >> Chain Volume Measures

สำนักงานคณะกรรมการพัฒนาการเศรษฐกิจและสังคมแห่งชาติ

Office of the National Economic and Social Development Board

Preface

The improvement on the compilation of Thailand's Quarterly Gross Domestic Product (QGDP) this time covers both nominal and real terms, and the revised series traces back to the first quarter of 1993. The revision is done on both production and expenditure sides, and is congruent with the annual national income that was revised and published in January, 2012. Important advancement on this series includes adding important economic activities, updating indicators, and upgrading compilation method in accordance to the most recent international framework of System of National Accounts. In particular, the chained index is used for the compilation of QGDP in real terms, i.e. Chain Volume Measures (CVM), instead of the current method that uses fixed base year. CVM is acknowledged, on both theoretical and empirical grounds, to be superior to the fixed base method for its accuracy in reflecting the actual economic activities. Many developed countries have already converted to use CVM.

The values of Thailand's QGDP at current prices in the new series are higher than the existing series throughout the whole series. On average, between Q1/1993 to Q4/2014, the total of 88 quarters, QGDP increases by 5.6 percent each quarter. The main factor for the increase is the broadened coverage of data to include new economic activities. As a result of the increase in current prices values, the growth of real term QGDP using CVM is calculated higher by 0.1 percent each quarter on average. However, the directions of economic growth measured by the two methods are similar.

This document accompanies the seminar to introduce the new time series of Thailand's QGDP in Chain Volume Measures (1993-2014), Preliminary. There are two sections. The first section covers backgrounds, concepts, changes on Thailand's QGDP compilation method, and conclusion on the results. The second section provides statistical tables. The objective of this seminar is to publicize the new series as well as for relevant agencies and data users to give opinions and suggestions before the official public dissemination of the series.

The NESDB would like to express its gratitude to relevant agencies and individuals, both in public and private sectors, who have provided data and suggestions that have deeply enriched the improvement of this new QGDP series. We hope that the new series will be useful and enhance economic analysis, development strategies and policy planning, and so forth.

Office of the National Economic and Social Development Board

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Executive Summary

Quarterly Gross Domestic Product (QGDP) of Thailand is compiled according to the international standard and has achieved the Special Data Dissemination Standard (SDSS) since June 1999. In particular, the short term or quarterly data must be disseminated within three months after a given quarter. Presently, QGDP of Thailand is disseminated within 8 weeks, or every third Monday of the second month after a given quarter. QGDP of Thailand is compiled on two sides: the production and expenditure sides, calculated at both current prices value and constant prices value with 1988 as a base year. Meanwhile, Thailand's annual national income is compiled on all three sides: production, expenditure and income.

The improvement on quarterly data this time is an important mission continued from the change of annual national income to chained volumes that the NESDB has upgraded the compilation method and first publicized the series of 1990-2010 in February 2012. We have continued to publish national income in chained values, with the latest one in 2013 (National Income of Thailand 2013, Chain Volume Measures). The main objective of the change in QGDP compilation to CVM is so that the short term, quarterly, data system is congruent with annual data. Moreover, it is to improve the quality of QGDP as macroeconomic indicators, so that it effectively reflects the true economic activities.

QGDP using CVM is compiled under the framework by International Monetary Fund (Quarterly National Accounts Manual: concepts, Data Sources, and Compilation IMG, 2001). The technique used to link quarterly data between years is annual overlaps technique. The procedure is as follows:

1) Calculate values at current prices both for quarter and annual data.

2) Calculate average weighted prices of each year in order to find values of output at average current prices and previous year prices in the next step

3) Calculate values of each quarter and year of the current year using previous year weighted prices.

4) Use the annual overlaps technique to calculate average quarterly output value of the previous year using average weighted prices of that year.

5) Calculate the direct index which is the ratio of the value calculated in step 3) to the value calculated in step 4) using annual overlaps. The direct index is the ratio of a given quarter value of the current year to the average value of the previous year per quarter.

6) Create the chain index from direct indexes by using year 2002 as a reference year, for Thailand. That is setting the index of year 2000 equal to 100.

7) Calculate values in chain volume measures for each quarter and year by using chain index and the values of GDP at current prices of year 2002 as the reference year.

8) Calculate seasonally adjusted QGDP by using X-12 program.

Besides adjusting calculation method of the real term values, the improvement on QGDP this time follows the changes of annual national income to CVM as well. This includes increasing coverage of data, improving indicators and updating accounting method to comply with the System of National Accounts 2008. For this reason, three main factors contributes to the differences between the new series of QGDP using CVM and the existing series using fixed based year:

1) QGDP is different as a result of the changes in annual values. Because QGDP values need to be adjusted so that the sum of each activity in four quarters is equal to the annual value of that activity. Therefore, when the annual values of the two series differ, the quarter values inevitably differ.

2) The addition of new economic activities and improvement of indicators for QGDP calculation is to comply with the changes in annual national income compilation.

3) As a result of the calculation method change from fixed weighted volume measures to CVM, the price structures used in calculation change every year.

The change in QGDP compilation this time, therefore, covers both values at current prices and at constant prices or the real term value, and both for production and expenditure sides. The changes go all the way back to Q1 of 1993. The next part concludes the main result of the new series from Q1/1993 to Q4/2014.

QGDP at current prices, production sides

The two series move closely together in directions. However, the values in the new series are overall higher. The differences become more evident after economic recovery in 1997, and after 2000 the QGDP of overall series increased by approximately 105.5 billion baht per quarter, or 5.6% of QGDP (Table 1, Appendix.) The main reason is from the addition of new economic activities in the account to more accurately reflect Thai economy.

CVM of QGDP, Production side

The growth rate of the new series is at 3.8 percent, close to the average growth rate of 3.6% in the existing series. The directions of YOY growth are the same in both series. However, there are distinct differences in some part of the series, for example, between 1995 and 1998, and 2001 and 2012.

CVM of QGDP, Expenditure side.

The YOY growth rate of QGDE in the new series both increases and decreases from the 1988 prices series. The overall growth trends in two series are consistent, while there are differences in some quarters.

Private consumption expenditure (PCE) in chained values from Q1/1993 to Q4/2014 expands at the rate of 3.4% on average, higher than the expansion of 3.1 % on average in the existing series. Government consumption expenditures (GCE) in chained values grow approximate 5.5% per quarter, higher than the growth of 4.9% on average in the existing series. Expenditures on gross fixed capital formation in chained values expand at 1.8% on average, in comparison with the growth rate of 1.6%. The growth of imports and exports in chain volumes record at 7.3% and 6.7%, in comparison to 6.6% and 5.5%. We can see that the growth rates of chained values of important components in expenditures on average are higher than that of the existing series throughout the whole series. This is a result of significant adjustment in the annual values.

Contents

Chapter 1
Introduction

1.1 Background

National Account Office under the Office of National Economic and Social Development Board (NESDB) is responsible for compilation and publication of national income of Thailand both annually and quarterly. Besides national income, it is also responsible for producing gross regional product, gross provincial product, input-output matrix (IO Table), the flow of funds accounts as well as other statistics or accounts relevant to the system of national accounts. These statistics and accounts are designed to present a statistical picture of the structure of the economy. They offer a comprehensive view of the economy and are key instruments in policy making for public sectors and business strategy planning for private sectors.

The compilation of national income, one of the main accounts in the system of national accounts, is measuring of the total market value of production that flows through the economy in terms of production, expenditures on goods and services, and returns on production factors. There are three ways of measuring national income: **(1) production approach** or Gross Domestic Product (GDP) in the country which measures the values of final goods and services in the economy; **(2) expenditure approach**, measuring total expenditures in the economy, including household and government expenditures, investments and external sector; and **(3) income approach**, measuring income of owners of production factors, which is the returns from economic activity. The NESDB compiles and publicizes national income of Thailand using all three approaches mentioned above both annually.

In the past, the NESDB compiled national income of Thailand to measure economic growth using two prices: 1) current market prices, and 2) fixed-weighted prices or constant prices. National income is measured using both prices in production and expenditure approaches, while it is only measured in current prices in income approach. The value of national income in current prices shows the market value of economic activity that occurs in a given period. Therefore, national income at current prices is useful for analysis of changes in the values of economic activity.

Comparing economic activities in current prices convolutes the source of changes in values, because values measured in current prices also include changes in values as a result of price changes. On the other hand, measuring national income in real terms using constant prices rid of the variation in prices, therefore reflect merely the changes in volumes. National income in real terms is necessary for monitoring the actual changes in volumes of economic activity. Therefore, rates of change of national income at constant prices are crucial for economic

evaluation. The rate of change at constant prices is a more accurate indicator of quantitative changes in economic activity. A crucial step in national income compilation at the constant prices is selecting the base year. The structure of goods and services in base year will be used to weigh prices for later periods. However, technological progress, especially in telecommunication services, continuously change production methods, distributions, qualities and types of goods and services, as well as consumption and investment patterns. The reference year will need to be changed periodically in order to reflect the economic structure at a given time. Many countries change their reference years every five to ten years.

For Thailand, the reference years have been changed four times, in 1956, 1962, 1972 and 1988. The last base year, 1988, was at the beginning of the upturn of the economic cycle in 1987 to 1996. In the mid-1997, there was an unprecedented financial crisis in Thailand. The economic was in recession during 1997 to 1999 and recoiled back during 2000 to 2001. Thai economy enters the new economic cycle in 2002. As we can see, Thailand's national income fixed base is at 1988 prices, the price structure of the previous economic cycle.

The NESDB recognizes the necessity to adjust the fixed-weighted prices to accurately reflect the current economic structure. Meanwhile, the System of National Accounts 1993 (SNA93) or the latest SNA 2008 have proposed Chain Volume Measures (CVM) for the compilation of national income, using real prices of a previous year in place of fixed-weighted prices. In this framework, the price structure will always be up to date as the reference year is updated annually. Presently, leading countries especially in OECD such as the US, Canada, Australia, Japan, etc. have already converted to use CVM in place of the fixed-weighted volume measures. In 2003, the NESDB started planning to change the base year of national income of Thailand annually in 3 phases

Phase 1 Data evaluation in order to select a base year and proper compilation method for Thai Economy, between the fixed-weighted volume measures and Chain Volume Measures. Berra limited company was the consultant for the study. The study reveals that 1) year 2003 is the appropriate year for the next base year or reference year for CVM; and 2) measuring national income using Chain Volume Measures is more suitable for Thailand.

Phase 2 Planning and program development to efficiently compile national income with current prices and CVM. The compilation in this framework is more complicated than fixed-weighted volume measures. Moreover, to increase coverage, data sources are reevaluated and improved for the new time series.

Phase 3 Compilation of the new national income time series since 1990 until present using CVM. It also incorporates new economic activities into the accounts.

Compilation of national income using CVM in practice faces many difficulties, resulting in a delay of public dissemination of the new series. The main challenges include the complicated calculation method, the addition of new economic activities, and the length of the series. The extended length of the series leads to imbalance in data between the production side and the expenditure side. The statistical discrepancy was too high, some up to 10% of GDP, which exceeded the set limit of 2.5% by the NESDB. The reconciliation of the two sides by conventional method was unsuccessful. In order to appropriately reconcile the discrepancy in accordance with the international standard, an updated Supply and Use Table (SUT) was needed. The production of a new SUT with data from 2007 was completed in 2010. With the new SUT, the reconciliation of the two sides was successful, resulting in statistical discrepancy less than 2.5% for the whole series.

The NESDB publicized CVM of the annual national income series from 1990 to 2010 first time in January 2013. The latest CVM series was up to year 2011 and published in 2012. The NESDB would like to develop the quarterly national income using CVM so the series is congruent with annual national income series. The NESDB has hired the Economic Research and Training Center, Faculties of Economics, Thammasat University as a consultant for the project to develop the system for processing quarterly national income. Currently, the preliminary result for quarterly GDP in CVM from Q1/1993 to Q4/2011, both production and expenditure sides, are successfully generated and are during the reconciliation process.

1.2 Objectives

The purpose of this seminar is to propose the conceptual framework and calculation method of CVM for the quarterly GDP. The adjustments are made for both current prices and real terms in CVM series, from Q1/1993 to Q4/2011 (76 quarters). This seminar provides a space for relevant agencies for suggestions and opinions before the public dissemination of the series.

This document summarizes the conceptual framework and backgrounds to the adjustment to the annual national income series, and the preliminary results of the quarterly GDP, CVM series that is coherent with the annual series.

Chapter 2
Concepts and Introduction of Chain Volume Measures in Quarterly National Income

2.1 Compilation of national income in real terms

Calculating national income real terms, both the fixed weighted price measures and Chain Volume Measures (CVM), is essentially the computation of national income in real terms that try to get rid of the changes in prices each year. The two methods are different and we need to choose the method that best reflects our economy. The NESDB investigates the two methods in two stages: theoretical and empirical investigation. The NESDB have prepared data and compile the series using two methods with the same data, in order to compare the pros and cons of fixed-weighted volume measures and chain volume measures.

2.1.1 Fixed-weighted volume measures

To generate a series using fixed-weighted volume measures, one year is selected as a reference year and the structure of goods and services in that year is used as weights for other years. In other words, national income in each year will be calculated using the price from the base year to get rid of the variations in prices in order to compare the volume changes in the series. There are 3 methods generally used in fixed-weighted volume measures:

Base year valuation of quantities: calculation of real terms values using the volumes of goods in each year multiply with the prices of the goods in the base year.

Price deflation is adjusting the value of current prices with the price indexes of relevant goods and services in order to find values at the fixed price in base year.

Volume extrapolation is estimation of fixed price value in each year by multiplying values in base year with relevant quantity indexes in each year.

Concepts and principles in the preparation of national income, a fixed-price, fixed base year, as presented above may lead to a few questions as to why the base year needed to be changed several times, or whether the base year is reflective of the current economic

climate. Using the price structure of goods and services from the base year may not be reasonable for two reasons:

- New qualities goods: the quality of the same products may improve. The same amount of money could afford better quality goods, whence the price per unit in the base year should be adjusted.
- New products: new goods and services are introduced in the economic system after the base year. In computing national income, new items must be added for completion, therefore there must be an adjustment of base-year prices.

2.1.2 Chain Volume Measures

National income in real terms using CVM is the measurement of the quantitative changes in productions or expenditures using a constant price from a consecutive year instead of using prices from a base year that is further away. This is a pairwise "direct index". For instance, 1990 is the beginning year of CVM national income series. The value of year 1991 is calculated using 1990 prices, and the value is compared to the value of 1990. Similarly, 1992 value is calculated using 1991 prices, and the value is compared to 1991 value, and so forth. This measurement which values the quantities at the prices of the prior year is known as "Laspeyres" Volume Measure. But since the national income must be a time series, the pairwise rate are chained into a time series by "Chain linking (cumulating period–to-period growth), creating a chain index. The chain index allows the comparison of growth in the series even though the price structure of goods and services is not constant throughout the whole series.

Summary of calculation methods for national income in real terms using CVM, Laspeyres Volume Measures

Step 1	Calculate value at previous year prices (PYP) by using this year quantity multiply by previous year prices $PYP_t = Q_t \times P_{t-1}$ ***When Q is quantities and P is prices***
Step 2	Calculate value at previous year (PV) using last year quantities multiply by previous year prices $PV_{t-1} = Q_{t-1} \times P_{t-1}$

Step 3	Calculate direct index (DI), using PYP in step 1 divide by PV in step 2 $DI_t = \frac{PYP_t}{PV_{t-1}} = \frac{Q_t \times P_{t-1}}{Q_{t-1} \times P_{t-1}}$
Step 4	Calculate chain index (CI) or chain linking by multiplying direct index in step 3 from each year together, with the reference year index equal to 100. $CI_{5,1} = DI_{5,4} \times DI_{4,3} \times DI_{3,2} \times DI_{2,1}$
Step 5	Calculate Chain Volume Measures (CVM). The CVM value of the reference year is equal to the current price value of that year, and link the value with other year using chain index in step 4.

2.1.3 What is the limitation of fixed-weighted volume measures?

Fixed-weighted volume measures rely on the price structure of goods and services in the reference year. As time passes, the structure of the economy inevitably changes, in terms of both quality and invention of new economic activities. Theoretically, using constant prices to measure economic growth can lead to 2 problems:

- Substitution bias. As a result of substitution bias, economic growth that is calculated using constant prices is biased upwards. This is because the goods that are cheaper (more expensive) will be produced or consumed more (less), as a result of the substitution effect. Consumers will substitute away from more expensive products with cheaper alternatives. Therefore, when we use prices from a much earlier base year, the values will be weighted too much on the products that are cheaper. The further away the base year from the current year, the more the price structures diverge. The growth will, consequently, be further away from the true value.
- Laspeyres-Paasche gap: Laspeyres calculation is using a price structure in the past as the reference year, while Paasche calculation is using a price structure in the future (of later year) as the reference year. Theoretically, Laspeyres calculation is biased upward while Paasche is biased downward. The difference between the two calculations is called Laspeyres-Passche gap. Moreover, every time that a reference year is changed, there is a difference in economic growth using different base years.

➢ Introduction of new products and improvement in quality: Besides the discrepancy from the changing price structure, fix-weighted Laspeyres volume index also do not allow for the introduction of new products and improvement in quality into the current year calculation.

2.1.4 What is the limitation of Chain Volume Measures?

Chain volume index, theoretically, can give more accurate measurement of economic growth, because the chain index incorporates the most current price structure in the calculation of the value every year. This reduces substitution bias. Moreover, the chain index allows for addition of new economic activity at any point in the series. These are the main reasons that SNA93 advocates CVM over fixed-weighted volume measures.

However, the chain index has a drawback—it lacks the additive property. The sum of the CVM for the components of some aggregates, such as total consumption expenditure or GDP, may differ from the CVM of the total.

2.2 Comparison between annual national income in chain volume measures and fixed weight volume measures

From a theoretical perspective, the chain volume measures of national income are superior to the fixed weight volume measure, except for its non-additive property. The non-additivity may cause difficulty in finding an economic structure as well as in weighting variables for economic forecasting. National income is important information that many agencies use to monitor and analyze economic climates; therefore, changing the compilation method of national income should be empirically justified as well. The NESDB with Berra Company Limited have conducted a study together to investigate the pros and cons of CVM compilation method for Thai Economy data. The study uses existing data from the NESDB from 1993-2003. The results can be concluded as follows:

➢ National income in constant prices using 1988 prices leads to substitution bias. If using 1988 as a base year, GDP growth between 1993 and 1996 is 3.58%. However, if the base years are between 1993 and 1996, GPD growths of 1993-1996 are between 3.02 and 3.18; if the base years are between 1997 and 2003, GPD growths are between 2.74 and 2.90 (Table 2.1). Moving the base year to later years results in smaller GDP growths.

Table 2.1 Year-on-year growth rates of GDP, calculated using Fixed-weighted volume measures with varying base years.

Base Year	1994/93	1995/94	1996/95	1997/96	1998/97	1999/98	2000/99	2001/00	2002/01	2003/02	Average
1988	8.99	9.24	5.90	-1.37	-10.51	4.45	4.75	2.17	5.33	6.87	**3.58**
1993	8.78	8.58	5.38	-1.85	-10.33	3.86	4.34	1.78	5.24	6.07	**3.18**
1994	8.60	8.45	5.34	-1.89	-10.16	3.69	4.40	1.86	5.10	6.09	**3.15**
1995	8.44	8.14	5.25	-1.98	-9.84	3.59	4.39	1.97	4.94	5.87	**3.08**
1996	8.34	8.07	5.01	-2.14	-10.02	3.71	4.26	2.19	4.89	5.91	**3.02**
1994	8.36	7.78	4.74	-2.33	-9.99	3.47	4.23	2.15	4.71	5.84	**2.90**
1998	8.44	7.67	4.72	-2.19	-10.01	3.54	4.20	2.00	4.63	5.96	**2.90**
1999	8.47	7.56	4.44	-2.56	-10.31	3.15	3.83	2.18	4.88	5.70	**2.74**
2000	8.54	7.64	4.38	-2.47	-10.24	3.27	3.95	2.13	5.05	5.94	**2.82**
2001	8.53	7.61	4.47	-2.43	-10.25	3.36	3.73	2.18	5.08	5.90	**2.82**
2002	8.38	7.58	4.48	-2.43	-10.25	3.53	3.46	2.23	5.05	5.96	**2.80**
2003	8.45	7.62	4.50	-2.52	-10.18	3.48	3.62	2.18	5.03	5.81	**2.80**

➢ Comparing Laspeyres-Paasche gap between national income calculated using CVM and fixed-weighted volume measures, Chain Volume Measures are found to reduce the gap in 39 cases out of 45 case studies.

➢ Theoretically, Chain Fisher Volume Measures are the best index for national income. Comparing GDP growth in 1993-2003 using fixed-weighted prices from 1988 and Chain Fisher Volume Measures resulted in average differences of 0.56% per year. Meanwhile, the average differences using Chain Fisher Volume Measures and Chain Laspeyres Volume Measures, whose calculation method is simpler, are only 0.07% per year (Table 2.2).

Table 2.2 Year-on-year GDP growth rates calculated using fixed – weighted index (base year 1988) and chain volume indexes

		1994/93	1995/94	1996/95	1997/96	1998/97	1999/98	2000/99	2001/00	2002/01	2003/02	Average
GDP	Fixed-weighted base year 1988	8.99	9.24	5.90	-1.37	-10.51	4.45	4.75	2.17	5.33	6.87	**3.58**
	Chain Fisher	8.69	8.29	5.13	-2.23	-10.00	3.35	3.89	2.16	5.07	5.89	**3.02**
	Chain Laspeyres	8.78	8.45	5.25	-2.14	-9.99	3.54	3.83	2.13	5.08	5.96	**3.09**

➢ The CVM of national income is non-additive. The difference between the sum of sub-items and the overall national income are approximately 1-2 percent per year.

Table 2.3 The differences between the sum of GDP sub-items and total GDP, calculated using chained index

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Production Approach ([Sum 4 digits – Total]*100/Total)											
Laspeyres	0.00	0.00	0.11	0.23	0.47	0.49	0.68	1.12	1.08	1.31	1.27
Paasche	0.00	0.11	0.37	0.59	0.91	0.92	1.24	1.61	1.52	1.81	1.74
Fisher	0.00	0.04	0.11	0.13	0.21	0.14	0.25	0.29	0.41	0.48	0.50

➢ System of National Accounts 1993 proposes 3 methods to deal with the non-additivity of CVM.

○ Method 1 Publicize the chain volume measures of national income without any adjustment. This method shows statistical transparency and points out to the users the drawback of this method. The users can use the statistics in analyses with their discretion in adjusting the statistics. In the case of Thailand, we have published CVM of national income without any adjustment.

○ Method 2 Distribute the differences from the non-additivity to different components. This method may distort the production quantities on the sub-item levels and adversely affects analysis on sub-items.

○ Method 3 Eliminate the differences, by making the aggregate statistics in each level equal to the sum of statistics of sub-items at each level. This method generally is not advisable, because it distort the quantities at aggregate levels. Moreover, the aggregate statistics become dependent on the statistical adjustment of sub-items. This defeats the purpose of using the CVM to improve the statistics at aggregate level.

2.3 Summary of data revision and compilation of annual national income in chain volume measures

After the study, the NESDB have published CVM of national income series from 1990 to 2010 for the first time in January 2012. On the other hand, the constant price series with 1988 base year have been compiled and published for more than 20 years. The NESDB has updated new economic activity periodically, both for small and major economic activities. For instance, the addition of petro chemical production in 1999 added 34.92 billion baht in values at constant prices. However, such addition is only sectoral improvement and did not

integrate the new activity into the whole system. The CVM annual income series was a significant improvement. It did not only change the calculation method from the constant prices to CVM, but also updated new economic activities, adjust definitions according to international SNA standards and update data sources. Moreover, the reconciliation process of the production and expenditure sides utilizes the updated Supply and Use Table from year 2007. As a result, this improvement does not only change GDP statistics in nominal terms, but also in real terms. Important improvement and changes can be summarized as follows.

2.3.1 Important improvements

- Increased coverage of economic activities in all the production, expenditure and income sides.

- Improvement in calculation methods and data sources. For instance, the production measurement of intermediary financial services is changed from using imputed service charge to using FISM. Value added at constant prices calculation of intermediary financial services is also changed from single deflation to double deflation. Moreover, parts of the households are counted as producers; therefore interests which were recorded as households' income-expense would be accounted as production factors as well.

- Improvement according to the latest international SNA framework. For instance, government investment in construction and repairs and total investment by the Ministry of Defense which were counted as government consumption expenditures were moved to investment sector.

2.3.2 Results of CVM national income 2010 in conclusion

➢ National income at current prices

Gross domestic product during 1990-2010 changed from the previous series by approximately 259 billion baht per year, or 4.7% of GDP. The growth rate of GDP at current prices in 1990-2010 both decreased and increased from the previous series, with changes of approximately 0.1% per year.

Expenditures on gross domestic product (GDE), or national income expenditure side at current prices from 1990-2010 approximately increased from the previous series by 214 billion baht per year, about 3.9% of GDE. The growth rate of GDE at current prices in 1990-2010 both decreased and increased from the previous series, with changes of approximately 0.2% per year.

- CVM of national income (with reference year at 2002)

The CVM of GDP in 1990-2010 growth rates changed from the constant price (1988) series approximately 0.1% per year. The directions of growth are consistent in two series, while the average GDP growth rate of the whole series increased slightly from 4.4% in constant prices to 4.5% in CVM.

The CVM of GDE in 1990-2010 changed from the constant price (1988) series approximately 0.2% per year. The average GDE growth rate of the whole series increased slightly from 4.3% in constant prices to 4.5% in CVM.

- GDP per capita

The adjustment of national income series leads to higher values of GDP at current prices. GDP per capita is higher for the whole series. In 2010, GDP per capita was 150,117 per person in the previous series, and increased to 160,556 per person in the new series.

Further details on the improvement and adjustment of national income of Thailand, CVM, can be found at “National Income of Thailand, Chain Volume Measures: 1990-2010 Edition.”

Chapter 3
Concepts and Compilation of Quarterly Gross Domestic Product in Chain Volume Measures

Besides the compilation of annual national income, quarterly gross domestic product (QGDP) compilation is also an important mission of the NESDB. QGDP statistics are important fundamental data for economic warning and short-term economic predictions. The compilation, evaluation and analysis of data for QGDP need to be timely and up to the standards like Special Data Dissemination Standard (SDDS) by International Monetary Fund (IMF) and the Report on the Observance of Standards and Codes (DATA ROSCs). Therefore, QGDP needs to be released within the next quarter or has time lag of no more than one quarter. Presently, the NESDB compiles QGDP using both expenditure approach and production approach with 1988 prices as a base year and publicizes QGDP on the third Monday of the second month in the next quarter.

Because the NESDB publicizes annual national income in Chain Volume Measures (CVM), QGDP statistics compilation should also switch from using the fixed weight volume measure to CVM for consistency. This chapter demonstrates the compilation of current prices of QGDP and the concept of Quarterly Chain Volume Measures (QCVM) for Thailand

3.1 Compilation of QGDP using fixed weighted volume measure (base year 1988)

The NESDB began to publicize QGDP in 1999. The QGDP series is reported starting with the first quarter of 1993 and ending with the latest quarter at a given time. Two important concepts in QGDP compilation are:

- Data should accurately reflect the growth of the economy.
- Data should be publicized timely, up to date, and followed the standard of Special Data Dissemination Standard (SDDS).

QGDP is compiled using both production and expenditure approaches at current prices and fixed base year.

The production approach classifies the production sector according to the International Standard Industrial Classification (ISIC) Rev.3 in the level of 4 digits, while the

expenditure approach mainly classifies data by expenditures codes according to Central Product Classification (CPC).

The process of GDP compilation needs to be speedy; there are 2 ways of compilation.

1) Direct calculation from detailed data, using the same calculation method as annual GDP.

2) Indirect calculation from related data by using statistical estimation.

(1) Extrapolation Method is an estimation of quarterly data from related economic indicators such as industrial output index.

(2) Commodity flow method adjusts incomplete data during the duration of QGDP compilation in production and expenditure approaches.

(3) Past Trend Adjustment Method uses trends from the past to adjust data in the case of sub-commodities.

Using indirect calculation, due to incomplete data, leads to differences between the sum of the values of QGDP and annual GDP. To reconcile the discrepancy, we employ a mathematic technique called "Denton Least Squares" using a processing program called The Canadian Bench Program and Extrapolation (Bench Program). It uses Denton Least Squares method to minimize the sum of the squares of differences between the ratio of actual values and estimated values, under the constraint that the sum of four quarters is equal to the annual value. Moreover, the annual value must be estimated independently from the quarterly values.

Besides the normal quarterly data, the NESDB also publicizes the quarterly seasonal adjusted data at current and constant prices using a processing program called "X-12" for seasonal adjustment.

Currently, National Account Office publicizes the report and data of QGDP on the third Monday of the second month in next quarter. It holds a press conference as well as distributing data through internet and hardcopy. Public dissemination consists of 2 parts:

- The first part is the report of quarterly economic analysis, by using the rate of sectoral economic expansion both for both production and expenditure sides.

- The second part is the report of QGDP in statistic tables, which is classified to 5 groups: Gross Domestic Expenditure, Gross Domestic Product, Household Expenditure, Fixed Capital Formation, and Government Expenditure. Each group will be provided with current market price tables, constant price (base year of 1988) tables, seasonal adjustment tables, and the tables of growth (year-on-year basis) in subcategories—the total of 20 main tables.

3.2 The concept of chain volume measures of QGDP

QGDP of Thailand presently is under the same framework of system of national account as annual national income. However, there is a matter of seasonality involved in QGDP. Moreover, data processing in QGDP is different from annual GDP due to the limitation of the data that needs indirect calculations. Therefore, it is necessary to adjust quarterly data to be consistent with annual data. The compilation of chain value of QGDP also differs from the compilation of chain value of annual GDP. The NESDB together with the consultant from the Economics academy services center, faculty of economics investigates the compilation in theory. This chapter will review to the compilation of chain volume measures of QGDP under the framework of chain volume measures of quarterly national Accounts by International Monetary Fund (Quarterly National Accounts Manual: concepts, Data Sources, and Compilation IMF, 2001).

The aforementioned document defined QNA as abbreviated for Quarterly National Accounts and ANA as Annual National Accounts. A good time series data of QNA should conform to ANA data and have the following properties:

1) The time series data should accurately reflect economic activity, both short term and long term, especially the turning point of business cycle.

2) Data should be comparable over the time, for example, a comparison with previous quarter, same quarter of the previous year or with many previous years.

3) Those data should be comparable over time, even with unequal length of time. For example, the comparison of the average of two previous quarters with the same

two quarters of many previous years, or the comparison of the average of two quarters with the previous year annual average, should be possible.

4) Data are comparable between short term and long term, for instance, the annual and quarterly data.

In principle, QNA and ANA compilation should be coherent and produce the same annual value. The congruency between QNA and ANA can be achieved by 2 methods: 1) to produce ANA data from QNA data. Or 2) to adjust the sum of quarterly values to equal an annual value, called "Benchmarking" in order to force the QNA to conform with ANA. In General, QNA and ANA are compiled separately by using many indexes. The sum of QNA data inevitably differs from ANA data. Currently, the distributed QNA of Thailand is compiled using both methods, depending on available data in each sector. Besides the congruency between data of QNA and ANA, chain volume measures also need chain link index calculation simultaneously in both series. We can conclude the concepts of CVM of QNA compilation as follow:

3.2.1 The weighted price structure in CVM of QNA

In general, an accurate quantitative measurement should measure the output at a given time of homogenous goods. The appropriate price measurement should be the weighted average as well, by using the output quantities as the weight for average calculation. For example, the annual output volume will be the sum of output quantities of each quarter in that year. So, a price measure of one goods should be the weighted average, using quarterly outputs as the weight to find the price average of the goods. Generally, the weighted average values will differ from non-weighted average of the price, especially for the basic goods. In countries with high inflation, the difference in quarterly prices leads to a clear difference between the weighted and the equal weighted averages. In QGDP compilation, the price structure is a crucial aspect of overall data evaluation.

Because the CVM compilation of Thailand mainly uses the Laspeyres index, this study will focus on Laspeyres methods. Calculations relevant to quarterly Laspeyres index calculation is concluded below.

The QNA calculation of fixed base year

- Given total values of goods in quarter *q* of year *y* in average prices of year 0, which is a base year, denotes $CP^{\bar{0}}_{q,y}$ and can be calculated by:

$$CP^{\bar{0}}_{q,y} = \sum_i \bar{p}_{i,0} \cdot q_{i,q,y}$$

given $\bar{p}_{i,0}$ is the weighted average price of goods *i* in year 0 by using quarterly output quantities as the weight. It is computed by $\bar{p}_{i,0} = \dfrac{\sum_q p_{i,q,0} \cdot q_{i,q,0}}{\sum_q q_{i,q,0}}$

when $p_{i,q,0}$ is the price level of a goods *i* in a quarter *q* of year 0 and

$q_{i,q,0}$ is a quantity of goods *i* in quarter *q* of year 0

$q_{i,q,y}$ is a quantity of goods *i* in quarter *q* of year *y*

- The Laspeyres volume index calculation using quarterly fixed-based method measures quantitative change of goods and services from the average of year 0 to quarter *q* in year *y* by using an average of year 0 as the base year, denoted $LQ_{\bar{0}\rightarrow(q,y)}$ and is calculated by

$$LQ_{\bar{0}\rightarrow(q,y)} = \frac{\sum_i \bar{p}_{i,0} \cdot q_{i,q,y}}{\sum_i \bar{p}_{i,0} \cdot \bar{q}_{i,0}}$$

given

$\bar{q}_{i,0}$ as the un-weighted average (per quarter) in a quantity of goods *i* at year 0

In this case, the equation shows that the price structures that are used to weigh in each quarter are in every year of fixed base time series, which is the weakness national income compilation using fixed base.

The QNA calculation of annually chain-linked quarterly Laspeyres

- The calculation of Laspeyres volume index in a short term can measure the change in quantities of goods and services from an average of previous year to quarter *q* of year *y*, denoted $LQ_{\overline{(y-1)}\rightarrow(q,y)}$, and is calculated as

$$LQ_{\overline{(y-1)}\rightarrow(q,y)} = \frac{\sum_i \overline{p}_{i,y-1} \cdot q_{i,q,y}}{\sum_i \overline{p}_{i,y-1} \cdot \overline{q}_{i,y-1}}$$

Given $\overline{p}_{i,y-1}$ the weighted average in a price of goods *i* at year *y-1* by using the output quantities of goods in each quarter as the weight. The calculation is the same way the weighted average $\overline{p}_{i,0}$ above.

$\overline{q}_{i,y-1}$ is the un-weighted average (per quarter) in quantity of goods *i* in year *y* –1

The QNA calculation by annually chain-linked quarterly Laspeyres showed different results from using fixed base year. The price structure in CVM to weigh for each quarter is average prices of the previous year and is the same in every quarter in that year. However, the price will be adjusted timely in every year using price of "y –1" or the gap of 1 year. However, QNA will be unchained data. The quarterly data will not be time series since the price structure used for the weight will be pairwise and changes every year. So it is necessary to link the chain volumes of quarterly data to be able to compile the QNA of time series.

3.2.2 The linkage in a chain volume of QNA

International Monetary Fund refers to chain volume linkage as the production of long-term prices and quantities measurement using short term indexes that were produced from different based years. For example, to measure changes from year 0 to year t, a linkage of chain linked annual index is

$$CI_{0\rightarrow t} = I_{0\rightarrow 1} \cdot I_{1\rightarrow 2} \cdot I_{2\rightarrow 3} \cdot \ldots \cdot I_{(t-1)\rightarrow t}$$

denoting

$I_{(t-1)\rightarrow t}$ as the indexes that demonstrate the change of prices or quantities from year "t – 1" to year "t".

In the case of Thailand's quantitative indexes, that index "$I_{(t-1)\rightarrow t}$" is "$LQ_{(t-1)\rightarrow t}$" (Laspeyres Volume Index) that measures the change from year "t – 1" to year "t" or direct Index which use to calculate current national income.

However, *SNA* 1993 recommended that the chain volume linkage should not be done at higher frequency than annually. (For example, using previous quarter's prices to compute Laspeyres Volume Index in this quarter for quarterly linkage) This is because short term changing in prices causes too much fluctuation in short term index, leading to too much deviation in long term changes. The main objective of chain volume linkage is to consider the changes of trends in production in long term, by taking into account the gradual changes in comparative prices, not the short-term fluctuation in prices.

In the case of Laspeyres quantitative measurement, the congruency between QNA and ANA is a main reason that the chain volume linkage should not be at higher frequency than annual level. QNA and ANA are coherent when the weighted price in QNA calculation is the same price in ANA calculation. Consequently, the Laspeyres QNA calculation should use a weighted average of prices of the previous year, not quarterly prices.

Because Thailand uses the Laspeyres chain volume linkage in ANA calculation, the short term linkage should be the same. The calculation uses weighted average of prices in previous year as a weight. The short term linkage of annually chain-linked quarterly Laspeyres in the last chapter is equal to:

$$LQ_{\overline{(y-1)}\rightarrow(q,y)} = \frac{\sum_i \overline{p}_{i,y-1} \cdot q_{i,q,y}}{\sum_i \overline{p}_{i,y-1} \cdot \overline{q}_{i,y-1}}$$

3.2.3 The annual linkage technique of quarterly data

The QNA calculated by using annually chain-linked quarterly Laspeyres is short term quarterly data that is still unchained. The unchained data is quarterly data; however, it is not time series because the price structure that is used for weight is pairwise and it varies every year. Therefore, QNA calculated above needs to be linked into quarterly chain linked data between the years in order to create a time series of QNA. There are many techniques to link annual data into quarterly data, but this paper will demonstrate the two most used techniques: 1) Annual overlaps technique and 2) One-quarter overlaps technique.

Both techniques yield similar results but the values calculated using one-quarter overlaps technique will give more continuous change between the fourth quarter and the first quarter of next year. Meanwhile, the values calculated using the annual overlaps technique will demonstrate more gaps between years. However, the annual overlaps

technique, Laspeyres method will link quarterly data in a consistent fashion with annual data. . That is the sum of quarterly data will be equal to annual data. Meanwhile, quarterly data from one-quarter overlaps technique may not sum up to equal to annual data. Benchmarking is needed in this case in order to adjust quarterly data to conform to annual data.

Steps in Annual overlaps technique calculation

1) Calculate total value of quarterly output by using the weighted average prices of each goods or services in the previous year.

2) Calculate total average values of quarterly output in each year by using the weighted average prices of each goods and services of the same year.

3) Convert the total quarterly value of outputs in step 1 into direct index by comparing with an average quarterly output values of the previous year (in step 2)

4) Link quarterly index by using annual indexes of past years and set the average of indexes in the referenced year to 100.

The annual overlaps technique calculation will result in the value of annual index to equal to the average of unweighted quarterly indexes; however, there might be a jump between values at the link between years.

Steps in One-quarter overlap technique calculation

1) Calculate total value of quarterly output by using the weighted average prices of each goods or services in the previous year.

2) Calculate total values of the fourth quarter output in each year by using the weighted average prices of each goods and services of the same year.

3) Convert the total quarterly value of outputs in step 1 into direct index by comparing with the values of fourth quarter output of the previous year (in step 2)

4) Link quarterly index by using annual indexes of past years and set the index of the fourth quarter of the referenced year to 100.

The annual index that is calculated using one-quarter overlaps technique will not equal to unweighted average of quarterly index.

Consider an example of chain linked index calculation using both techniques, given the outputs of production sector consists of two products: A and B. Tables 3.1 and 3.2 show price levels and quantity of outputs in each quarter during 1997-2000 and chain indexes calculated using annual overlaps and one-quarter overlaps techniques, respectively.

Table 3.1: Example of chained index calculation by annual overlaps technique

(a) Calculating using 2 commodities (commodity A and commodity B)

						At Constant Price of:						Chain Linked Index		Chain Linked Index	
						1997		1998		1999		1997=100	1998=100	1997=100	1998=100
y	QA	QB	PA	PB	Total At current	Level	Index	Level	Index	Level	Index	Level	Level	% Growth (y-o-y)	
q1	59.8	60.5	7.4	5.0	745.0										
q2	61.7	60.2	7.1	5.4	763.2										
q3	63.7	58.1	6.8	6.4	805.0										
q4	65.8	57.2	6.7	7.2	852.7										
1997	**251.0**	**236.0**	**7.0**	**6.0**	**3165.9**	**3165.9**	**100.0**					**100.0**	**95.1**		
q1	67.4	57.6	6.1	8.0	871.9	815.6	103.0					103.0	98.0		
q2	69.4	57.1	5.7	8.6	886.6	826.6	104.4					104.4	99.3		
q3	71.5	56.5	5.3	9.4	910.1	837.7	105.8					105.8	100.7		
q4	73.7	55.8	5.0	10.0	926.5	848.9	107.3					107.3	102.0		
1998	**282.0**	**227.0**	**5.5**	**9.0**	**3595.1**	**3328.8**	**105.1**	**3595.1**	**100.0**			**105.1**	**100.0**	**5.15%**	**5.15%**
q1	76.0	55.4	4.5	10.7	934.8			917.0	102.0			107.3	102.0	4.10%	4.10%
q2	78.3	54.8	4.3	11.5	966.9			924.2	102.8			108.1	102.8	3.53%	3.53%
q3	80.6	54.2	3.8	11.7	940.4			931.5	103.6			109.0	103.6	2.96%	2.96%
q4	83.1	53.6	3.5	12.1	939.4			939.9	104.6			110.0	104.6	2.52%	2.52%
1999	**318.0**	**218.0**	**4.0**	**11.5**	**3781.5**			**3712.6**	**103.3**	**3781.5**	**100.0**	**108.6**	**103.3**	**3.27%**	**3.27%**
q1	85.5	53.2	3.4	12.5	955.7					954.5	101.0	109.6	104.3	2.20%	2.20%
q2	88.2	52.7	3.1	13.0	958.5					959.6	101.5	110.2	104.8	1.93%	1.93%
q3	90.8	52.1	2.8	13.8	973.2					963.1	101.9	110.6	105.2	1.51%	1.51%
q4	93.5	52.0	2.7	14.7	1016.9					972.8	102.9	111.7	106.3	1.62%	1.62%
2000	**358.0**	**210.0**	**3.0**	**13.5**	**3904.3**					**3850.0**	**101.8**	**110.5**	**105.1**	**1.81%**	**1.81%**

(b) Calculating using only commodity A

				At Constant Price of:						CLI	% Growth	
				1997		1998		1999		1997=100	(y-o-y)	
y	QA	PA	Total At current	Level	Index	Level	Index	Level	Index	Level	QA	CLI
q1	59.8	7.4	442.5									
q2	61.7	7.1	438.1									
q3	63.7	6.8	433.2									
q4	65.8	6.7	440.9									
1997	**251.0**	**7.0**	**1754.6**	**1754.6**	**100.0**					**100.0**		
q1	67.4	6.1	411.1	471.2	107.4					107.4		
q2	69.4	5.7	395.6	485.1	110.6					110.6		
q3	71.5	5.3	379.0	499.8	113.9					113.9		
q4	73.7	5.0	368.5	515.2	117.5					117.5		
1998	**282.0**	**5.5**	**1554.2**	**1971.3**	**112.4**	**1554.2**	**100.0**			**112.4**	**12.35%**	**12.35%**
q1	76.0	4.5	342.0			418.9	107.8			121.1	12.76%	12.76%
q2	78.3	4.3	336.7			431.5	111.1			124.8	12.82%	12.82%
q3	80.6	3.8	306.3			444.2	114.3			128.4	12.73%	12.73%
q4	83.1	3.5	290.9			458.0	117.9			132.4	12.75%	12.75%
1999	**318.0**	**4.0**	**1275.8**			**1752.6**	**112.8**	**1275.8**	**100.0**	**126.7**	**12.77%**	**12.77%**
q1	85.5	3.4	290.7					343.0	107.5	136.3	12.50%	12.50%
q2	88.2	3.1	273.4					353.9	110.9	140.6	12.64%	12.64%
q3	90.8	2.8	254.2					364.3	114.2	144.7	12.66%	12.66%
q4	93.5	2.7	252.5					375.1	117.6	149.0	12.52%	12.52%
2000	**358.0**	**3.0**	**1070.8**					**1436.3**	**112.6**	**142.6**	**12.58%**	**12.58%**

(c) Calculating using only commodity B

				At Constant Price of:						CLI	% Growth	
				1997		1998		1999		1997=100	(y-o-y)	
y	QB	PB	Total At current	Level	Index	Level	Index	Level	Index	Level	QB	CLI
q1	60.5	5.0	302.5									
q2	60.2	5.4	325.1									
q3	58.1	6.4	371.8									
q4	57.2	7.2	411.8									
1997	**236.0**	**6.0**	**1411.3**	**1411.3**	**100.0**					**100.0**		
q1	57.6	8.0	460.8	344.4	97.6					97.6		
q2	57.1	8.6	491.1	341.5	96.8					96.8		
q3	56.5	9.4	531.1	337.9	95.8					95.8		
q4	55.8	10.0	558.0	333.7	94.6					94.6		
1998	**227.0**	**9.0**	**2041.0**	**1357.4**	**96.2**	**2041.0**	**100.0**			**96.2**	**-3.81%**	**-3.81%**
q1	55.4	10.7	592.8			498.1	97.6			93.9	-3.82%	-3.82%
q2	54.8	11.5	630.2			492.7	96.6			92.9	-4.03%	-4.03%
q3	54.2	11.7	634.1			487.3	95.5			91.9	-4.07%	-4.07%
q4	53.6	12.1	648.6			481.9	94.4			90.8	-3.94%	-3.94%
1999	**218.0**	**11.5**	**2505.7**			**1960.0**	**96.0**	**2505.7**	**100.0**	**92.4**	**-3.96%**	**-3.96%**
q1	53.2	12.5	665.0					611.5	97.6	90.2	-3.97%	-3.97%
q2	52.7	13.0	685.1					605.7	96.7	89.3	-3.83%	-3.83%
q3	52.1	13.8	719.0					598.8	95.6	88.3	-3.87%	-3.87%
q4	52.0	14.7	764.4					597.7	95.4	88.1	-2.99%	-2.99%
2000	**210.0**	**13.5**	**2833.5**					**2413.7**	**96.3**	**89.0**	**-3.67%**	**-3.67%**

The calculated values in the table 3.1 (a) can be explained as follows:

1) *The weighted annual average price of each goods each year* can be calculated by dividing the sum of the value of the goods (price times quantity) for four quarters by the sum of the volumes in the fourth quarter. For example,

a. *The weighted average prices of commodity A at year 1997* is equal to [(59.8 X 7.4) + (7.1 X 61.7) + (63.7 X 6.8) + (6.7 X 65.8)] / [59.8 + 61.7 + 63.7 + 65.8] = 7

b. *The weighted average prices of commodity B at year 1998* is equal to [(57.6 X 8.0) + (57.1 X 8.6) + (9.4 X 56.5) + (55.8 X 10.0)] / [57.6 + 57.1 + 56.5 + 55.8] = 9

etc.

2) *The total value of quarterly output in the weighted average price of the previous year* can be computed by multiplying the quantity of goods in quarter *q*, year *y* by the weighted average price in year *y – 1*. For example,

a. The total value of output in the first quarter of 1998 in the weighted average price of 1997 is [(67.4 x 7.0) + (6.0 x 57.6)] = 815.6

b. The total value of output in the second quarter of 1999 in the weighted average price of 1998 is [(78.3 x 5.5) + (9.0 x 54.8)] = 924.2

etc.

3) *The annual and quarterly volume index compared in previous year average value* is calculated by dividing the value in step 2) by the average value per quarter of the prior year. For example,

a. *The volume index in the first quarter of 1998*, compared with the average value of 1997 is [815.6 / (3165.9 / 4)] x 100 = 103.0

b. The volume index in the second quarter of 1999, compared with the average value of 1998 is [924.2 / (3,595.1 / 4)] x 100 = 102.8

c. *c. The annual volume index of 1999*, compared with the average value of 1998 is [(3712.6 / 4) / (3595.1 / 4)] x 100 = 103.3

etc.

4) *The annual chain index* is calculated by using the annual volume index from step 3). Start by selecting a reference year. In the case of forward calculation, multiply the annual volume indexes from the reference year onward to that year. In the case of backwards calculation, divide the annual volume index of that year by the product of the annual volume indexes from the reference year to that year. For example,

a. *The chain index of 1999 with 1997 as a reference year is* 103.3 x (105.1 / 100) x (100.0 / 100) = 108.6

b. *The chain index of 1997 with 1998 as a reference year is* (100.0/ 105.1) * 100 = 95.1

etc.

5) *The quarterly chain index* is calculated by using the quarterly and annual volume indexes from step 3) and step 4). Start from selecting a reference year, and then multiply the quarterly volume index from step 3) by the previous year's annual chain index from step 4). For example,

a. The chain index in the 2nd quarter of 1999 with 1997 as a reference year is 102.8 x (105.1 / 100) = 108.1

b. The chain index in the 3rd quarter of 2000 with 1998 as a reference year is 101.9 x (103.3 / 100) = 105.2

etc.

6) The *last* column in Table 3.1 (a) shows that the *year-on-year growth rates of chain volume index* are the same, even if using different reference years. For example,

a. The year-on-year growth rate of chain volume index in 1998 (calculated on a chain index with 1997 as the reference year) is [(105.1 - 100.0) / 100.0] x 100 = 5.15

b. *The* year-on-year growth rate of chain volume index in the 3rd quarter of 1999 (calculated on a chain index with 1997 as the reference year) is [(109.0 - 105.8) / 105.8] x 100 = 2.96

From the calculation method above, the annual chain index is equal to the unweighted average of the quarterly index. The sum of the quarterly values of goods is equal to the annual value of goods in the same year. For instance, for the chain index in 2000 with 1997 as a reference year, the annual chain index is equal to the average of the quarterly chain index.

$$110.5 = (109.6 + 110.2 + 110.6 + 111.7) / 4$$

However, the annual overlaps method may cause discrepancy in the change of quantity during the transition period between two years. For example, at current prices, the value and quantity of output in the 1st quarter of 2000 is higher than the value and quantity of output of the 4th quarter of 1999; however, the chain index of the 4th quarter of 1999 stood at 110.0, higher than the chain index of the 1st quarter of 2000 which is equal to 109.6, with 1997 as a reference year.

Table 3.1 (b) shows the calculation of the chain volume index with annual overlaps technique for commodity A. The calculation of the chain volume index in table 3.1 (b) is same as in table 3.1 (a). The last two columns of Table 3.1 (b) show the year-on-year growth rates of commodity A and the chain volume index of commodity A, respectively. An example of the calculation is as follows

1) The year-on-year growth rate of the quantity of commodity A in 1998 is

[(282.0 - 251.0) / 251.0] x 100 = 12.35

The year-on-year growth rate of the chain volume index of commodity A in 1998 is [(112.4 - 100.0) / 100.0] x 100 = 12.35

2) The year-on-year growth rate of the quantity of commodity A in the 3rd quarter of 1999 is [(80.6 - 71.5) / 71.5] x 100 = 12.73

3) The year-on-year growth rate of the chain volume index of commodity A in the 3rd quarter of 1999 is [(128.4 - 113.9) / 113.9] x 100 = 12.73

The calculation shows that the year-on-year growth rate in volume of commodity A and the chain volume index are the same size. This is consistent with the theory.

Table 3.1 (c) shows the calculation of the chain volume index with annual overlaps technique for commodity B. The calculation is the same as in table 3.1 (b). An example of the calculation is as follows:

1) The year-on-year growth rate of the quantity of commodity B in 1998 is

[(227.0 - 236.0) / 236.0] x 100 = -3.81

The year-on-year growth rate of the chain volume index of commodity B in 1998 is [(96.3 - 100.0) / 100.0] x 100 = -3.81

2) The year-on-year growth rate of the quantity of commodity B in the 3rd quarter of 1999 is [(54.2 - 56.5) / 56.5] x 100 = -4.07

3) The year-on-year growth rate of the chain volume index of commodity B in the 3rd quarter of 1999 is [(91.9 – 95.8) / 95.8] x 100 = -4.07

The calculation shows that the year-on-year growth rate in volume of commodity B and the chain volume index are the same size. This is consistent with the theory.

Table 3.2 Example of chained index calculation using one-quarter overlaps technique.

(a) Calculating using 2 commodities (commodity A and commodity B)

						at constant price of						Chain Index		Chain Index	
						1997		1998		1999		1997=100	1998=100	1997=100	1998=100
Y	QA	QB	PA	PB	Total at current price	Level	Index	Level	Index	Level	Index	Level	Level	Growth rate (yoy)	
Q1	59.8	60.5	7.4	5.0	745.0										
Q2	61.7	60.2	7.1	5.4	763.2										
Q3	63.7	58.1	6.8	6.4	805.0										
Q4	65.8	57.2	6.7	7.2	852.7										
1997	**251.0**	**236.0**	**7.0**	**6.0**	**3,165.9**	**3,165.9**	**100.0**					**100.0**			
Q1	67.4	57.6	6.1	8.0	871.9	815.6	103.0					103.0	97.1		
Q2	69.4	57.1	5.7	8.6	886.6	826.6	104.4					104.4	98.4		
Q3	71.5	56.5	5.3	9.4	910.1	837.7	105.8					105.8	99.7		
Q4	73.7	55.8	5.0	10.0	926.5	848.9	107.3	907.9	100.0			107.3	101.0		
1998	**282.0**	**227.0**	**5.5**	**9.0**	**3,595.1**	**3,328.8**	**105.1**	**3,595.1**				**105.1**	**100.0**		
Q1	76.0	55.4	4.5	10.7	934.8			917.0	101.0			108.3	102.0	5.1	5.1
Q2	78.3	54.8	4.3	11.5	966.9			924.2	101.8			109.2	102.8	4.5	4.5
Q3	80.6	54.2	3.8	11.7	940.4			931.5	102.6			110.0	103.6	4.0	4.0
Q4	83.1	53.6	3.5	12.1	939.4			939.9	103.5	949.5	100.0	111.0	104.6	3.5	3.5
1999	**318.0**	**218.0**	**4.0**	**11.5**	**3,781.5**			**3,712.6**		**3,781.5**		**109.6**	**103.3**		
Q1	85.5	53.2	3.4	12.5	955.7					954.5	100.5	111.6	105.1	3.0	3.0
Q2	88.2	52.7	3.1	13.0	958.5					959.6	101.1	112.2	105.7	2.8	2.8
Q3	90.8	52.1	2.8	13.8	973.2					963.1	101.4	112.6	106.1	2.4	2.4
Q4	93.5	52.0	2.7	14.7	1,016.9					972.8	102.5	113.8	107.1	2.5	2.5
2000	**358.0**	**210.0**	**3.0**	**13.5**	**3,904.3**					**3,850.0**		**112.6**	**106.0**		

(b) Calculating using only commodity A

				at constant price of						Chain Index	Growth rate (yoy)	
				1997		1998		1999		1997=100		
Y	QA	PA	Total at current price	Level	Index	Level	Index	Level	Index	Level	QA	CI
Q1	59.8	7.4	442.5									
Q2	61.7	7.1	438.1									
Q3	63.7	6.8	433.2									
Q4	65.8	6.7	440.9									
1997	**251.0**	**7.0**	**1,754.6**	**1,754.6**	**100.0**					**100.0**		
Q1	67.4	6.1	411.1	471.2	107.4					107.4		
Q2	69.4	5.7	395.6	485.1	110.6					110.6		
Q3	71.5	5.3	379.0	499.8	113.9					113.9		
Q4	73.7	5.0	368.5	515.2	117.5	406.2	100.0			117.5		
1998	**282.0**	**5.5**	**1,554.2**	**1,971.3**	**112.4**	**1,554.2**				**112.4**		
Q1	76.0	4.5	342.0			418.9	103.1			121.1	12.8	12.8
Q2	78.3	4.3	336.7			431.5	106.2			124.8	12.8	12.8
Q3	80.6	3.8	306.3			444.2	109.4			128.4	12.7	12.7
Q4	83.1	3.5	290.9			458.0	112.8	333.4	100.0	132.4	12.8	12.8
1999	**318.0**	**4.0**	**1,275.8**			**1,752.6**		**1,275.8**		**126.7**		
Q1	85.5	3.4	290.7					343.0	102.9	136.3	12.5	12.5
Q2	88.2	3.1	273.4					353.9	106.1	140.6	12.6	12.6
Q3	90.8	2.8	254.2					364.3	109.3	144.7	12.7	12.7
Q4	93.5	2.7	252.5					375.1	112.5	149.0	12.5	12.5
2000	**358.0**	**3.0**	**1,070.8**					**1,436.3**		**142.6**		

(c) Calculating using only commodity B

				at constant price of						Chain Index	Growth rate (yoy)	
				1997		1998		1999		1997=100		
Y	QB	PB	Total at current price	Level	Index	Level	Index	Level	Index	Level	QA	CI
Q1	60.5	5.0	302.5									
Q2	60.2	5.4	325.1									
Q3	58.1	6.4	371.8									
Q4	57.2	7.2	411.8									
1997	**236.0**	**6.0**	**1,411.3**	**1,411.3**	**100.0**					**100.0**		
Q1	57.6	8.0	460.8	344.4	97.6					97.6		
Q2	57.1	8.6	491.1	341.5	96.8					96.8		
Q3	56.5	9.4	531.1	337.9	95.8					95.8		
Q4	55.8	10.0	558.0	333.7	94.6	501.7	100.0			94.6		
1998	**227.0**	**9.0**	**2,041.0**	**1,357.4**	**96.2**	**2,041.0**				**96.2**		
Q1	55.4	10.7	592.8			498.1	99.3			93.9	-3.8	-3.8
Q2	54.8	11.5	630.2			492.7	98.2			92.9	-4.0	-4.0
Q3	54.2	11.7	634.1			487.3	97.1			91.9	-4.1	-4.1
Q4	53.6	12.1	648.6			481.9	96.1	616.1	100.0	90.8	-3.9	-3.9
1999	**218.0**	**11.5**	**2,505.7**			**1,960.0**		**2,505.7**		**92.4**		
Q1	53.2	12.5	665.0					611.5	99.3	90.2	-4.0	-4.0
Q2	52.7	13.0	685.1					605.7	98.3	89.3	-3.8	-3.8
Q3	52.1	13.8	719.0					598.8	97.2	88.3	-3.9	-3.9
Q4	52.0	14.7	764.4					597.7	97.0	88.1	-3.0	-3.0
2000	**210.0**	**13.5**	**2,833.5**					**2,413.7**		**89.0**		

The calculation of chain index with one-quarter overlaps technique can be shown in table 3.2 (a) and explained as follows:

1) *The weighted annual average price of each goods each year* can be calculated by dividing the sum of the value of the goods (price times quantity) of the four quarters by the sum of the volumes in the fourth quarter (similar to the annual overlaps method). For example,

a. *The weighted average prices of commodity A at years 1997* is equal to [(59.8 X 7.4) + (7.1 X 61.7) + (63.7 X 6.8) + (6.7 X 65.8)] / [59.8 + 61.7 + 63.7 + 65.8] = 7

b. *The weighted average prices of commodity B at years 1998* is equal to [(57.6 X 8.0) + (57.1 X 8.6) + (9.4 X 56.5) + (55.8 X 10.0)] / [57.6 + 57.1 + 56.5 + 55.8] = 9

etc.

2) *The total value of quarterly output in the weighted average price of the previous year* is calculated by multiplying the quantity of goods in quarter in *q*, year *y* by the weighted average price in year *y – 1* (similar to the annual overlaps method). For example,

a. *The total value of output in the first quarter of 1998 in the weighted average price of 1997 is* [(67.4 x 7.0) + (6.0 x 57.6)] = 815.6

b. *The total value of output in the second quarter of 1999 in the weighted average price of 1998 is* [(78.3 x 5.5) + (9.0 x 54.8)] = 924.2

etc.

3) *The total value of outputs in the fourth quarter in the weighted average price of the same year* is calculated by multiplying the quantity of outputs in the 4^{th} quarter of year *y* by the weighted average price in year *y*. For example,

a. *The total value of output in the fourth quarter of 1998* in the weighted average price of 1998 is [(73.7 x 5.5) + (55.8 x 9.0)] = 907.9

b. *The total value of output in the fourth quarter of 1999* in the weighted average price of 1999 is [(83.1 x 4.0) + (53.6 x 11.5)] = 949.5

4) *The quarterly volume index compared with the average total value of output in the reference year:* in case of 1997 as a reference year, set the average total value of outputs in 1997 at 100.0. , To calculate the quarterly volume index of the year next to the reference year, year 1998 in this case, divide the value in step 2) of each in 1998 by the average value per quarter in the prior year. For example,

a. *The volume index in the 1^{st} quarter of 1998 compared with the average total value of output in 1997* is [815.6 /(3165.9/4)] × 100 = 103.0

b. *The volume index in the 4^{th} quarter of 1998 compared with the average total value of output in 1997* is [848.9 /(3165.9/4)] × 100 = 107.3

5) *The quarterly volume index compared with the quarterly volume index in the fourth quarter of the previous year* is calculated by dividing the value in step 2) by the value of goods in the fourth quarter of the previous year, which was calculated using the weighted average prices in the same year as in step 3). However, in the case of the year after the reference year, the calculation follows step 4). For example,

a. *The volume index in the 2^{nd} quarter of 1999 compared with the volume index in the 4^{th} quarter of 1998* is [924.2 / 907.9] ×100 = 101.8

b. *The volume index in the 1st quarter of 2000 compared with the volume index in the 4th quarter of 1999* is [954.5 / 949.5] × 100 = 100.5

etc.

6) *The quarterly chain index* is calculated by using the quarterly chain index from step 5) to calculate the chain link index as in step 4) using the 4th quarter of the previous year as a link. For example,

a. The *chain index in the 2nd quarter of 1999 with 1997 as a reference year is 101.8×(107.3 / 100) = 109.2*

b. *The chain index in the 1st quarter of 2000 with 1998 as a reference year is 100.5×(104.6 /* 100) = 105.1

etc.

7) The *last* column in Table 3.2 (a) shows that the year-on-year growth rates of chain volume index are the same when using different reference years. For example,

a. *The year-on-year growth rate of chain volume index in the 1st quarter of 1999 (calculated from the chain index with 1997 as a reference year)* is [(108.3 – 103.0) / 103.0] 100 = 5.12

b. *The year-on-year growth rate of chain volume index in the 1st quarter of 1999 (calculated from the chain index with 1998 as a reference year) is* [(102.0 – 97.1) / 97.1] 100 = 5.12

We can see that one-quarter overlaps technique calculation yields different values in the average of the unweighted quarterly chain index from the annual chain index from the usual calculation method. (The annual chain index calculated using one-quarter overlaps technique and annual overlaps technique is of the same value.) For example, if 1997 is the reference year, the quarterly average chain index of 2000 is equal to 112.6 (= [111.6 + 112.2 + 112.6 + 113.6]/4), which is different from the annual chain index of 110.5. In other words, for QGDP, the sum of quarterly values calculated using one-quarter overlaps technique is different from the value of annual GDP in chain volume measures. Conversely, if using the annual overlaps technique, the sum of quarterly value is equal to the value of annual GDP. The non-additivity characteristic of quarterly values is the disadvantage of one-quarter overlaps techniques.

However, the advantage of the one-quarter overlaps calculation method is that it does not cause a jump in values in the transition period between two years. For example, if 1997 is the reference year, the chain index of the 1st quarter of 2000 stood at 111.6, higher than the chain index of the 4th quarter of 1999 which is equal to 111.1. It is consistent with changes in the value of output and volume of production at market prices during that time.

Table 3.2 (b) shows the calculation of the chain volume index with one-quarter overlaps technique for commodity A. The process of calculation of the chain volume index in table 3.2 (b) is same as in table 3.2 (a). The last two columns of Table 3.2 (b) show the year-on-year growth rates and the chain volume index commodity A, respectively. An example of the calculation is as follows

1) *The year-on-year growth rate in volume of commodity A in the 4th quarter of 1998 is* $[(73.7 - 65.8) / 65.8] \times 100 = 12.01$

2) *The year-on-year growth rate of the chain volume index of commodity A in the 4th quarter of 1998 is* $[(112.0 - 100.0) / 100.0] \times 100 = 12.01$

3) *The year-on-year growth rate in volume of commodity A in the 3rd quarter of 1999 is* $[(80.6 - 71.5) / 71.5] \times 100 = 12.73$

4) *The year-on-year growth rate of the chain volume index of commodity A in the 3rd quarter of 1999 is* $[(128.4 - 113.9) / 113.9] \times 100 = 12.73$

The calculation shows that the year-on-year growth rate in volume of commodity A and the chain volume index are the same size. This is consistent with the theory in volume measures.

Table 3.2 (c) shows the calculation of the chain volume index with one-quarter overlaps technique for commodity B. The process of calculation of the chain volume index in table 3.2 (c) is the same as in table 3.2 (b). The last two columns of Table 3.2 (c) show the year-on-year growth rates and the chain volume index of commodity B, respectively. An example of the calculation is as follows

1) *The year-on-year growth rate in volume of commodity B in the 4th quarter of 1998 is* $[(55.8 - 57.2) / 57.2] \times 100 = -2.45$

2) *The year-on-year growth rate of the chain volume index of commodity B in the 4th quarter of 1998 is* $[(97.6 - 100.0) / 97.6] \times 100 = -2.45$

3) *The year-on-year growth rate in volume of commodity B in the 3rd quarter of 1999 is* $[(54.2 - 56.5) / 56.5] \times 100 = -4.07$

4) *The year-on-year growth rate of the chain volume index of commodity B in the 3rd quarter of 1999 is* $[(91.9 - 95.8) / 95.8] \times 100 = -4.07$

The calculation shows that the year-on-year growth rates in volume of commodity B and the chain volume index are the same size. This is also consistent with the theory.

From example 3.1 and 3.2, Table 3.3 compares the chain volume index and the year-on-year growth rate (with 1997 as a reference year) using two calculation methods: the annual overlaps and one-quarter overlaps techniques. Figure 3.1 and 3.2 illustrate the chain volume index and the year-on-year growth rate between 1998 and 2000 using the two calculation methods.

From figure 3.1, the kink between two years of chain volume measures using one-quarter overlaps technique will be smaller than the kink from using annual overlaps technique. The one-quarter overlaps technique chain links the value of the first quarter of the current year to the value of the fourth quarter in the previous year.

On the other hand, the annual overlaps technique chain links the value of the first quarter of the current year to the average value of the previous year. Using the average value of the previous year may cause discontinuation at the link, leading to more variation in the chain volume measures when using the annual overlaps technique.

However, if consider the rate of change of chain volume index of the same quarters (year-on-year) that calculated from the both techniques in each quarter during 1998 to 2000 from table 3.3 and figure 3.2 will show that the rate of change of chain volume index from both techniques move in the same direction, but the rate of change from one-quarter overlaps will be higher than that of annual overlaps. Thailand currently publishes year-on-year growth rate of QGDP without seasonal adjustment as a main figure. However, quarterly data with quarter-on-quarter growth and seasonal adjustment is also available.

In conclusion, QNA compilation by linking quarterly data into annual chain linked to create time series data can be done using two techniques above: annual overlaps and one-quarter overlaps techniques. International Monetary Fund (Quarterly National Accounts Manual: concepts, Data Sources, and Compilation IMF, 2001) did not give a verdict on which technique should be used. One-quarter overlaps technique may give a smoother time series, but the sum of quarterly data will not be equal to annual data. Therefore, benchmarking is necessary to conform quarterly data to annual data. For annual overlaps technique, the sum of quarterly data is equal to annual data. Presently, Thailand compiles QGDP using both direct and indirect methods as well as using indicators. This contributes to discrepancy between QGDP and annual GDP. Therefore, benchmarking is necessary to balance QGDP and annual GDP. The Denton Least Squares method is used through The Canadian Bench Program and Extrapolation (Bench Program). Therefore, the compilation of chain volume measure of QGDP using annual overlaps technique is more appropriate and practical, since using one-quarter overlaps technique will result in having to benchmark the quarter data twice.

Table 3.3 the comparison of chain volume index between the annual overlaps and one-quarter overlaps techniques

	Annual Overlaps 1997 = 100		One-quarter Overlaps 1997 = 100	
Y	Level	Growth (y-o-y)	Level	Growth (y-o-y)
q1	103.0		103.0	
q2	104.4		104.4	
q3	105.8		105.8	
q4	107.3		107.3	
1998				
q1	107.3	4.1%	108.3	5.1%
q2	108.1	3.5%	109.2	4.5%
q3	109.0	3.0%	110.0	4.0%
q4	110.0	2.5%	111.0	3.5%
1999				
q1	109.6	2.2%	111.6	3.0%
q2	110.2	1.9%	112.2	2.8%
q3	110.6	1.5%	112.6	2.4%
q4	111.7	1.6%	113.8	2.5%
2000				

Figure 3.1 Comparison of chain volume using annual overlaps and one-quarter overlaps techniques

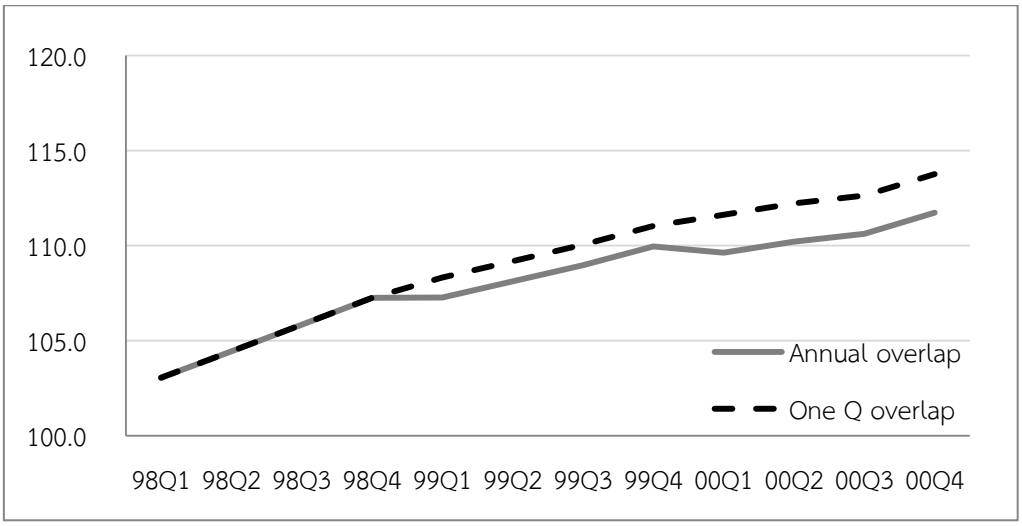
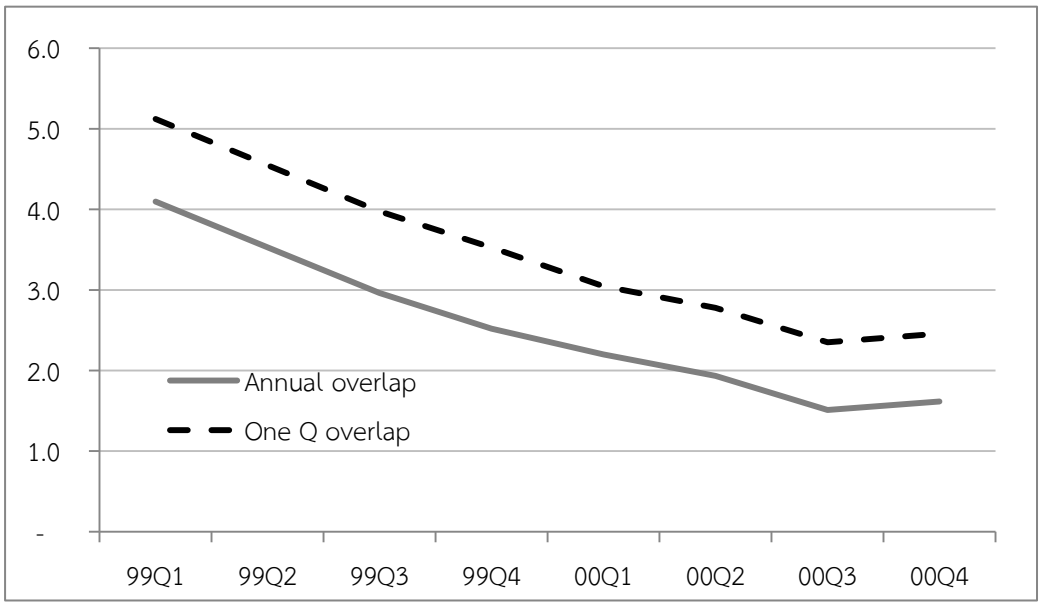


Figure 3.2 the comparison year-on-year growth rate of chain linked index using annual and one quarter overlaps techniques



3.3 Compilation of QGDP in CVM of Thailand

The compilation of QGDP in CVM of Thailand using annual overlaps technique can be concluded as follows:

- Step 1 Calculate the quarterly and annual current prices.

- Step 2 Calculate weighted average price for each year to compute the value added at the current average price and the previous year prices in the next step.

- Step 3 Calculate quarterly and annual output values of the current year in weighted average prices of the previous year. Quarterly and an annual output values in this step will be used to calculate direct index.

- Step 4 Use the annual overlaps technique to calculate an average output value per quarter of a previous year at the weighted average price of that year.

- Step 5 Calculate a direct index from a ratio of output value in step 3 and 4. The direct index of quarter-on-quarter can compute from the ratio of output value in each quarter of current year divided by the annual output value of an average previous year per quarter.

- Step 6 Produce chain index using direct indexes in step5. In case of Thailand, year 2002 is the referenced year, so the index in 2002 is equal 100.

- Step 7 Calculate chain volume measures for each quarter and year from the chain index (step 6) and year 2002 values to determine GDP at current price and adjusted the values using chain index for each quarter and year.

- Step 8 Use QGDP in CVM above to calculate seasonally adjusted QGDP using program “X-12.”

Chapter 4
Revision of quarterly gross domestic product estimation using chain volume measures (CVM)

The compilation of quarterly gross domestic product (QGDP) using chain volume measures (CVM) with series of 1Q 1993 to 4Q 2014 is a major task that is continued from the CVM compilation of annual national income. The NESDB has studied, improved, and first publicized the CVM series of 1990 -2010 in January 2012. We have continued to publish national income in chained values, with the latest one in 2013 (National Income of Thailand 2013, Chain Volume Measures). The main objective of the change in QGDP compilation to CVM is so that the short term, quarterly, data system is congruent with annual data. Moreover, it is to improve the quality of QGDP as macroeconomic indicators, so that it effectively reflects the real economic situations.

However, the compilation of QGDP has both similarity and differences from the annual national income compilation. QGDP is short term data and is estimated quickly in order to publicize in timely manner, hence is limited in terms of data availability. The estimation of QGDP in some activities can utilize the same dataset and compilation method as that of annual national income; however some activities require the indirect estimation method. In the indirect method, the estimation uses major relevant economic indicators and a mathematical technique called "Denton least square". This technique is a method which adjusts quarterly series so that the annual sums of the adjusted values are equal to independent annual totals so that the quarterly series is free of artificial discontinuities between years[1]. In, practice, the Canadian Bench program and Extrapolation (Bench Program) can calculate the values satisfying Denton least square conveniently.

Besides adjusting calculation method of the real term values, the improvement of QGDP follows the changes of CVM annual national income as well. This included increasing data coverage, improving indicators and updating accounting method according to with the System of National Accounts 2008. QGDP of Thailand is compiled on two approaches: the production and expenditure approaches.

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1 http://www.imf.org/external/pubs/ft/qna/pdf/Benchmarking-Reconciliation_C6_Draft.pdf page 51 retrieved on May 19, 2015

In conclusion, QGDP compilation on both the production and expenditure approaches led the differences between the new series of QGDP using CVM and the existing series using fixed-base year method as follows:

1) QGDPs are different as a result of the changes in annual values. QGDP values need to be adjusted so that the sum of each activity in four quarters is equal to the annual value of that activity. Therefore, when the annual values of the two series differ, the quarter values inevitably differ.

2) The addition of new economic activities and improvement of indicators for QGDP calculation complying with the changes in annual national income compilation.

3) As a result of the change in calculation method, the price structures changed. Prices used in calculation change every year in CVM method. In addition, the technique used to link quarterly data between years is annual overlaps techniques.

The result of the new series of QGDP on both the production and expenditure approaches can be summarized as follows:

4.1 Quarterly Gross Domestic Product, production side

In compilation of QGDP on production side, there are many factors that led to differences between new series (QCVM series) and old series (1988 price's series). Details are as follows

4.1.1 The revision of National Accounts of Thailand to chain volume measures

National income accounts by production side (chain volume measures) are different from old series (1988 prices). With the annual data improvement, quarterly data needs to be adjusted as well, so that the sum of quarterly data in each activity is equal to annual data. The essences of improvement in QGDP CVM are.

1) Coverage. Inclusion of economic transactions is more complete. New included economic activities include Non-Banks, National Credit Bureau, NPISH, dormitory,

private water supply, and transport services such as private van, motorcycle's taxi, charter flight, shipping, cable TV, satellite broadcasting and internet services.

2) The compilation is updated to the latest framework of SNA, and data improved according to major data sources. Important items include:

- Financial intermediation services. Measurement of value added in financial intermediation services changes from using imputed service charge to using financial intermediation services indirectly measures (FISIM), for transactions carried out as financial intermediation or deposits and lending. Moreover, in the calculation of real value added, the calculation is changed from single deflation to double deflation.

- Construction. Calculation method is improved. The concept and coverage is adjusted according to the latest national accounts system. Construction and maintenance by government agencies and investments budget of ministry of defense is added to gross fixed capital information in construction. (Previously recorded in government consumption expenditure). Moreover, it includes costs for mineral exploration of state-enterprises and exploration mineral resources by private companies.

- Updated ratio of intermediate cost in every activities by using a ratio from input-output table which conducted by NESDB every 5 years. Data reconciliation also uses updated supply and use table of 2007.

4.1.2 The improvements on economic activity and indicators

Calculating quarterly gross domestic product by chain volume measures is comprehensive and reflects the economic conditions most accordingly with new annual data as mentioned above. We also add more details in economic activities from 164 items to 223 items. Most new additions are in manufacturing, real estate renting and business activities, other community, social and personal services activities. Conclusions are as follow.

1) Agriculture, Hunting and Forestry reduced production items in QGDP from 8 to 7 activities by adding hunting activities to forestry activities, complying with annual national income accounts. Moreover, the ratio of intermediate cost is updated according to annual data.

2) Fishing. No new items. Improvement complies with annual data.

3) Mining and quarrying. No new items. Some activities are improved by updating the ratio of intermediate cost. Data sources are updated in line with annual national income accounts.

4) Manufacturing. New items are added up from 89 activities to 113 activities, in line with annual national accounts in order to improve coverage and reflect the economic sector more accurately.

5) Electricity, gas and water supply. Improve calculation methodology in some activities by updating the ratio of intermediate cost and data sources.

6) Construction. Methodology and concept are improved according to the latest national accounts system. The construction and maintenance by government agencies and investments budget of ministry of defense are included in gross fixed capital information in construction (Previously recorded in government consumption expenditure). Moreover, costs Mineral exploration of state-enterprises and exploring mineral resources by private companies are added.

7) Wholesale retail trade and repair of motor etc. Data coverage is improved, in line with annual national accounts by using data from Revenue department, National Statistic office and input output table of Thailand.

8) Hotels and restaurants. Add new detail activities including dormitories by using a survey of revenue and expenditure by National Statistic Office and data from input-output table. Improve hotels and restaurants by using data from the Bank of Thailand, Tourist authority of Thailand, Ministry of commerce, National Statistic office and input output table.

9) Transport, storage and communications. Add detail items from 13 to 16 activities including non-schedule's air transport, shipping and private's post office.

10) Financial intermediation. Add non-bank credit card companies.

11) Real estate, renting and business activities. Add detail items from 7 to 30 activities, in line with annual national accounts. Details were Renting and business services added 23 activities including renting of land transport equipment, renting of water transport equipment, renting of air transport equipment, renting of construction and civil

engineering machinery and equipment, software consultancy and supply, labour recruitment and provision of personnel, investigation and security activities, building-cleaning activities, packaging activities, and other business activities n.e.c. Improved indicators including legal activities, architectural and engineering activities and related technical consultancy, advertising, and photographic activities by NSO's data, Revenue department and Input output table. Real estate and renting improved data by Socio-economic survey of households in whole country.

12) Public administration and defense, including mandatory social securities. Improved according to new data of government consumption expenditure and updated depreciation of fixed assets using gross fixed capital formation new series.

13) Education. Added activities include private's education foundation using NPISH's data (National Statistic Office) and updated education's fee (by Ministry of commerce). In public education, new GCE data is used and depreciation of fixed asset is updated according GFCF's new series.

14) Health and social work. For private sector, added items include health foundation and day care services. Moreover, health's fee and intermediate costs are improved using NSO data. In public sector, new GCE data is used and the depreciation of fixed asset is updated according GFCF's new series.

15) Other community, social and personal services activities. Added detail items from 14 to 22 activities, including Sewage and refuse disposal, sanitation and similar activities, dramatic arts, music and other arts activities, News agency activities, Thai's massage, botanical and zoological gardens and nature reserves activities, sporting activities. Moreover, indicators are improved.

16) Private household with employed persons. Update data on numbers of employees, wages and salaries using Labor Force Survey.

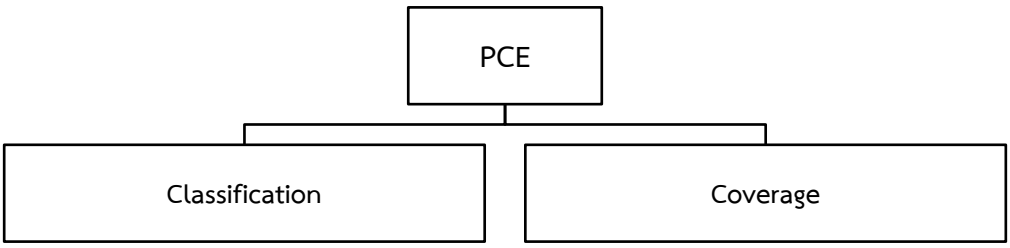
4.1.3 The change of compilation technique of quarterly gross domestic product

The change of compilation technique is also another factor that results in differences between two series. QGDP production approach in real terms is changed from fixed weight prices to chain volume measures. Annual chain indexes in quarterly data are

linked by annual overlaps as mentioned in earlier chapters. Differences of each linking method are discussed in Chapter 3.4.2

4.2 Quarterly Gross Domestic Product, expenditure side

4.2.1 Private consumption expenditure (PCE)



Classification

1) The classification of private consumption expenditure is revised from the Central Product Classification (CPC) to the Classification of Individual Consumption by Purpose (COICOP) in line with the classification in annual national income compilation. In addition, the item of consumption of non-profit institutions serving households is showed separately, instead of being added to household consumption expenditure.

> COICOP is a classification published by the United Nations Statistics Division for the benefit of classifying the purpose of individual consumption expenditures. In addition, it is useful for analyzing the pattern of consumption expenditures rather than the classification designed for the production. COICOP enables illustration of the change of consumers' consumption behavior over the period. For example the comparison of the proportion of spending on goods on daily basis such as food, beverages, clothing, or the proportion of the expenditure on free time or entertainment or other services, etc.

2) Private consumption expenditure (PCE) consists of 2 items:

- Household final consumption expenditure or Individual consumption expenditure of households according to COICOP
- Final consumption expenditure of non-profit institutions serving households (NPISHs) or Individual consumption expenditure of NPISHs

Coverage

The coverage of quarterly PCE is updated in line with that of annual national income. It can be summarized as follows:

Sector	Revision
Food and beverages	Excluding the item of eaten-out food and beverages (such as restaurant, hotel, food stall, and vending machine) and including them in the restaurant sector instead.
Clothing and footwear	Adding the item of the expenditure on clothing repair services, clothing renting services, and footwear repair services in accordance with the socio-economic survey (SES) of the National Statistics Office (NSO). In addition, the item of dressmaking expenditure is revised.
Housing	Revising of the compilation techniques consistent with the socio-economic survey (SES) figures which consist of actual rent, imputed rent, and repair and maintenance of housing. Adding the item of the expenditure of interior decoration services and gardening services consistent with SES figures.
Health	Revising the item of medical services, and medicine expenditure along with the Nation Health and Medicine Account of Ministry of Public Health.
Transport	Adding the item of railway passenger transport services (BTS), road passenger transport services (motorcycle and van services), and air passenger transport services (low-cost airlines).
Communication	Adding the item of the expenditure of private post office service and internet services for household.
Recreational and cultural	Adding the item of the expenditure of concert and musical performance, art gallery, exhibition, park, zoo and botanical garden, museum, and library.
Education	Adding the expenditure of household on the item of non-budgetary public education along with SES.
Restaurants and hotels	Including the item of eaten-out food and beverages (such as restaurant, hotel, food stall, and vending machine) instead of

Sector	Revision
	adding them in the food and beverages sector. Update calculation consistent with the expenditure of non-resident in the country and input-output table. The item of the expenditure of dormitory is added.
Miscellaneous	Revising of the compilation techniques on the insurance in accordance with the SNA93: the service charge is calculated from premium *less* claim and reserve and *plus* investment income. Adding the expenditure of financial service in line with the financial intermediation services indirectly measured (FISIM).
Non Profit Institution Serving Households (NPISHs)	Adding the item of non-profit institutions serving households consumption expenditure in accordance with the SNA 93 (see the details in Non-profit institution of Thailand 2006-2008 edition). The estimation is consistent with the survey of non-profit organization of the National Statistic Office as well as additional survey.

4.2.2 Government consumption expenditures (GCE)

General government final consumption expenditure was improved and reclassified according to the latest framework of Standard National Accounts (SNA2008). In the new series, it was registered with the value of 271,221 million baht per quarter on average during Q1/1993 - Q4/2014, which increased from the previous series by 55,948 million baht per quarter on average. The important revisions to general government final consumption expenditure are as follows:

Items	Revisions
Compensation of employees	● Revised contribution to social security fund and contribution to local pension fund from local government authorities consistent with income approach data. ● All of data are revised and updated especially the non-budgetary such as funds, revolving funds, government autonomous agencies and government public agencies

Items	Revisions
Purchases from enterprises and abroad	● Revised and adding some more related items into purchases from enterprises and aboard in according to SNA2008. 1) Cost of repair and military investment was revised and recorded in government investment instead, except for military arms and weapons. 2) Financial intermediation services indirectly (FISIM) was added. 3) Non-life insurance service charge was added. 4) Output central bank was added. 5) Revise and update all of related data, especially non-budgetary such as funds, revolving funds, government autonomous agencies and government public agencies
Purchases by households and enterprises	● Revise compilation techniques according to SNA2008 ● Compile and record other taxes on production into general government final consumption expenditure following SNA2008.
Consumption of fixed capital	● Compile and record consumption of fixed capital into general government consumption expenditure.
Social benefit in kind	● Compile and record social benefit in kind that government acquired goods and services for households.

4.2.3 Gross capital formation (GCF)

4.2.3.1 Gross fixed capital formation (GFCG)

The details of revisions are as follows:

Gross fixed capital formation	Construction	Machinery and equipment
• Gross fixed capital formation are divided into 2 parts as • 1) By type of capital goods, consists of construction and machinery and equipment • 2) By type of institutions, consists of private and public sector	• Improve the framework under concept of SNA 2008. • Construction and repair of self-government and investment in construction of ministry of defense treat as investment from the previous version treat as government consumption expenditure (GCE). • Cost of mineral exploration of state enterprise and mineral exploration of private sector is added. • Adding land development for agriculture data into other construction item.	• Record purchase of weapon of various ministries as gross fixed capital formation in public sector. Previously it was recorded as government consumption expenditure • Additional computer software expenditure data

4.2.3.2 Change in inventories

Change in inventories compilation is revised in various items as well as coverage adjustment consistent with surveys and compilation in both production and expenditure GDP compilation. In addition, change in inventories is classified by Thailand Standard Industrial Classification (TSIC) and calculated from inventories at the ending of a period *minus* inventories at the beginning.

Data sources for change in inventories compilation are the surveys, censuses and official reports from National Statistical Office, Ministry of Industry and Office of the National Economic and Social Development Board including:

- Industrial census
- Industrial survey
- Report of the trades and services
- Input-Output Table
- Quarterly sales survey
- Finished goods inventory index

4.2.4 International Trade on Goods and Services

There are three adjustments in international trade on goods and services which are recording of imports and terminology changes.

1) Import goods valuation are changed from cost, insurance and freight (CIF) basis, which includes shipment and insurance cost, to free on board (FOB) basis in accordance with the 1993/2008 SNA's recommendation. FOB is the value recorded at exporter's customs frontier. Freight and insurance was previously included in CIF import values. With FOB valuation, freight and insurance spending of importers is now excluded from import values and is included in the transportation and insurance service items instead. Hence, import good value recording remained only valuation of goods, the same values as export goods. Therefore, trade balance is shown excluding transportation and insurance cost. Goods and services data at current prices are provided by The Customs Department and Bank of Thailand.

2) The change above does not only affect import goods recording, but also affect service payments which include transportation and insurance expenditure from importation. Overall, current account does not change from the adjustment. In addition, the adjustment is also consistent with Balance of Payments and International Investment Position Manual, 6th Edition.

3) Terminology of the return on factor of production has been changed from Gross National Product (GNP) to Gross National Income (GNI) in line with 1993 SNA. Terminology is changed because GNP or GNI are measurement of primary income or factor income possessed by residents who are involved in economic activities whether inside or outside economic boundary. The term "GNI" indicates to the measurement of income better than the term "GNP" in prior standard of 1953/1968 SNA.

The details of the revision of annual national income of Thailand using CVM is available in "National Income of Thailand, Chain Volume Measures: 1990-2010 edition" and the seminar document for the dissemination of National Income of Thailand, Chain Volume Measures: 1990-2010.

Chapter 5
Results of Real Quarterly Gross Domestic Product with Chain Volume Measure Estimations

The result of real quarterly Gross Domestic Product with chain volume measure (QGDP CVM) estimation is influenced not only by the change in compilation technique but also by other adjustments in line with annual figures as mentioned in the previous chapter. Adjustments mentioned in the previous chapter lead to changes in quarter values in both current market prices and real terms in terms of the level or scale as well as the trend of movement of quarterly values. Changes in values from Q1 of 1993 to Q4 of 2013 moved under the influence of annual figures. In other word, the values of each quarter in a year on both current market prices and the real term value are adjusted so that the sum of four quarters equals to the annual figure (benchmarking). The annual figure of 2014 is independently estimated, not the summation of four quarters.

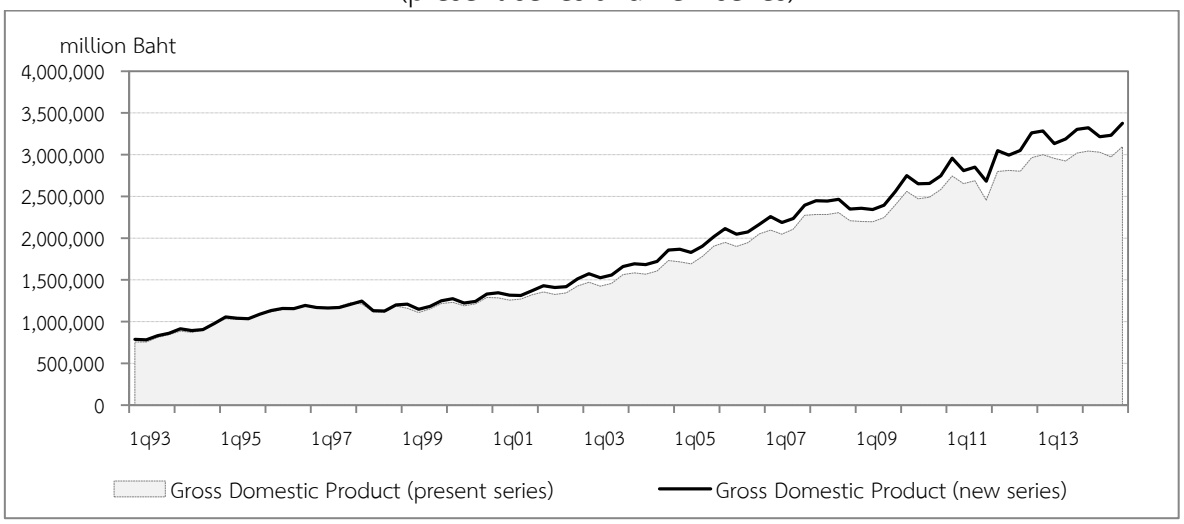
This chapter will show the comparison between the current series (QGDP with fixed-base year method) and the new series (QGDP with CVM) on both the production and expenditure sides. The level of values, growth rate, and movement trend or change over the period in each series are compared and examined.

5.1 Quarterly Gross Domestic Product at current market prices

5.1.1 Production approach (Quarterly Gross Domestic Product: QGDP)

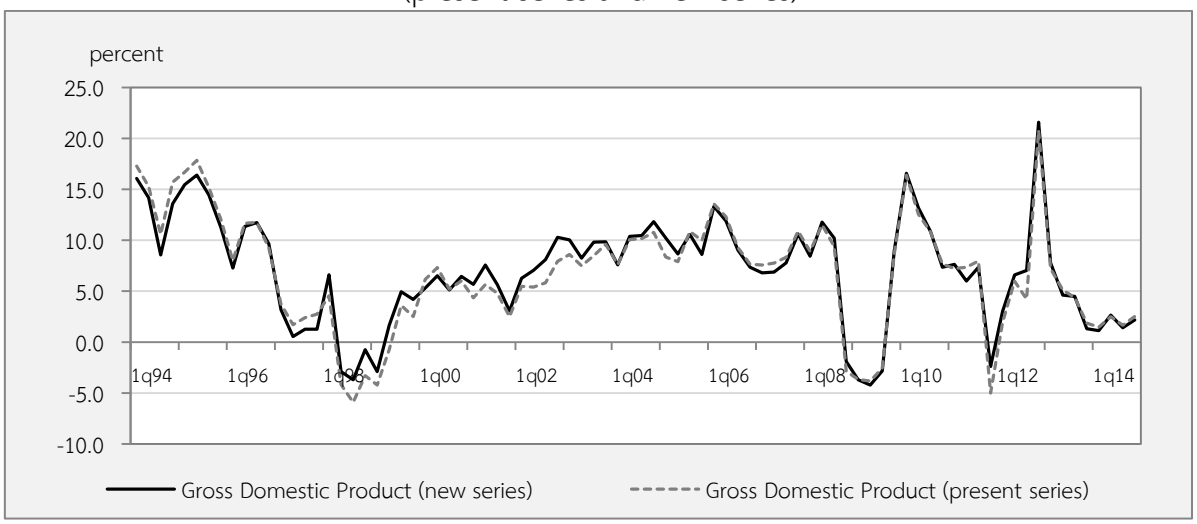
Figure 5.1 shows that the value of new quarterly gross domestic product at current market prices compared with the present series has a similar trend. However, new series has higher value than present series throughout the whole series. The figure also shows different levels in two series since the recovery from the economic crisis in 1998. From year 2000 onwards, the value of QGDP increases by 105,528 million baht or 5.6% of QGDP per quarter on average. This is a result of revision of economic activities included QGDP in line with latest national accounts of Thailand.

Figure 5.1 QGDP at current market prices
(present series and new series)

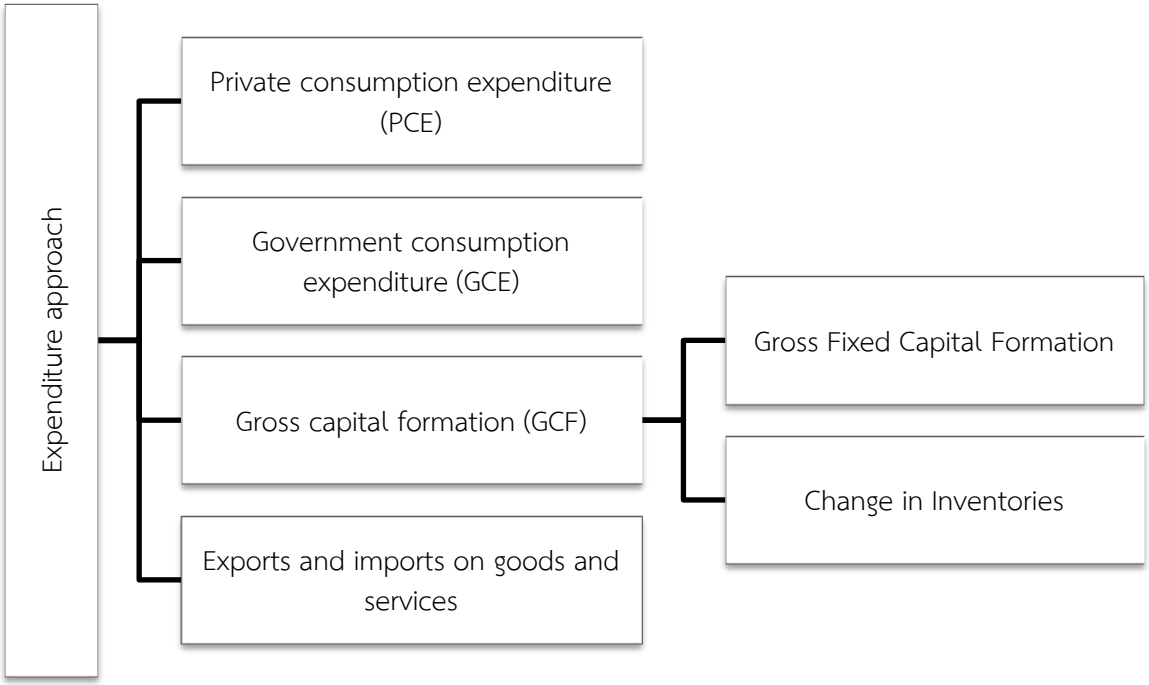


Overall, growth rates at current market prices (Q1/1993-Q4/2014) in figure 5.2 found that new series sometimes increases and sometimes decreases from the present series. Overall, the average growth rate of new series is 7.0% compared with 6.8% growth in present series, or increases 0.2% per quarter. Overall growth has not changed significantly compared to present series.

Figure 5.2 Growth rates (YoY) of QGDP at current market prices
(present series and new series)



5.1.2 Expenditure approach (Quarterly Gross Domestic Expenditure: QGDE)



The adjustment in QGDE compilation using CVM in line with the annual values resulted the values in current market prices from Q1 of 1993 to Q4 of 2014 (88 quarters) that differ from the present series in almost all quarters, increasing by approximately 86,609 million baht per quarter (see Table 1 on appendix) or 4.7% of QGDE. In particular, the values of the end period of new series increase explicitly as a result of increases in almost all components of the expenditure.

Private consumption expenditure (PCE) increases by approximately 23,640 million baht per quarter. Government consumption expenditure (GCE) is higher by approximately 55,948 million baht per quarter. Expenditure on gross fixed capital formation expands at 12,430 million baht on average. Exports of goods and services are lower by approximately 2,791 million baht per quarter. Meanwhile imports of goods and services higher by 4,299 million baht on average.

Figure 5.3 QGDE at current prices
(present series and new series)

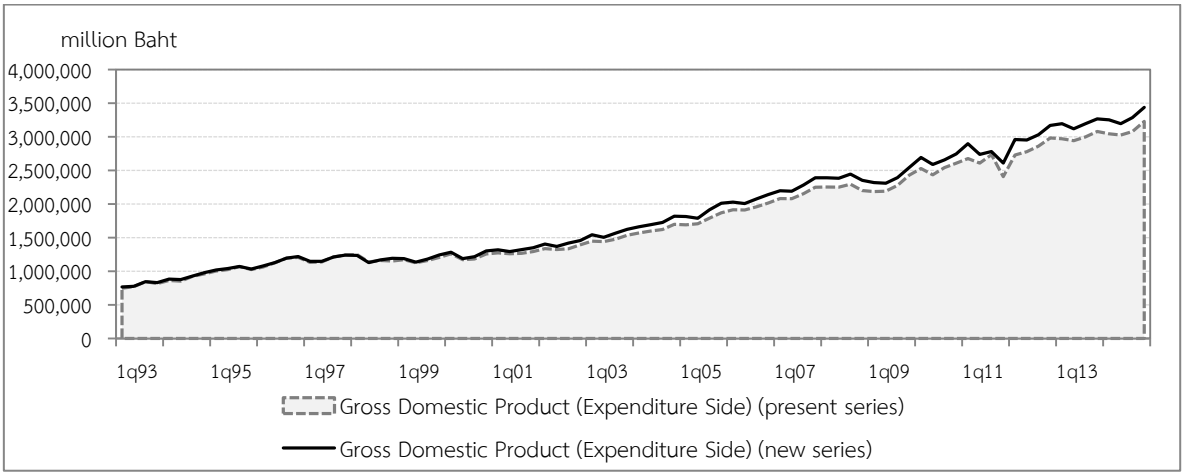
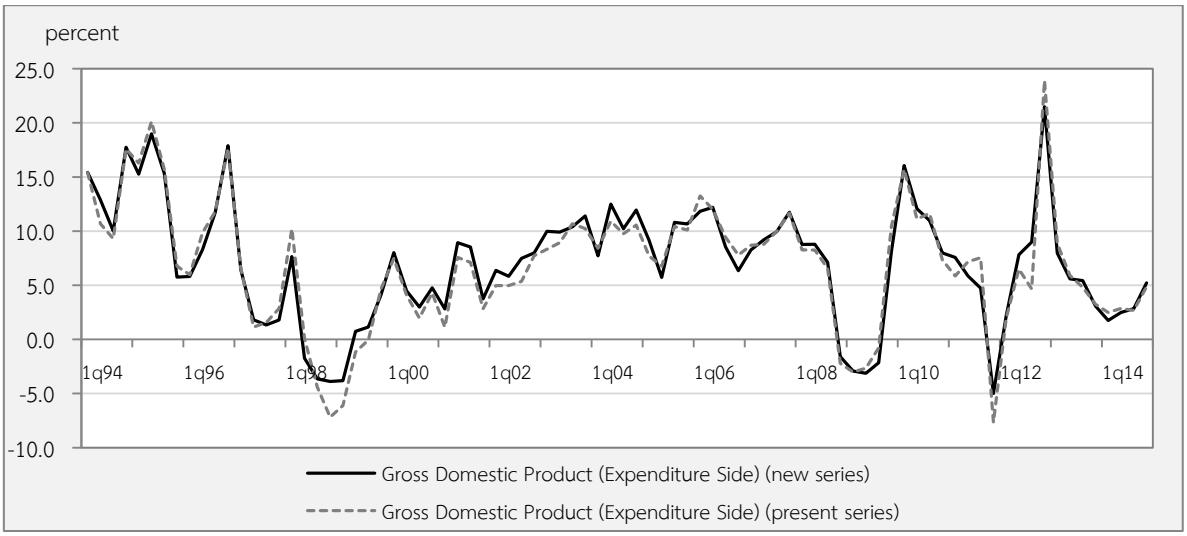


Figure 5.4 Growth rate (YoY) of QGDE
(present series and new series)



From the above figures, the movements between new QGDE at current market prices and present QGDE are consistent with each other. In Figure 5.3, the values of the new series are approximately higher than that of the present series as a consequence of the changes in coverage and annual figures of QGDE. Nonetheless, the movement of year-on-year growth rates in the new series sometimes increases and sometimes decreases from the present series.

The structure of the component on expenditure side at current market prices also changed. The proportion of private consumption expenditure and gross fixed capital formation declined from 55.3% and 28.4% in 1988 prices series to 53.4% and 27.7% in the new series. On the other hand, the share of government consumption expenditure increased

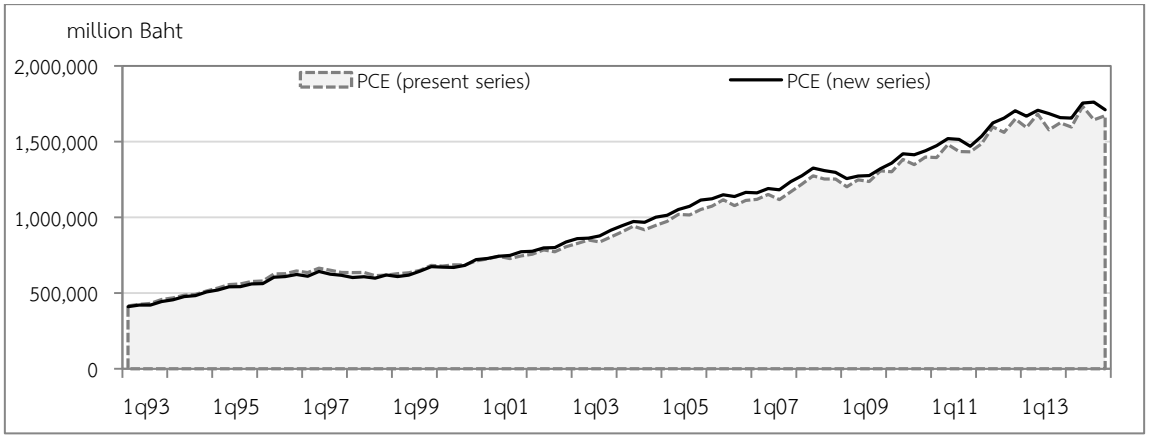
from 11.7% in present series to 13.8% in the new series. The share of export of goods and services decreased from 63.3% in present series to 59.9% in the new series. The share of imports of goods and services dropped from 59.3% to 56.4%.

The components of expenditure are illustrated below:

- **Private Consumption Expenditure (PCE)**

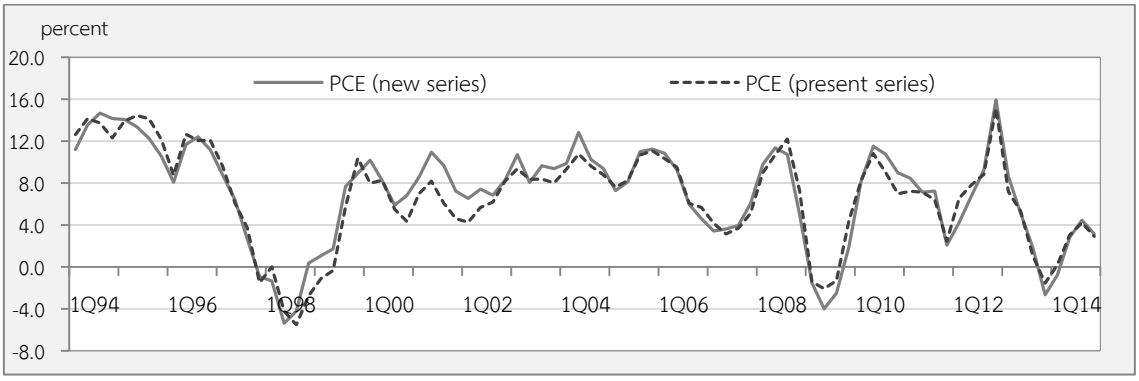
As a result of the change in compilation method, quarterly PCE at current market prices increases approximately by 23,640 million baht per quarter or 2.4% of overall PCE, or 1.3% of total expenditure.

Figure 5.5 Quarterly PCE Value
of the present series and new series at current prices



From the above figure, the movement of quarterly PCE at current prices in the new series and present series show similar trends although the average values of the new series came higher. In particular, the biggest gap between two series is in Q3 2014 with the highest value at 116,458 million baht and the smallest value in 2Q of 2001.

Figure 5.6 Quarterly PCE growth rates (YoY)
of the present series and new series at current prices



From Figure 5.6, the growth rates of PCE at current market prices in new series from Q1 of 1993 to 4Q of 2014 exhibited both increases and decreases from the existing series. The average growth is at 7.0% compared to 6.7% in the previous series, or 0.3% increase on average. However, the growth rates of the new series were not significantly different from previous series.

- **Government Consumption Expenditure (GCE)**

General government final consumption expenditure increased throughout the new series by 55,948 million baht per quarter on average, which accounted for 2.1% of GDP. In 3Q/2013, government final consumption expenditure increased the most by 141,672 million baht or accounted for 3.1% of GDP; whereas 2Q/1993 increased the least by 10,418 million baht or accounted for 1.0% of GDP. Followed the latest concept of standard national accounts, consumption of fixed capital and social benefit in kind were compiled and recorded at 33,532 million baht and 21,566 million baht per quarter on average, respectively. Meanwhile, government compensation of employees and net purchase of goods and services rose by 2,322 million baht and 1,473 million baht per quarter on average, respectively.

In term of structure, government compensation of employees at current market prices in the traditional series during 1993-2014 accounted for 71.1% of GCE per quarter on average; whereas net purchase of goods and services accounted for 28.9% of GCE per quarter on average. However, in the new edition, government compensation of employees and net purchase of goods and services accounted for only 58.1% and 23.4% of GCE per quarter on average, respectively. The change was a result of additional values in

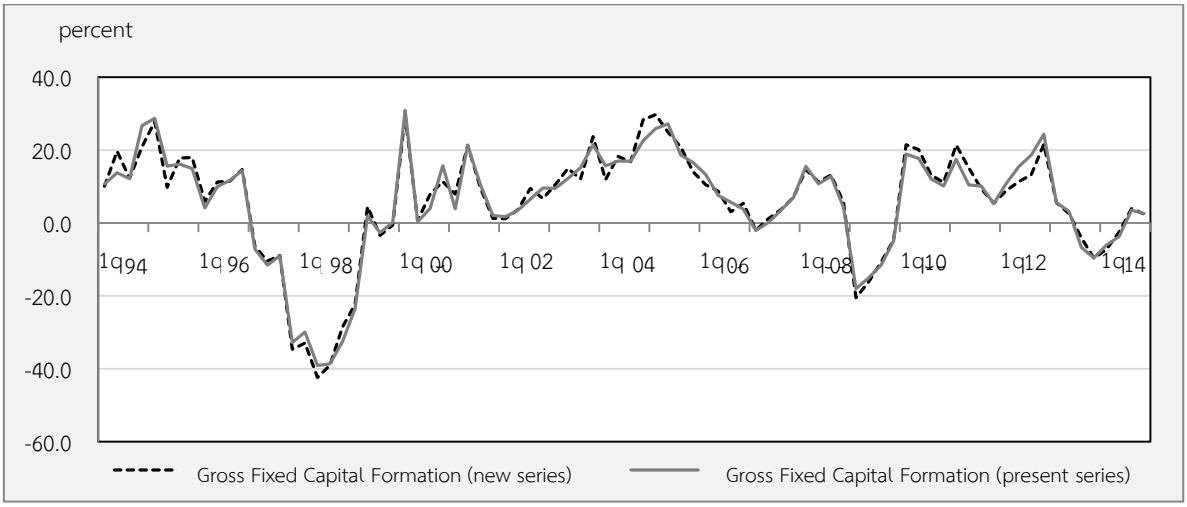
consumption of fixed capital and addition of the item social benefit in kind into the GCE, following latest concept of standard national accounts, which accounted for 12.7% and 5.8% of GCE in average per quarter respectively.

➢ **Gross Capital Formation (GCF)**

- **Gross Fixed Capital Formation (GFCF)**

Revised quarterly gross fixed capital formation or quarterly investment increased from the old series on average by 12,430 million Baht per quarterly. The increase was from the rise in construction and equipment and machinery by 9,588 million Baht per quarter on average and 2,842 million Baht per quarter, respectively. The improvement due to the addition of construction information such as road repair of government, repairing of public and private buildings, cost of petroleum exploration, drilling of state enterprises and private, as well as investment in machinery and equipment, according to the new revised value added and value of capital imported goods. In the old concept purchases of military ordnance item are counted in government consumption expenditure; however, in the new concept the purchases of military ordnance except for tanks, warships and combat aircraft are counted in gross fixed capital formation. Public and private investment increased by 8,434 million baht and 3,996 million baht per quarterly on average.

Figure 5.7 YoY growth rates of GFCF
in the new series and existing series at current prices



- **Change in Inventories**

Change in inventories at current market prices in the first quarter of 2011 changed the most by 95,246 billion baht, resulting in change in inventories to GDP ratio at that period changing from -0.6% to 2.7%. However, the average of change in inventories to GDP ratios in all periods registers at 0.6%, as same as the old series.

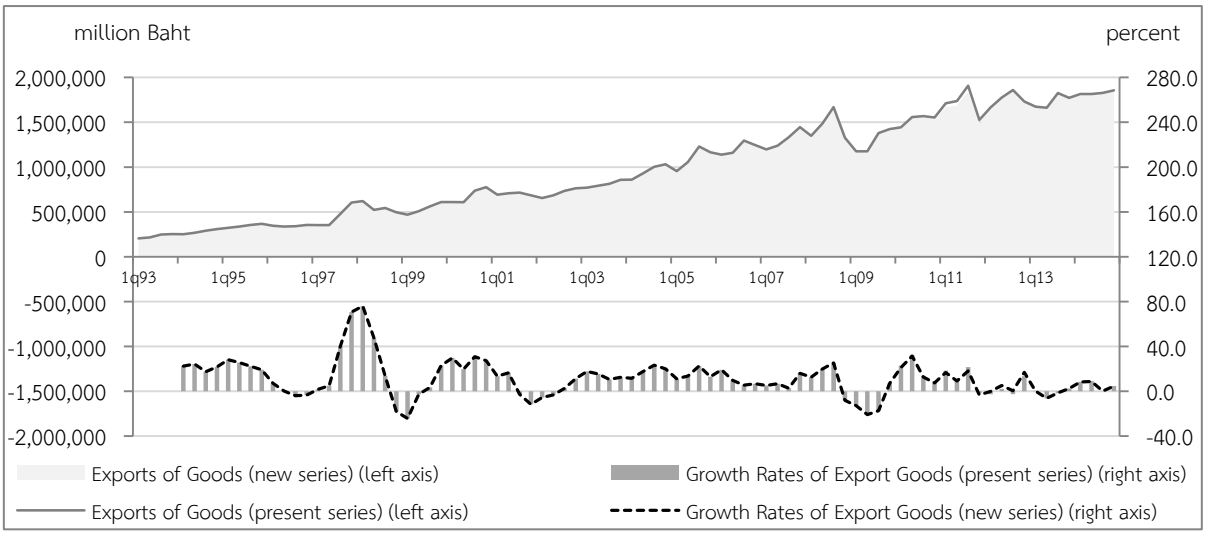
The highest quarterly change in inventories was in the first quarter of 2013 at the value of 182,144 million Baht. On the other hand, the lowest change in inventories registered at -159,180 million Baht in the first quarter of 2009.

➢ **International Trade on Goods and Services**

Quarterly international trade on goods and services at current market prices from the first quarter of 1993 to the fourth quarter of 2014 changed not only from the revision of data sources, but also from import recording's method.

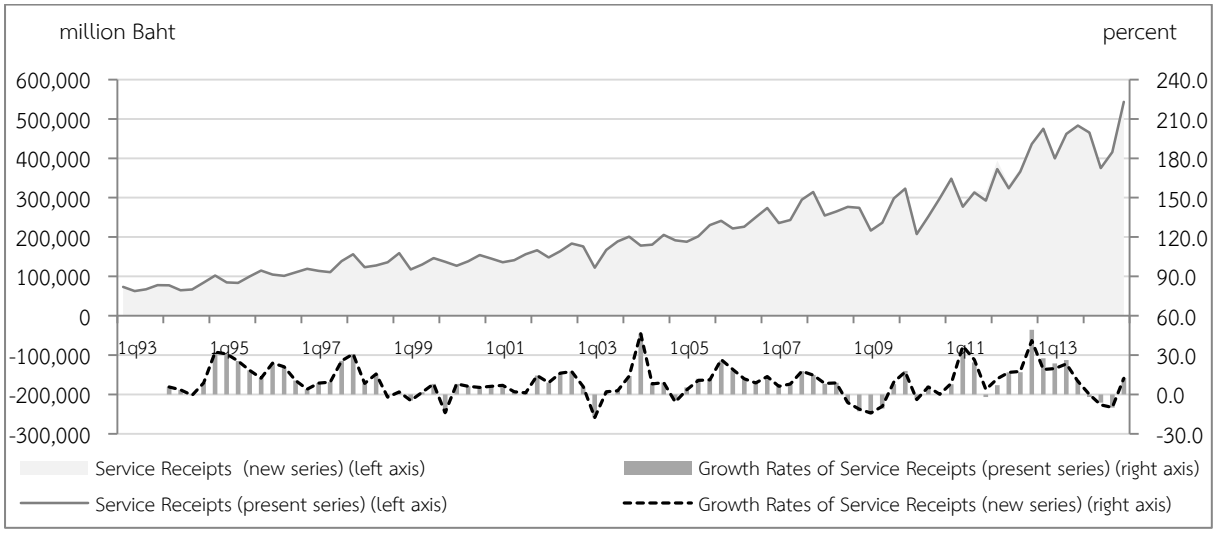
Quarterly merchandise export data at current market prices changed only from 2009 to 2014. The big adjustment from data sources display evidently in the first quarter of 2010 to the fourth quarter of 2011 with an average 2.0% decrease, or 33 billion of Baht per quarter from 1.63 trillion of Baht to 1.59 trillion of Baht. The average quarterly exports goods growth rate in this period is revised from 16.0% to 14.2%. For 2013 to 2014 quarterly exports goods are slightly revised with slight change in growth.

Figure 5.8 Values and growth rate (YoY) of export quarterly
of new series and existing series at current prices



Quarterly service receipts data are revised from 2005 to 2014. These changing are significant in 2011 and 2012 by an average of 9.9 billion of Baht per quarter increasing or increasing by an average of 2.9%. So, average quarterly growth rate in 2011 to 2012 is revised upward from 19.2% to 20.4%. Moreover, average quarterly growth rate in 2013 is revised downward. However, changing in other period are insignificantly revised.

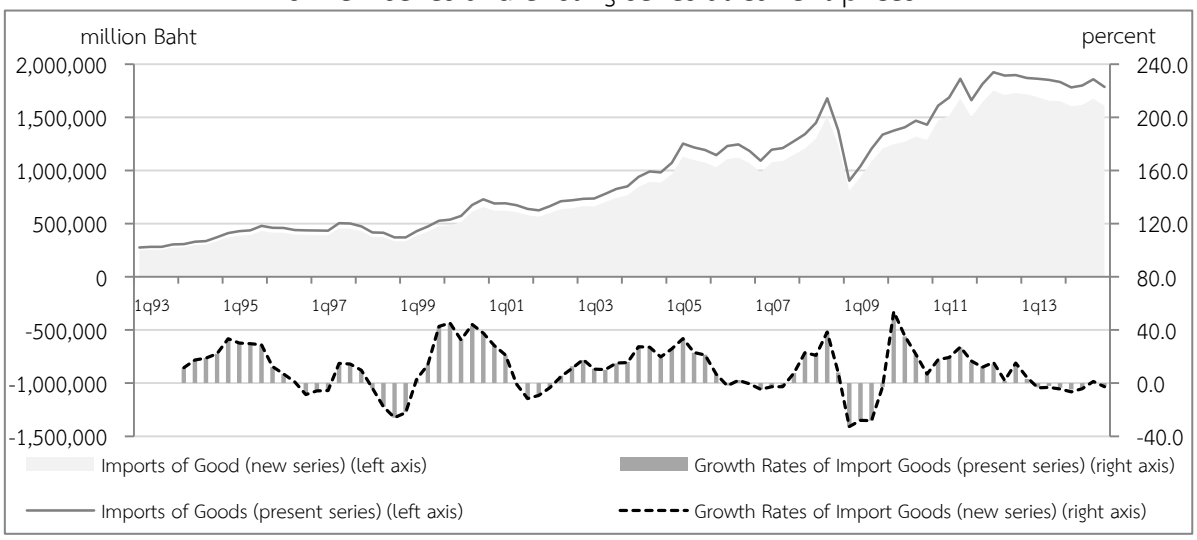
Figure 5.9 Values and growth rate (YoY) of service receipts quarterly
of new series and existing series at current prices



Imports on goods and services at current prices data are revised from 1993 to 2014 due to revision from data sources and recording method on import goods.

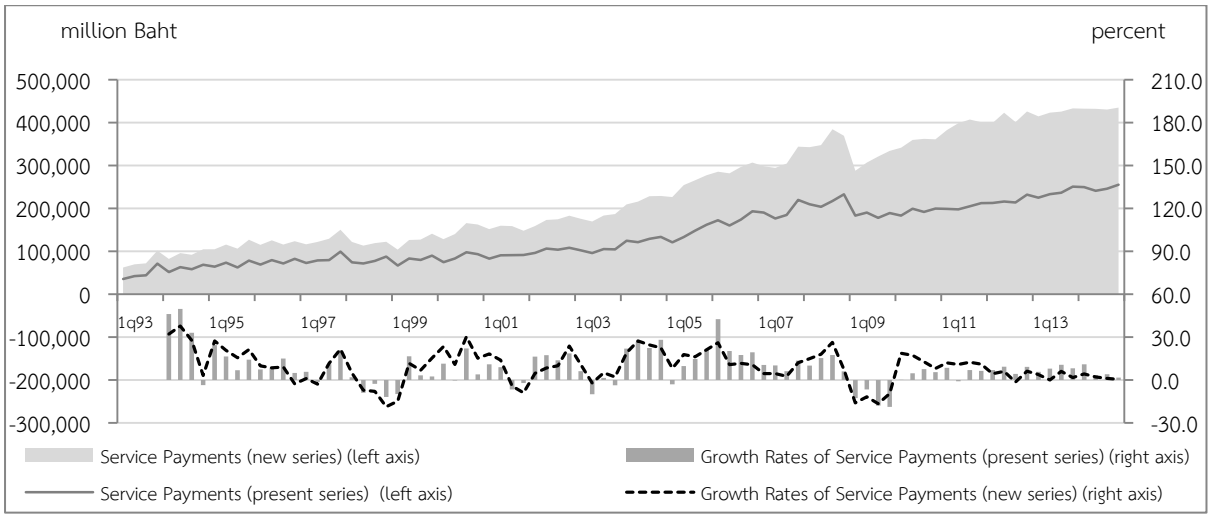
Import goods are revised downward in every quarter from 1993 to 2014 by an average of 9.8% as a result of change from CIF to FOB valuation leading shipment and insurance cost being removed.

Figure 5.10 Values and growth rate (YoY) of imports quarterly
of new series and existing series at current prices



Average quarterly service payments at current market prices in 1993 to 2014 increased from 140 billion Baht to 240 billion Baht, or 72.8% increase. The revision was a result of freight and insurance cost addition. Average growth rates are revised upward slightly from 9.0% to 9.3%. Significant revisions are observed from 2008 to 2011 with average of 2.0% increasing to 7.2 %.

Figure 5.11 Values and growth rates (YoY) of service payments quarterly
of new series and existing series at current prices



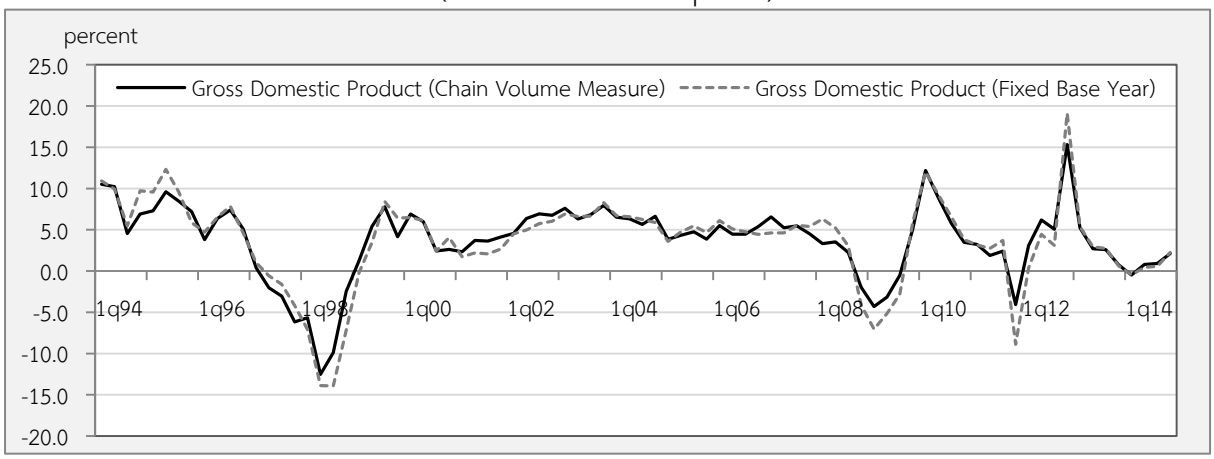
5.2 Real Quarterly Gross Domestic Product (Chain Volume Measure)

5.2.1 Production approach (Quarterly Gross Domestic Product: QGDP)

Average growth (YoY) of QGDP non seasonal adjusted in production side is 3.8% in CVM series compared with a 3.6% growth of 1988 series. Figure 5.13 shows that overall

economic trends are the same in two series. However, there are some periods of the series with growth rates that are markedly different between the two series, including 1995, 1998, 2001, 2007, 2008, and 2009 which are the periods with high economic volatility.

Figure 5.12 Real growth rates of QGDP
(CVM and constant prices)



Overall QoQ growth rates in figure 5.13 shows similar high variability in both series. The high variability is a result of quarter-specific seasonal factors. However, the effect of seasonal factors in the fixed based series is larger than that of CVM series, especially during 2001-2009. From year 2010 until present, the variation in CVM series becomes larger than the fixed base. Nonetheless, both series have the same seasonal pattern.

Figure 5.13 Real growth rates (QoQ) of QGDP (CVM and constant prices)

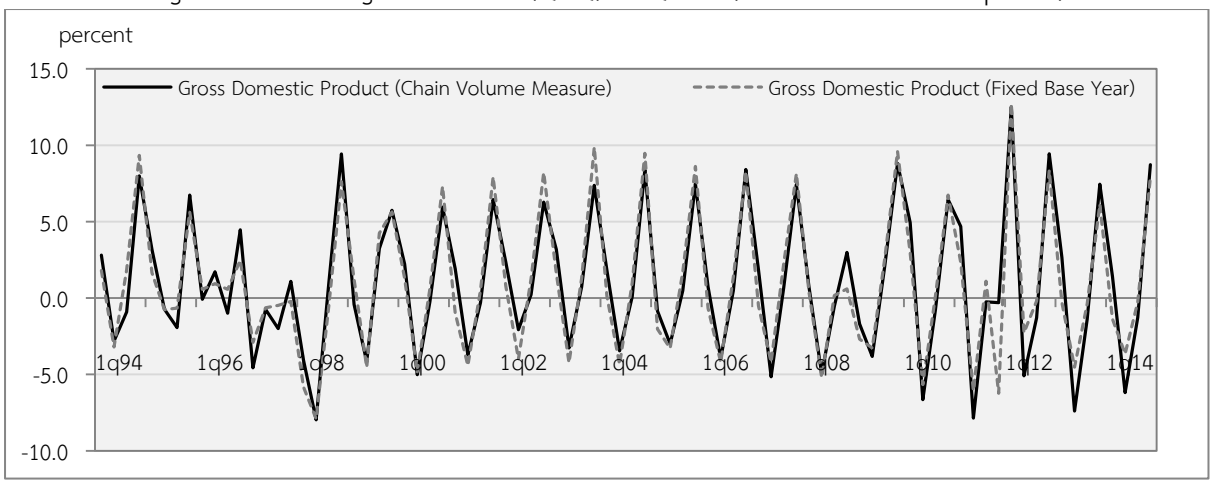


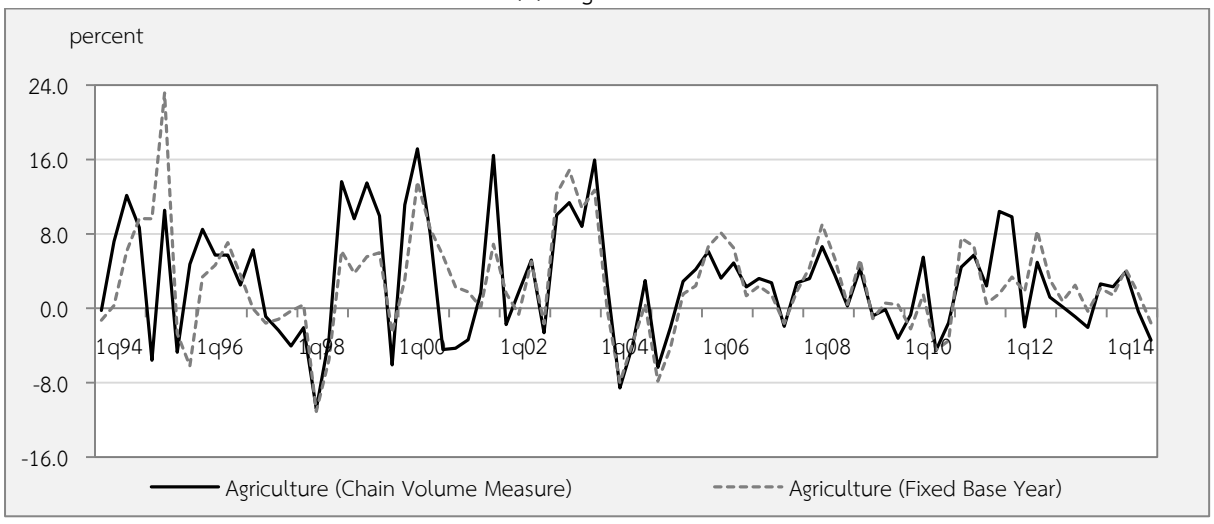
Figure 5.14 shows real growth rates of QGDP classified by agriculture and non-agriculture sectors. The agricultural sector in new series differs significantly from the fixed base in some periods including 1995, 1999, 2001, and 2012. There are 2 main possible factors. First, if value of agriculture data changes from fixed base series, quarterly growth will

change from the fixed base series. Second, the change in compilation technique from fixed base to chain volume measure leads changing agricultural price structure in CVM. Normally, agricultural prices have high volatility. In new series, the weighted price structures are updated every year and more accurately reflect the highly fluctuated nature of agricultural prices which affect growth of agricultural products.

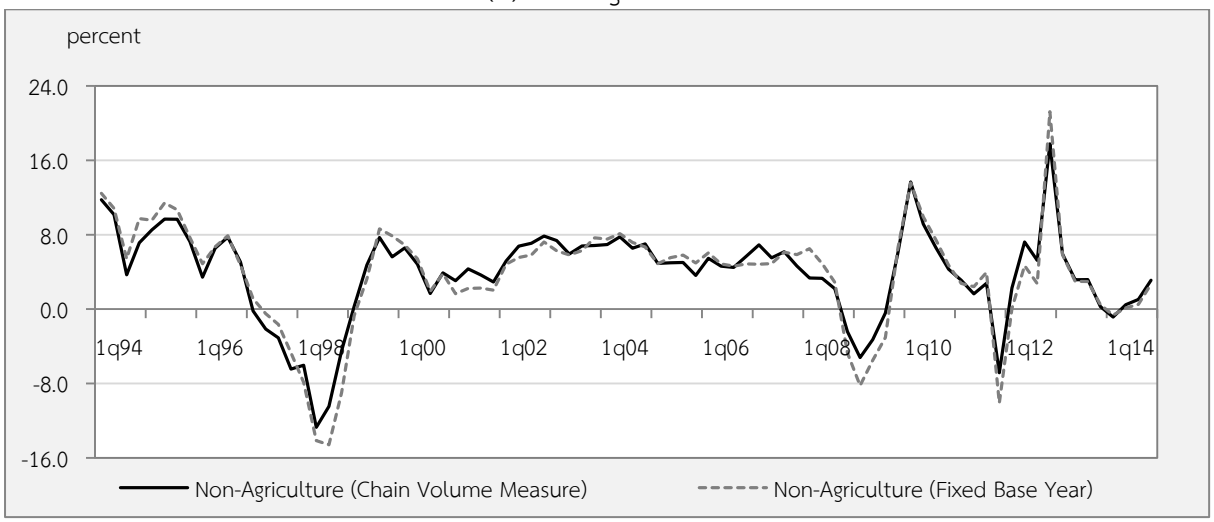
In the non-agriculture sector, there are no significant changes of growth rates between two series except for during 1995, 1998, 2007, and 2009. The main factor of the changes was from adjusting quarter data in line with annual figures which included new economic activities such as manufacturing sectors, transport, storage and telecommunication sector, real estate renting and business services activities sector, and other community services sectors. There is not much change as a result of technical changes, since the prices of non-agricultural goods do not fluctuate as much as the prices of agricultural good.

Figure5 .14 Real growth rates (YoY) of QGDP (CVM and fixed base classified by sector)

(a) Agriculture



(b) Non-Agriculture

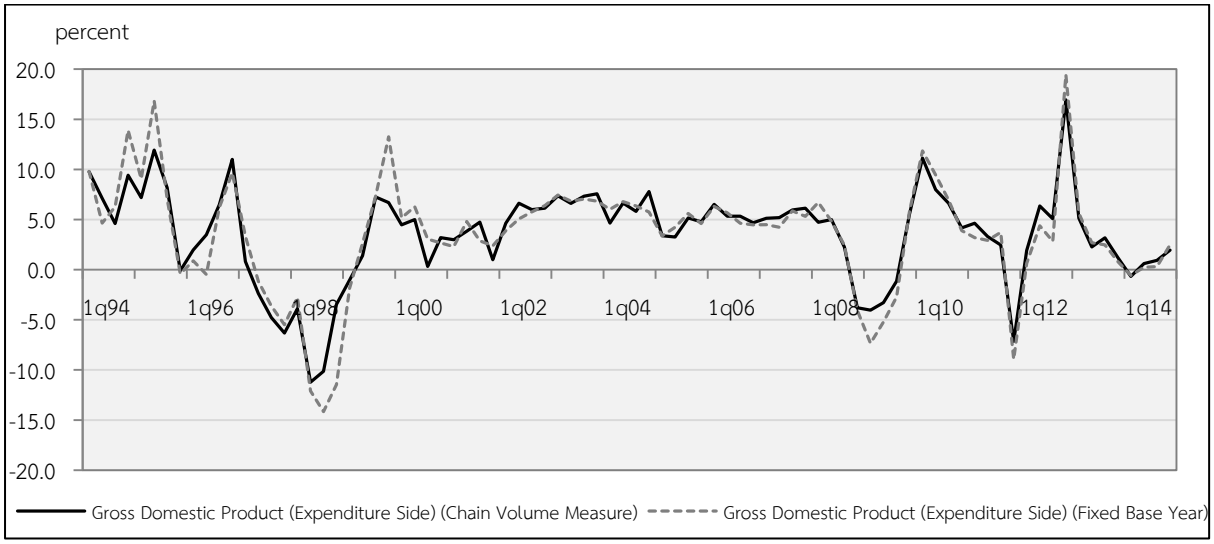


5.2.2 Expenditure approach (Quarterly Gross Domestic Expenditure: QGDE)

The growth rates (YoY) of quarterly QGDE from 1Q of 1993 to 4Q of 2014 (88 quarters) without seasonal adjustment in the new series both increases and decreases from the 1988 prices series. The overall growth trends in two series are consistent with growth of approximately 3.6% per quarter in the new series compared to a growth of 3.5% per quarter in the previous series. In addition, the growth rates of QGDE are also close to the growth rates of QGDP in the new series which increases on average 3.8% per quarter. (Table 2 in appendix)

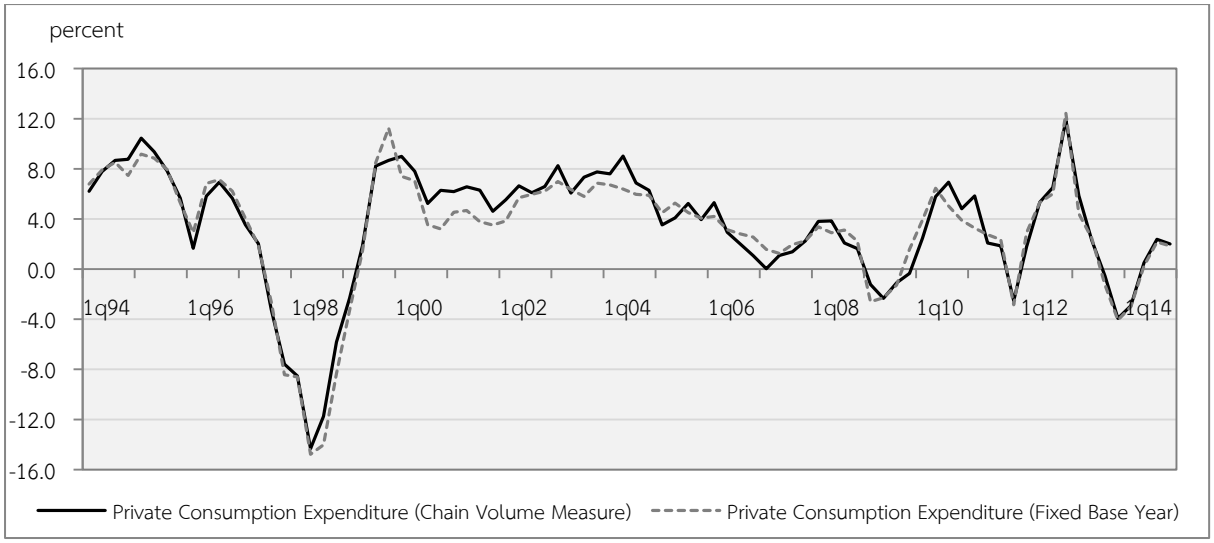
The trend of economic situation over the series considered from the growth rates (YoY) of QGDE using CVM and the fixed-base year series (Picture 5.15) shows the same movement although the level of the growth rates between the new series and the 1988 prices series differs in some quarters.

Figure 5.15 Growth rates (YoY) of gross domestic products expenditure side (QGDE) in real terms calculated by CVM and fixed base method



➢ **Private Consumption Expenditure (PCE)**

Figure 5.16 Growth rates (YoY) of private consumption expenditure)PCE) in real terms calculated by CVM and fixed base method



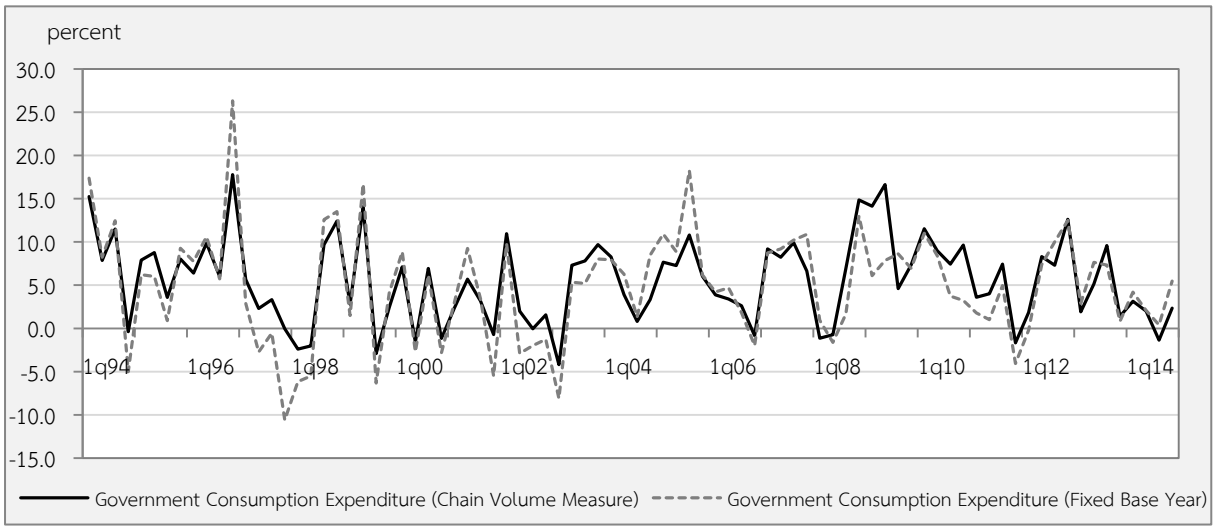
The growth rates (YoY) of PCE using CVM from 1993 to 2014 (88 quarters) without seasonal adjustment in the new series both increases and decreases from the 1988 prices series. The growth rates of the new series is at 3.4% on average per quarter, compared to average growth of 3.1% in 1988 prices series, or increases approximately by 0.3% per quarter. In addition, the biggest gap between two series is found at 2Q of 2004 which expands from 6.4% in 1988 prices series to 9.0% in new series.

However, PCE in new series and 1988 prices series move in the same direction overall (Figure 5.16). The PCE growth rate of 4Q of 2014 increases 2.0% compared to 1.9% in the previous series and expands at 0.5% annually higher than 0.3% of the 1988 prices series.

➢ **Government Consumption Expenditure (GCE)**

For the rates of growth, general government final consumption expenditure in the CVM edition increased by 5.5% per quarter on average, higher than 4.9% per quarter on average in the traditional fixed base year (1988). Government compensation of employees and net purchase of goods and services accounted increased by 4.3% and 6.8% per quarter on average respectively. Furthermore, consumption of fixed capital and social benefit in kind increased by 5.9% and 24.8% per quarter on average respectively. Prior to the CVM series, these two categories were not compiled and calculated in general government consumption expenditure (GCE).

Figure 5.18 Growth rates (YoY) of government consumption expenditure (GCE) quarterly in real terms calculated by CVM and fixed base method

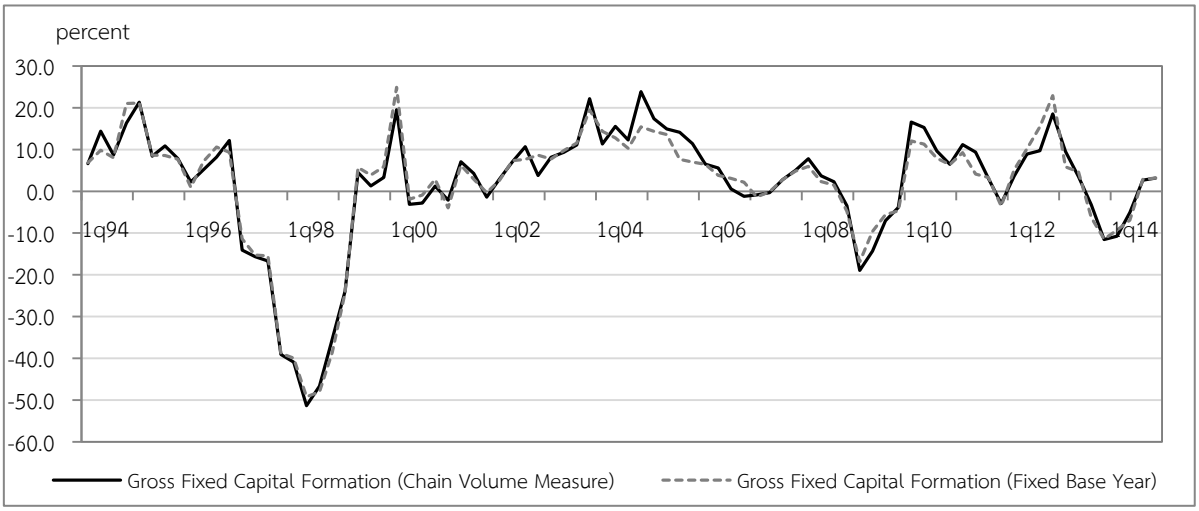


➢ **Gross Fixed Capital Formation (GFCF)**

Quarterly gross fixed capital formation or quarterly investment in real terms increased on average 1.8% per quarter. Quarterly gross fixed capital formation at 1988 prices grew on average 1.6% per quarter as growth rates fell during economic crisis in 1997-1998. After revision in chain volume measure, construction declined at an average of 0.2%, higher

than average decrease of 0.7% in 1988 series. Machinery and equipment in chain volume measures grew on average 3.5%, the same growth rate as 1988 series.

Figure 5.19 Growth rates (YoY) of gross fixed capital formation (GFCF) quarterly in real terms calculated by CVM and fixed base method



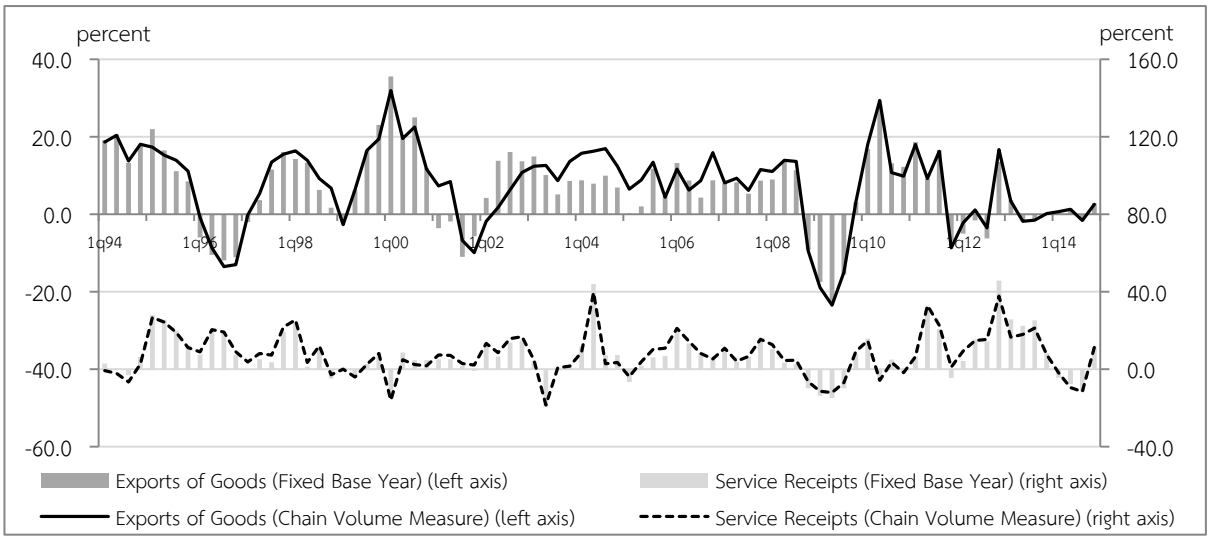
- **International Trade on Goods and Services**

Changing in real term compilation method and data led to revisions in growth rates of international trade on goods and services in real terms from 1994 to 2014 period.

Year on year growth rates of real quarterly exports from 1994 to 2014 changed in every period, resulting in average growth rates increased from 6.6% to 7.4%. The real quarterly export growth rate in the 4th quarter of 2014, the latest quarter, changes from 2.8% to 2.5%. Moreover, the average growth rate in 2010 to 2011, period with the most revised data, decreased from 13.5% to 12.8%.

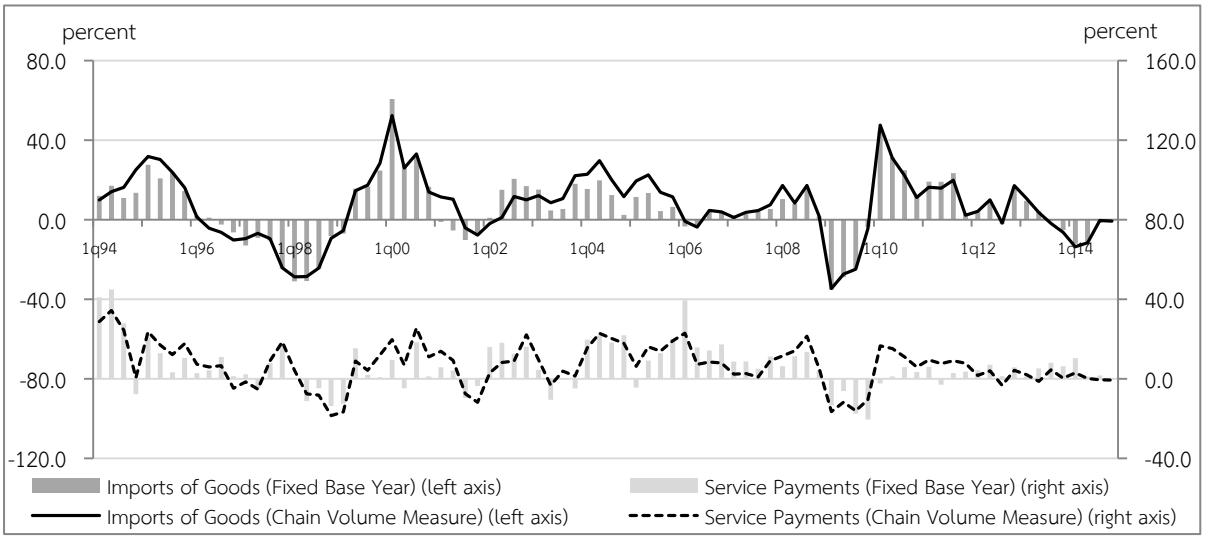
Average real quarterly service receipts growth rate in 1993-2014 changed from 7.3% in fixed base method to 7.5% in chain volume method. In addition, growth in the 4th quarter of 2014, the latest quarter, slightly revised from 11.4% to 11.3%.

Figure 5.20 Growth rates (YoY) of exports of Goods and services quarterly in real terms calculated by CVM and fixed base method



Average growth on real import goods for the whole series is 6.8% compared to 5.6% in old series. Moreover, the average in 2014 is lower from -6.2% to -6.6%. Average real service payments growth changed from 6.4% to 7.0%.

Figure 5.21 Growth rates (YoY) of imports of Goods and services quarterly in real terms calculated by CVM and fixed base method



Overall, chain volume measure method in real term compilation for international trade on goods and services revealed almost the same movement pattern as fixed base method.

5.3 Real Quarterly Gross Domestic Product (CVM) with seasonal adjustment

Generally, seasonally adjusted data is used in examining quarter on quarter growth of the economy. There are two types of typical seasonal adjustments.

First method

- The seasonal effects are gotten rid of at detial items level, and sum together. With this method, the sum of detail items is equal to aggregate item. This is the method the NESDB uses for 1988 prices series.

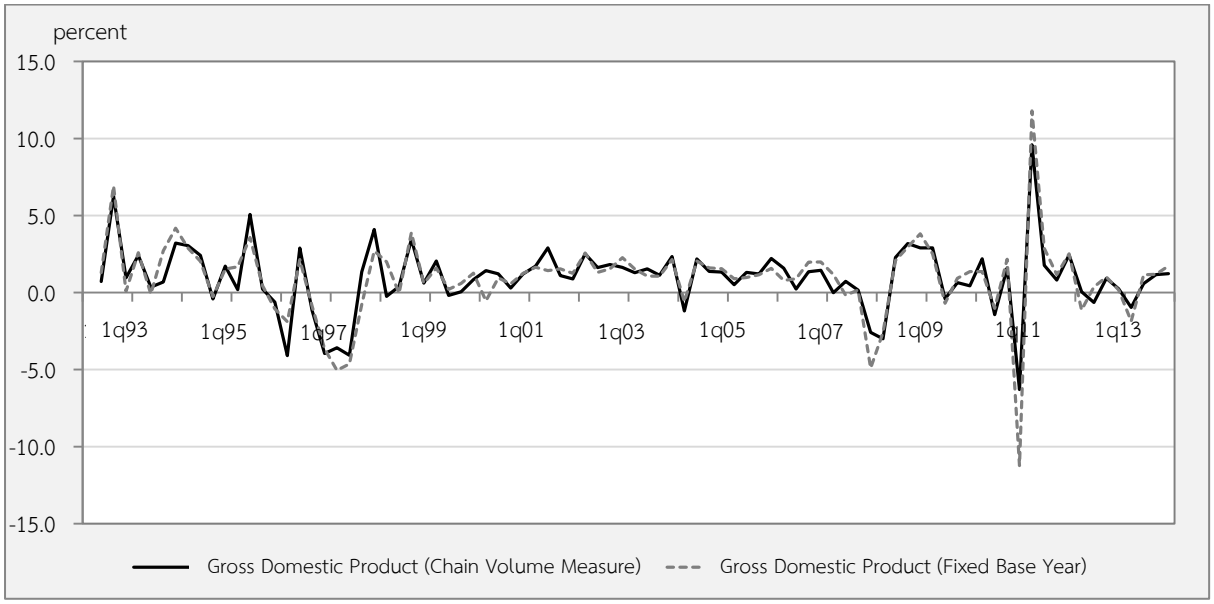
Second method

- The seasonal effects are gotten rid of at the detail item level and the aggregate level without any prior seasonal adjustmnet. In this method, the sum of seasonally adjusted detial items are not equal to the seasonally adjusted aggregate item.

In QGDP CVM compilation, the NESDB used the second method in seasonal adjustment, by adjusting at the detail items and the aggregate items without any prior adjustment. This is because with the CVM method, QGDP is the non-additivity property. The aggregate items are not equal to the sum of detail items, because there are residuals in the values of detail items. If the seasonal adjustment is done by the first method, the residuals would be included in the seasonally adjusted of the aggregate items as well. **Therefore, the seasonal adjustment method is changed to adjust at the detail items and the aggregate items independently.**

Comparing the seasonally adjusted series, the CVM series and 1988 prices series move in the same direction overall, except for some quarters.

Figure 5.22 Growth rates (QoQ) of GDP in real terms with seasonal adjustment in the CVM series and 1988 prices series

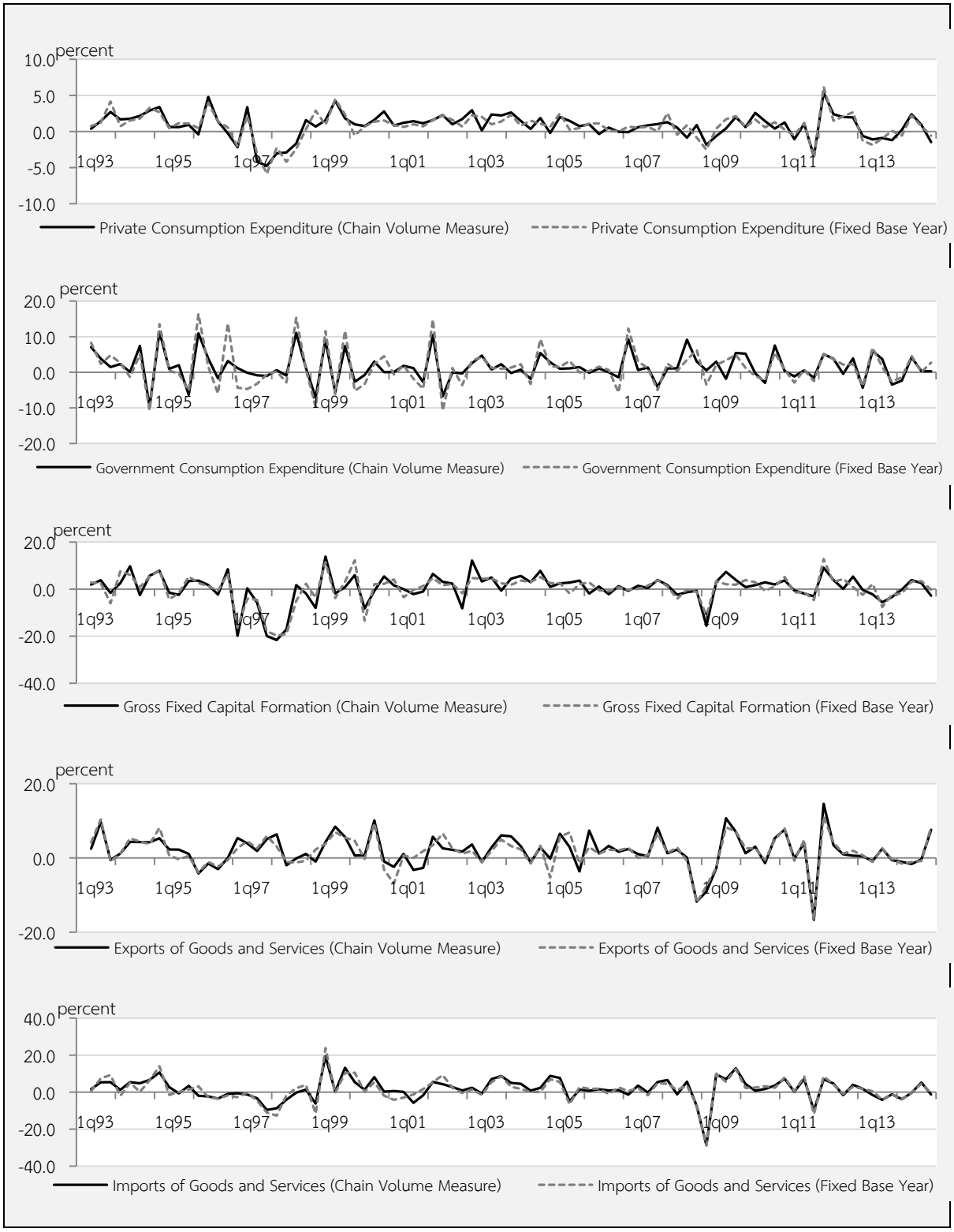


Similarly, considering the expenditure side, especially private consumption expenditure quarter with seasonal adjustment, the QOQ growth rates are consistent with 1988 prices series (Figure 5.23). Government consumption expenditure in CVM series after seasonal adjustment is also similar to the 1988 prices series. However, after year 2008 there are differences as the new series is increased in coverage and updated in compilation method according to SNA2008. The change includes adding consumption of fixed capital and social benefit in kind into GCE. The change results in structural differences.

Investment or fixed capital formation CVM series with seasonal adjustments also move consistently with the previous series during period before 2000. However, after 2000, differences between growths of the two series are obvious as a result of revised annual figures. For instance, construction and repair of roads by the government and repair of buildings by the private sector were previously included government consumption expenditure, and now are included in investment. Moreover, expenditures on computer software are included in investment.

For the external sector, exports and imports of goods and services in CVM with seasonal adjustment are consistent with 1988 series.

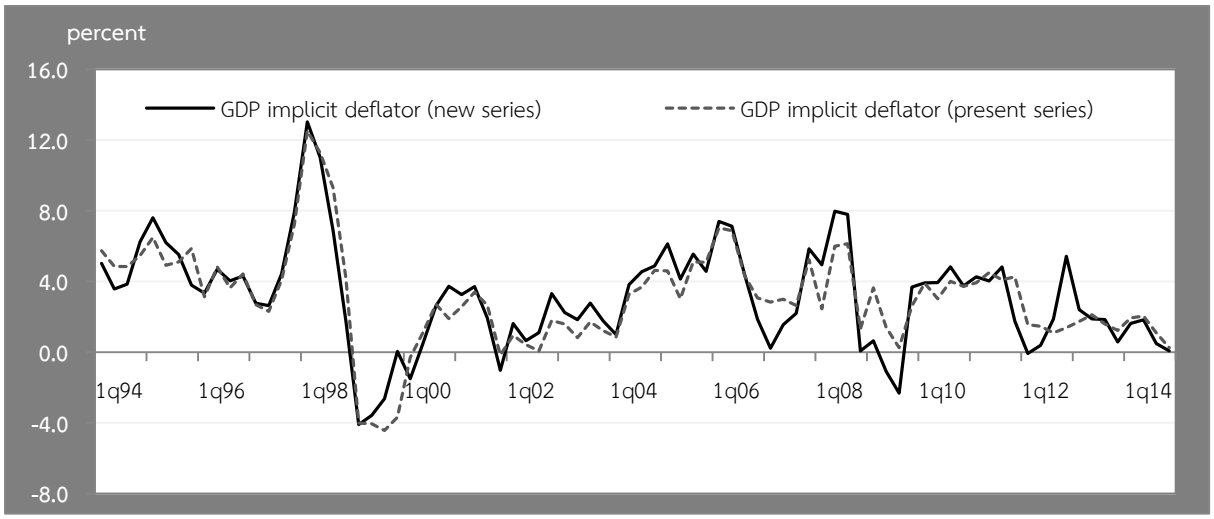
Figure 5.23 Growth rates (QoQ) of components of gross domestic product expenditure side in CVM series and 1988 prices series with seasonal adjustment



5.4 Implicit price deflator

The level of prices of goods and services obtained from QGDP compilation, or called "QGDP implicit prices deflator" is another set of data that can indicate the level of prices and services of overall economy, similar to consumer price index (CPI) produced by the Ministry of Commerce. These price indices can show movement of price levels and inflation of the economy.

Figure 5.24 Growth rates (YoY) of GDP implicit prices deflator
in new series and present series



In the fixed based series, the price structure is constant while in the CVM, the price structure is updated every year. Consider Figure 2.4, GDP implicit prices deflators move similarly but show more obvious differences after 2007. The price structures used in CVM is more current than the fixed base.

Comparing between CPI and GDP implicit prices deflators from two series will show that they move generally in the same direction. However, after year 2011 GDP implicit price deflator of CVM series starts to show more fluctuation than CPI.

In GDP compilation, the NESDB uses CPI and producer price index (PPI). PPI generally fluctuates more than CPI. QGDP implicit prices deflator therefore is a combination of price structure between CPI and PPI. With CVM, price structure is kept current and therefore, it shows more fluctuation as a result of recent ups and downs in PPI.

Figure 5.25 (a) growth rates of CPI and GDP Implicit prices deflator in present series

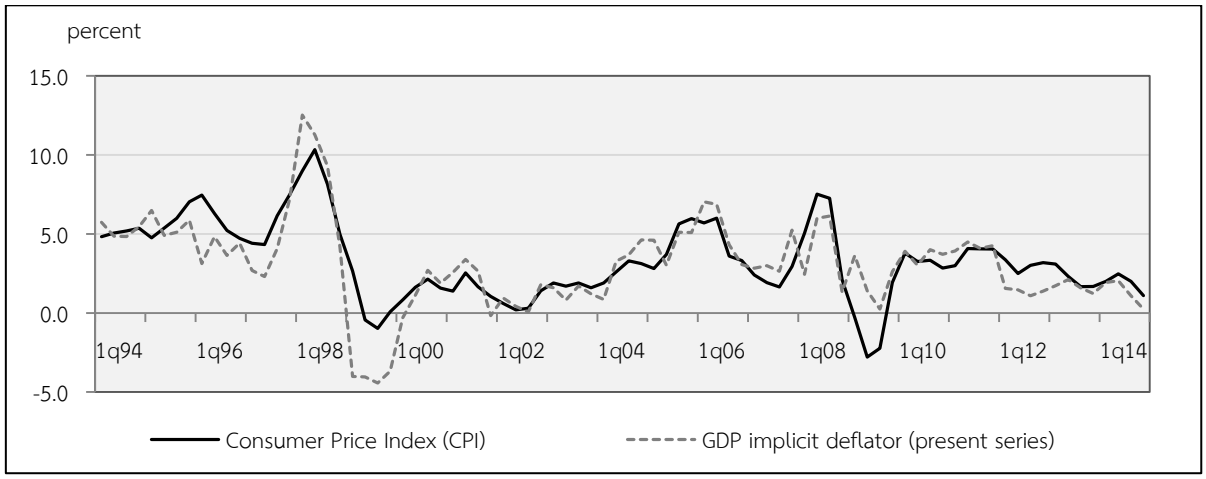
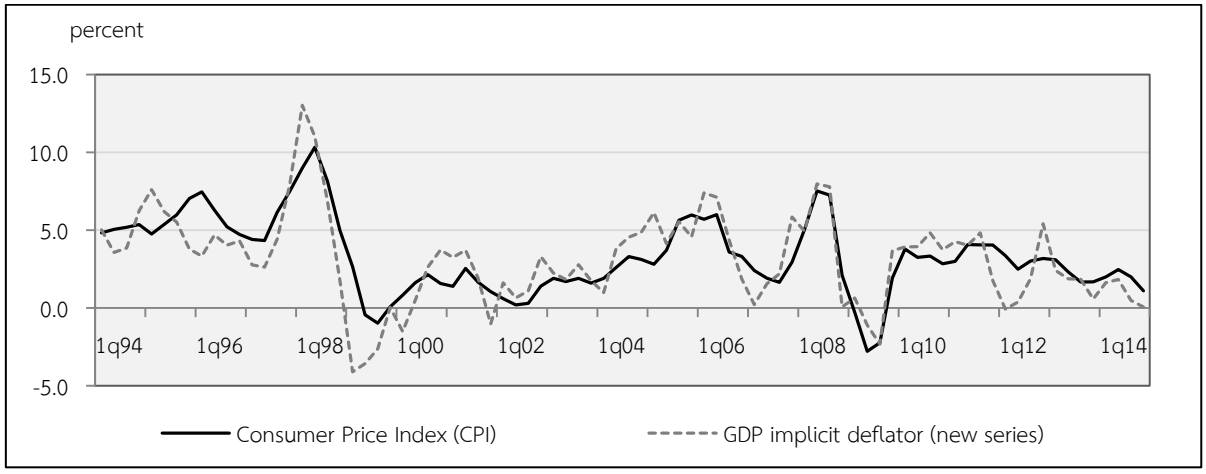


Figure 5.25(b) growth rates of CPI and GDP Implicit prices deflator in new series



Furthermore, PCE implicit prices deflator show that overall movement of prices are not different from the fixed base series and CPI. Some differences were a result of adjustment in values of consumption items that affect the structure of expenditure.

Statistical Tables

Table 1 Comparison of GDP and Expenditure , at Current Market Prices (Original) (Millions of Baht)

		1993 Q1	1993 Q2	1993 Q3	1993 Q4	1994 Q1	1994 Q2	1994 Q3	1994 Q4	1995 Q1	1995 Q2	1995 Q3	1995 Q4	1996 Q1	1996 Q2	1996 Q3	1996 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	788,017	782,214	832,162	861,046	914,642	893,013	903,415	978,020	1,056,012	1,039,466	1,033,955	1,088,176	1,132,819	1,157,530	1,155,207	1,193,049
(MB)	OLD	755,554	755,573	811,118	842,977	886,103	870,964	896,836	975,438	1,033,855	1,026,365	1,032,857	1,093,135	1,116,552	1,146,094	1,154,274	1,194,121
	Diff. (NEW-OLD)	32,463	26,641	21,044	18,069	28,539	22,049	6,579	2,582	22,157	13,101	1,098	-4,959	16,267	11,436	933	-1,072
Growth Rate	*NEW*					*16.1*	*14.2*	*8.6*	*13.6*	*15.5*	*16.4*	*14.4*	*11.3*	*7.3*	*11.4*	*11.7*	*9.6*
(Y-o-Y)	*OLD*					*17.3*	*15.3*	*10.6*	*15.7*	*16.7*	*17.8*	*15.2*	*12.1*	*8.0*	*11.7*	*11.8*	*9.2*
	Diff. (NEW-OLD)					*-1.2*	*-1.1*	*-2.0*	*-2.1*	*-1.2*	*-1.4*	*-0.7*	*-0.8*	*-0.7*	*-0.3*	*0.0*	*0.4*
Expenditure on Gross Domestic Product, (GDE)																	
GDE	NEW	765,544	774,925	843,731	830,444	883,562	874,715	928,187	977,768	1,018,452	1,040,733	1,070,536	1,034,020	1,077,661	1,127,021	1,195,877	1,218,959
(MB)	OLD	747,288	770,071	845,007	816,357	862,275	852,315	923,643	960,042	1,002,600	1,023,783	1,068,700	1,024,997	1,062,440	1,124,748	1,194,853	1,206,142
	Diff. (NEW-OLD)	18,256	4,854	-1,276	14,087	21,287	22,400	4,544	17,726	15,852	16,950	1,836	9,023	15,221	2,273	1,024	12,817
Growth Rate	*NEW*					*15.4*	*12.9*	*10.0*	*17.7*	*15.3*	*19.0*	*15.3*	*5.8*	*5.8*	*8.3*	*11.7*	*17.9*
(Y-o-Y)	*OLD*					*15.4*	*10.7*	*9.3*	*17.6*	*16.3*	*20.1*	*15.7*	*6.8*	*6.0*	*9.9*	*11.8*	*17.7*
	Diff. (NEW-OLD)					*0.03*	*2.2*	*0.7*	*0.1*	*-1.0*	*-1.1*	*-0.4*	*-1.0*	*-0.2*	*-1.6*	*-0.1*	*0.2*

Table 2 Comparison of Expenditure on Gross Domestic Product ,CVM (reference year 2002) (Original) (Millions of Baht)

		1993 Q1	1993 Q2	1993 Q3	1993 Q4	1994 Q1	1994 Q2	1994 Q3	1994 Q4	1995 Q1	1995 Q2	1995 Q3	1995 Q4	1996 Q1	1996 Q2	1996 Q3	1996 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	1,067,290	1,039,915	1,086,486	1,147,301	1,179,504	1,146,222	1,135,820	1,226,591	1,265,599	1,256,354	1,231,950	1,314,923	1,313,852	1,336,367	1,323,006	1,382,110
(MB)	OLD	602,234	588,137	624,366	656,171	667,985	646,573	658,485	719,930	731,863	726,277	721,508	762,088	766,427	773,668	778,008	797,235
	Diff. (NEW-OLD)	465,056	451,778	462,120	491,130	511,519	499,649	477,335	506,661	533,736	530,077	510,442	552,835	547,425	562,699	544,998	584,875
Growth Rate	*NEW*					*10.5*	*10.2*	*4.5*	*6.9*	*7.3*	*9.6*	*8.5*	*7.2*	*3.8*	*6.4*	*7.4*	*5.1*
(Y-o-Y)	*OLD*					*10.9*	*9.9*	*5.5*	*9.7*	*9.6*	*12.3*	*9.6*	*5.9*	*4.7*	*6.5*	*7.8*	*4.6*
	Diff. (NEW-OLD)					*-0.4*	*0.3*	*-0.9*	*-2.8*	*-2.3*	*-2.7*	*-1.1*	*1.3*	*-0.9*	*-0.2*	*-0.4*	*0.5*
Expenditure on Gross Domestic Product, (GDE)																	
GDE	NEW	1,073,276	1,075,031	1,156,966	1,135,667	1,178,177	1,151,573	1,210,205	1,242,746	1,262,857	1,288,977	1,309,174	1,241,307	1,287,650	1,333,830	1,393,961	1,377,835
(MB)	OLD	597,167	617,838	665,363	641,786	655,712	646,524	707,157	731,051	715,064	755,320	757,235	728,020	721,378	751,746	804,203	798,377
	Diff. (NEW-OLD)	476,109	457,193	491,603	493,881	522,465	505,049	503,048	511,695	547,793	533,657	551,939	513,287	566,272	582,084	589,758	579,458
Growth Rate	*NEW*					*9.8*	*7.1*	*4.6*	*9.4*	*7.2*	*11.9*	*8.2*	*-0.1*	*2.0*	*3.5*	*6.5*	*11.0*
(Y-o-Y)	*OLD*					*9.8*	*4.6*	*6.3*	*13.9*	*9.1*	*16.8*	*7.1*	*-0.4*	*0.9*	*-0.5*	*6.2*	*9.7*
	Diff. (NEW-OLD)					*0.0*	*2.5*	*-1.7*	*-4.5*	*-1.9*	*-4.9*	*1.1*	*0.3*	*1.1*	*4.0*	*0.3*	*1.3*

Table 1 Comparison of GDP and Expenditure

		1997 Q1	1997 Q2	1997 Q3	1997 Q4	1998 Q1	1998 Q2	1998 Q3	1998 Q4	1999 Q1	1999 Q2	1999 Q3	1999 Q4	2000 Q1	2000 Q2	2000 Q3	2000 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	1,168,691	1,163,763	1,169,774	1,208,071	1,246,006	1,130,012	1,126,498	1,199,043	1,209,797	1,148,520	1,182,198	1,249,306	1,273,892	1,223,345	1,242,678	1,329,908
(MB)	OLD	1,158,084	1,165,717	1,182,021	1,226,788	1,210,828	1,117,120	1,112,059	1,186,440	1,159,803	1,108,838	1,152,229	1,216,209	1,231,245	1,189,978	1,212,115	1,289,393
	Diff. (NEW-OLD)	10,607	-1,954	-12,247	-18,717	35,178	12,892	14,439	12,603	49,994	39,682	29,969	33,097	42,647	33,367	30,563	40,515
Growth Rate	*NEW*	*3.2*	*0.5*	*1.3*	*1.3*	*6.6*	*-2.9*	*-3.7*	*-0.7*	*-2.9*	*1.6*	*4.9*	*4.2*	*5.3*	*6.5*	*5.1*	*6.5*
(Y-o-Y)	*OLD*	*3.7*	*1.7*	*2.4*	*2.7*	*4.6*	*-4.2*	*-5.9*	*-3.3*	*-4.2*	*-0.7*	*3.6*	*2.5*	*6.2*	*7.3*	*5.2*	*6.0*
	Diff. (NEW-OLD)	*-0.6*	*-1.2*	*-1.1*	*-1.5*	*2.1*	*1.3*	*2.2*	*2.5*	*1.3*	*2.4*	*1.3*	*1.7*	*-0.9*	*-0.8*	*-0.1*	*0.4*
Expenditure on Gross Domestic Product, (GI																	
GDE	NEW	1,147,111	1,147,381	1,211,797	1,240,830	1,234,777	1,127,403	1,167,645	1,192,662	1,187,785	1,135,820	1,181,009	1,242,194	1,283,023	1,186,742	1,216,304	1,301,357
(MB)	OLD	1,132,144	1,137,605	1,213,442	1,240,630	1,247,898	1,138,701	1,159,938	1,151,485	1,171,522	1,125,423	1,159,265	1,205,509	1,259,082	1,171,369	1,182,173	1,257,251
	Diff. (NEW-OLD)	14,967	9,776	-1,645	200	-13,121	-11,298	7,707	41,177	16,263	10,397	21,744	36,685	23,941	15,373	34,131	44,106
Growth Rate	*NEW*	*6.4*	*1.8*	*1.3*	*1.8*	*7.6*	*-1.7*	*-3.6*	*-3.9*	*-3.8*	*0.7*	*1.1*	*4.2*	*8.0*	*4.5*	*3.0*	*4.8*
(Y-o-Y)	*OLD*	*6.6*	*1.1*	*1.6*	*2.9*	*10.2*	*0.1*	*-4.4*	*-7.2*	*-6.1*	*-1.2*	*-0.1*	*4.7*	*7.5*	*4.1*	*2.0*	*4.3*
	Diff. (NEW-OLD)	*-0.1*	*0.7*	*-0.2*	*-1.1*	*-2.6*	*-1.8*	*0.8*	*3.3*	*2.3*	*1.9*	*1.2*	*-0.5*	*0.5*	*0.4*	*1.0*	*0.5*

Table 2 Comparison of Expenditure on Gros

		1997 Q1	1997 Q2	1997 Q3	1997 Q4	1998 Q1	1998 Q2	1998 Q3	1998 Q4	1999 Q1	1999 Q2	1999 Q3	1999 Q4	2000 Q1	2000 Q2	2000 Q3	2000 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	1,318,988	1,309,131	1,282,872	1,296,880	1,244,211	1,145,058	1,155,996	1,265,051	1,259,712	1,206,994	1,246,011	1,317,541	1,346,759	1,279,196	1,276,275	1,352,160
(MB)	OLD	774,119	769,190	765,475	763,831	719,305	662,415	658,899	709,065	717,789	685,245	714,340	754,606	764,339	727,229	731,689	785,144
	Diff. (NEW-OLD)	544,869	539,941	517,397	533,049	524,906	482,643	497,097	555,986	541,923	521,749	531,671	562,935	582,420	551,967	544,586	567,016
Growth Rate	*NEW*	*0.4*	*-2.0*	*-3.0*	*-6.2*	*-5.7*	*-12.5*	*-9.9*	*-2.5*	*1.2*	*5.4*	*7.8*	*4.1*	*6.9*	*6.0*	*2.4*	*2.6*
(Y-o-Y)	*OLD*	*1.0*	*-0.6*	*-1.6*	*-4.2*	*-7.1*	*-13.9*	*-13.9*	*-7.2*	*-0.2*	*3.4*	*8.4*	*6.4*	*6.5*	*6.1*	*2.4*	*4.0*
	Diff. (NEW-OLD)	*-0.6*	*-1.5*	*-1.4*	*-2.0*	*1.4*	*1.3*	*4.0*	*4.7*	*1.5*	*2.0*	*-0.6*	*-2.3*	*0.4*	*-0.1*	*0.0*	*-1.4*
Expenditure on Gross Domestic Product, (GI																	
GDE	NEW	1,298,106	1,302,182	1,327,521	1,290,819	1,247,650	1,156,050	1,192,967	1,246,178	1,234,665	1,172,165	1,279,456	1,329,637	1,289,942	1,230,808	1,283,556	1,372,017
(MB)	OLD	745,450	743,030	775,100	754,537	724,852	653,135	665,373	668,059	711,482	670,342	714,226	756,564	748,247	712,384	735,989	776,715
	Diff. (NEW-OLD)	552,656	559,152	552,421	536,282	522,798	502,915	527,594	578,119	523,183	501,823	565,230	573,073	541,695	518,424	547,567	595,302
Growth Rate	*NEW*	*0.8*	*-2.4*	*-4.8*	*-6.3*	*-3.9*	*-11.2*	*-10.1*	*-3.5*	*-1.0*	*1.4*	*7.2*	*6.7*	*4.5*	*5.0*	*0.3*	*3.2*
(Y-o-Y)	*OLD*	*3.3*	*-1.2*	*-3.6*	*-5.5*	*-2.8*	*-12.1*	*-14.2*	*-11.5*	*-1.8*	*2.6*	*7.3*	*13.2*	*5.2*	*6.3*	*3.0*	*2.7*
	Diff. (NEW-OLD)	*-2.5*	*-1.2*	*-1.1*	*-0.8*	*-1.1*	*0.9*	*4.0*	*8.0*	*0.8*	*-1.2*	*-0.1*	*-6.6*	*-0.7*	*-1.3*	*-2.7*	*0.5*

Table 1 Comparison of GDP and Expenditure

		2001 Q1	2001 Q2	2001 Q3	2001 Q4	2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	1,345,988	1,315,910	1,312,620	1,370,495	1,430,289	1,408,751	1,419,013	1,511,525	1,573,721	1,524,943	1,558,175	1,660,463	1,693,075	1,683,223	1,721,026	1,856,947
(MB)	OLD	1,284,700	1,257,209	1,270,065	1,321,528	1,355,115	1,325,184	1,343,999	1,426,345	1,471,707	1,424,519	1,457,881	1,563,262	1,583,692	1,568,023	1,606,091	1,731,670
	Diff. (NEW-OLD)	61,288	58,701	42,555	48,967	75,174	83,567	75,014	85,180	102,014	100,424	100,294	97,201	109,383	115,200	114,935	125,277
Growth Rate	*NEW*	*5.7*	*7.6*	*5.6*	*3.1*	*6.3*	*7.1*	*8.1*	*10.3*	*10.0*	*8.2*	*9.8*	*9.9*	*7.6*	*10.4*	*10.5*	*11.8*
(Y-o-Y)	*OLD*	*4.3*	*5.6*	*4.8*	*2.5*	*5.5*	*5.4*	*5.8*	*7.9*	*8.6*	*7.5*	*8.5*	*9.6*	*7.6*	*10.1*	*10.2*	*10.8*
	Diff. (NEW-OLD)	*1.3*	*1.9*	*0.8*	*0.6*	*0.8*	*1.6*	*2.3*	*2.4*	*1.4*	*0.8*	*1.3*	*0.3*	*0.0*	*0.3*	*0.3*	*1.1*
Expenditure on Gross Domestic Product, (GI																	
GDE	NEW	1,319,187	1,292,695	1,320,133	1,350,085	1,403,260	1,368,083	1,418,925	1,457,911	1,543,379	1,503,628	1,566,460	1,624,140	1,662,510	1,691,613	1,726,502	1,818,155
(MB)	OLD	1,273,218	1,260,062	1,266,205	1,292,909	1,336,438	1,322,665	1,334,011	1,392,829	1,447,767	1,440,787	1,476,431	1,535,388	1,569,516	1,598,030	1,620,496	1,697,584
	Diff. (NEW-OLD)	45,969	32,633	53,928	57,176	66,822	45,418	84,914	65,082	95,612	62,841	90,029	88,752	92,994	93,583	106,006	120,571
Growth Rate	*NEW*	*2.8*	*8.9*	*8.5*	*3.7*	*6.4*	*5.8*	*7.5*	*8.0*	*10.0*	*9.9*	*10.4*	*11.4*	*7.7*	*12.5*	*10.2*	*11.9*
(Y-o-Y)	*OLD*	*1.1*	*7.6*	*7.1*	*2.8*	*5.0*	*5.0*	*5.4*	*7.7*	*8.3*	*8.9*	*10.7*	*10.2*	*8.4*	*10.9*	*9.8*	*10.6*
	Diff. (NEW-OLD)	*1.7*	*1.4*	*1.4*	*0.9*	*1.4*	*0.9*	*2.1*	*0.3*	*1.7*	*1.0*	*-0.3*	*1.2*	*-0.7*	*1.6*	*0.5*	*1.4*

Table 2 Comparison of Expenditure on Gros

		2001 Q1	2001 Q2	2001 Q3	2001 Q4	2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	1,378,082	1,326,725	1,322,688	1,407,869	1,441,031	1,411,215	1,414,290	1,503,042	1,550,744	1,500,110	1,511,006	1,622,512	1,651,929	1,594,896	1,596,307	1,730,193
(MB)	OLD	777,523	743,138	746,884	806,056	812,458	780,037	789,845	854,702	868,512	831,715	842,416	925,523	926,696	886,437	895,134	979,922
	Diff. (NEW-OLD)	600,559	583,587	575,804	601,813	628,573	631,178	624,445	648,340	682,232	668,395	668,590	696,989	725,233	708,459	701,173	750,271
Growth Rate	*NEW*	*2.3*	*3.7*	*3.6*	*4.1*	*4.6*	*6.4*	*6.9*	*6.8*	*7.6*	*6.3*	*6.8*	*7.9*	*6.5*	*6.3*	*5.6*	*6.6*
(Y-o-Y)	*OLD*	*1.7*	*2.2*	*2.1*	*2.7*	*4.5*	*5.0*	*5.8*	*6.0*	*6.9*	*6.6*	*6.7*	*8.3*	*6.7*	*6.6*	*6.3*	*5.9*
	Diff. (NEW-OLD)	*0.6*	*1.5*	*1.6*	*1.5*	*0.1*	*1.4*	*1.2*	*0.7*	*0.7*	*-0.3*	*0.2*	*-0.3*	*-0.2*	*-0.3*	*-0.6*	*0.8*
Expenditure on Gross Domestic Product, (GI																	
GDE	NEW	1,328,432	1,277,960	1,344,504	1,385,513	1,389,957	1,362,595	1,425,105	1,470,519	1,492,288	1,452,609	1,529,469	1,581,763	1,561,655	1,549,079	1,618,367	1,705,087
(MB)	OLD	765,495	746,612	757,119	795,167	795,219	784,418	800,822	845,952	854,392	838,008	857,255	903,807	905,765	894,826	911,723	955,771
	Diff. (NEW-OLD)	562,937	531,348	587,385	590,346	594,738	578,177	624,283	624,567	637,896	614,601	672,214	677,956	655,890	654,253	706,644	749,316
Growth Rate	*NEW*	*3.0*	*3.8*	*4.7*	*1.0*	*4.6*	*6.6*	*6.0*	*6.1*	*7.4*	*6.6*	*7.3*	*7.6*	*4.6*	*6.6*	*5.8*	*7.8*
(Y-o-Y)	*OLD*	*2.3*	*4.8*	*2.9*	*2.4*	*3.9*	*5.1*	*5.8*	*6.4*	*7.4*	*6.8*	*7.0*	*6.8*	*6.0*	*6.8*	*6.4*	*5.7*
	Diff. (NEW-OLD)	*0.7*	*-1.0*	*1.9*	*-1.4*	*0.7*	*1.6*	*0.2*	*-0.3*	*-0.1*	*-0.2*	*0.3*	*0.7*	*-1.4*	*-0.1*	*-0.5*	*2.0*

Table 1 Comparison of GDP and Expenditure

		2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	1,866,057	1,828,806	1,902,797	2,016,749	2,114,529	2,046,561	2,074,688	2,164,877	2,258,185	2,187,394	2,236,015	2,394,713	2,448,505	2,445,108	2,464,337	2,348,982
(MB)	OLD	1,716,030	1,691,863	1,780,615	1,904,385	1,948,891	1,900,243	1,945,831	2,049,974	2,096,403	2,047,536	2,107,739	2,273,519	2,283,347	2,283,267	2,305,387	2,208,465
	Diff. (NEW-OLD)	150,027	136,943	122,182	112,364	165,638	146,318	128,857	114,903	161,782	139,858	128,276	121,194	165,158	161,841	158,950	140,517
Growth Rate	*NEW*	*10.2*	*8.6*	*10.6*	*8.6*	*13.3*	*11.9*	*9.0*	*7.3*	*6.8*	*6.9*	*7.8*	*10.6*	*8.4*	*11.8*	*10.2*	*-1.9*
(Y-o-Y)	*OLD*	*8.4*	*7.9*	*10.9*	*10.0*	*13.6*	*12.3*	*9.3*	*7.6*	*7.6*	*7.8*	*8.3*	*10.9*	*8.9*	*11.5*	*9.4*	*-2.9*
	Diff. (NEW-OLD)	*1.9*	*0.8*	*-0.3*	*-1.4*	*-0.3*	*-0.4*	*-0.2*	*-0.3*	*-0.8*	*-0.9*	*-0.5*	*-0.3*	*-0.5*	*0.3*	*0.8*	*1.0*
Expenditure on Gross Domestic Product, (GI																	
GDE	NEW	1,814,612	1,788,377	1,913,172	2,011,889	2,029,170	2,006,460	2,076,635	2,139,592	2,196,906	2,190,987	2,283,077	2,390,955	2,389,460	2,383,321	2,445,620	2,352,992
(MB)	OLD	1,690,368	1,705,941	1,789,464	1,869,062	1,914,394	1,911,096	1,958,393	2,014,862	2,080,898	2,078,843	2,153,633	2,249,728	2,252,908	2,250,383	2,294,608	2,199,897
	Diff. (NEW-OLD)	124,244	82,436	123,708	142,827	114,776	95,364	118,242	124,730	116,008	112,144	129,444	141,227	136,552	132,938	151,012	153,095
Growth Rate	*NEW*	*9.1*	*5.7*	*10.8*	*10.7*	*11.8*	*12.2*	*8.5*	*6.3*	*8.3*	*9.2*	*9.9*	*11.7*	*8.8*	*8.8*	*7.1*	*-1.6*
(Y-o-Y)	*OLD*	*7.7*	*6.8*	*10.4*	*10.1*	*13.3*	*12.0*	*9.4*	*7.8*	*8.7*	*8.8*	*10.0*	*11.7*	*8.3*	*8.3*	*6.5*	*-2.2*
	Diff. (NEW-OLD)	*1.4*	*-1.0*	*0.4*	*0.6*	*-1.4*	*0.2*	*-0.9*	*-1.5*	*-0.4*	*0.4*	*0.0*	*0.1*	*0.5*	*0.5*	*0.6*	*0.6*

Table 2 Comparison of Expenditure on Gros

		2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	1,715,543	1,663,998	1,672,105	1,796,959	1,810,070	1,738,309	1,746,764	1,893,695	1,928,791	1,829,463	1,842,197	1,979,107	1,992,926	1,893,927	1,883,590	1,939,913
(MB)	OLD	959,975	928,361	944,173	1,025,510	1,018,621	975,690	989,089	1,071,104	1,065,589	1,020,773	1,043,868	1,128,796	1,132,889	1,073,963	1,075,757	1,082,224
	Diff. (NEW-OLD)	755,568	735,637	727,932	771,449	791,449	762,619	757,675	822,591	863,202	808,690	798,329	850,311	860,037	819,964	807,833	857,689
Growth Rate	*NEW*	*3.9*	*4.3*	*4.7*	*3.9*	*5.5*	*4.5*	*4.5*	*5.4*	*6.6*	*5.2*	*5.5*	*4.5*	*3.3*	*3.5*	*2.2*	*-2.0*
(Y-o-Y)	*OLD*	*3.6*	*4.7*	*5.5*	*4.7*	*6.1*	*5.1*	*4.8*	*4.4*	*4.6*	*4.6*	*5.5*	*5.4*	*6.3*	*5.2*	*3.1*	*-4.1*
	Diff. (NEW-OLD)	*0.3*	*-0.4*	*-0.7*	*-0.8*	*-0.6*	*-0.6*	*-0.3*	*0.9*	*1.9*	*0.6*	*-0.1*	*-0.9*	*-3.0*	*-1.7*	*-0.8*	*2.1*
Expenditure on Gross Domestic Product, (GI																	
GDE	NEW	1,614,516	1,599,470	1,701,901	1,786,526	1,719,766	1,684,659	1,792,744	1,870,197	1,807,899	1,772,070	1,899,459	1,984,760	1,893,463	1,860,719	1,942,238	1,909,324
(MB)	OLD	936,316	932,698	962,887	999,784	995,417	985,633	1,007,548	1,044,548	1,040,064	1,027,392	1,066,623	1,100,065	1,109,789	1,077,055	1,092,525	1,055,331
	Diff. (NEW-OLD)	678,200	666,772	739,014	786,742	724,349	699,026	785,196	825,649	767,835	744,678	832,836	884,695	783,674	783,664	849,713	853,993
Growth Rate	*NEW*	*3.4*	*3.3*	*5.2*	*4.8*	*6.5*	*5.3*	*5.3*	*4.7*	*5.1*	*5.2*	*6.0*	*6.1*	*4.7*	*5.0*	*2.3*	*-3.8*
(Y-o-Y)	*OLD*	*3.4*	*4.2*	*5.6*	*4.6*	*6.3*	*5.7*	*4.6*	*4.5*	*4.5*	*4.2*	*5.9*	*5.3*	*6.7*	*4.8*	*2.4*	*-4.1*
	Diff. (NEW-OLD)	*0.0*	*-1.0*	*-0.5*	*0.2*	*0.2*	*-0.3*	*0.7*	*0.2*	*0.6*	*1.0*	*0.1*	*0.8*	*-2.0*	*0.2*	*-0.2*	*0.3*

Table 1 Comparison of GDP and Expenditure

		2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	2,358,012	2,341,963	2,394,443	2,559,597	2,748,885	2,650,523	2,655,139	2,747,856	2,958,705	2,809,403	2,850,343	2,682,034	3,048,056	2,994,848	3,050,871	3,260,880
(MB)	OLD	2,199,600	2,196,020	2,246,467	2,399,464	2,560,083	2,471,448	2,490,045	2,583,245	2,744,960	2,652,994	2,688,075	2,454,105	2,798,211	2,811,487	2,801,625	2,964,026
	Diff. (NEW-OLD)	158,412	145,943	147,976	160,133	188,802	179,075	165,094	164,611	213,745	156,409	162,268	227,929	249,845	183,361	249,246	296,854
Growth Rate	*NEW*	*-3.7*	*-4.2*	*-2.8*	*9.0*	*16.6*	*13.2*	*10.9*	*7.4*	*7.6*	*6.0*	*7.4*	*-2.4*	*3.0*	*6.6*	*7.0*	*21.6*
(Y-o-Y)	*OLD*	*-3.7*	*-3.8*	*-2.6*	*8.6*	*16.4*	*12.5*	*10.8*	*7.7*	*7.2*	*7.3*	*8.0*	*-5.0*	*1.9*	*6.0*	*4.2*	*20.8*
	Diff. (NEW-OLD)	*0.0*	*-0.4*	*-0.3*	*0.3*	*0.2*	*0.6*	*0.0*	*-0.3*	*0.4*	*-1.4*	*-0.6*	*2.6*	*1.1*	*0.6*	*2.8*	*0.8*
Expenditure on Gross Domestic Product, (GI																	
GDE	NEW	2,319,616	2,308,538	2,393,064	2,542,556	2,692,243	2,587,020	2,655,744	2,745,569	2,896,210	2,738,703	2,781,365	2,608,418	2,959,469	2,953,021	3,031,263	3,168,838
(MB)	OLD	2,184,987	2,190,526	2,276,819	2,428,930	2,528,142	2,434,139	2,541,781	2,607,128	2,676,111	2,608,573	2,733,346	2,406,979	2,728,880	2,777,987	2,860,630	2,982,461
	Diff. (NEW-OLD)	134,629	118,012	116,245	113,626	164,101	152,881	113,963	138,441	220,099	130,130	48,019	201,439	230,589	175,034	170,633	186,377
Growth Rate	*NEW*	*-2.9*	*-3.1*	*-2.1*	*8.1*	*16.1*	*12.1*	*11.0*	*8.0*	*7.6*	*5.9*	*4.7*	*-5.0*	*2.2*	*7.8*	*9.0*	*21.5*
(Y-o-Y)	*OLD*	*-3.0*	*-2.7*	*-0.8*	*10.4*	*15.7*	*11.1*	*11.6*	*7.3*	*5.9*	*7.2*	*7.5*	*-7.7*	*2.0*	*6.5*	*4.7*	*23.9*
	Diff. (NEW-OLD)	*0.1*	*-0.5*	*-1.4*	*-2.4*	*0.4*	*0.9*	*-0.7*	*0.6*	*1.7*	*-1.3*	*-2.8*	*2.7*	*0.2*	*1.3*	*4.3*	*-2.4*

Table 2 Comparison of Expenditure on Gros

		2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4
Gross Domestic Product, (GDP)																	
GDP	NEW	1,906,994	1,834,098	1,873,623	2,038,716	2,139,278	1,997,077	1,981,946	2,109,652	2,208,372	2,034,791	2,029,775	2,023,611	2,276,716	2,160,786	2,132,661	2,333,933
(MB)	OLD	1,053,066	1,018,647	1,045,615	1,145,811	1,179,635	1,112,764	1,114,342	1,189,371	1,217,024	1,143,132	1,155,750	1,083,749	1,221,622	1,193,904	1,191,575	1,291,088
	Diff. (NEW-OLD)	853,928	815,451	828,008	892,905	959,643	884,313	867,604	920,281	991,348	891,659	874,025	939,862	1,055,094	966,882	941,086	1,042,845
Growth Rate	*NEW*	*-4.3*	*-3.2*	*-0.5*	*5.1*	*12.2*	*8.9*	*5.8*	*3.5*	*3.2*	*1.9*	*2.4*	*-4.1*	*3.1*	*6.2*	*5.1*	*15.3*
(Y-o-Y)	*OLD*	*-7.0*	*-5.2*	*-2.8*	*5.9*	*12.0*	*9.2*	*6.6*	*3.8*	*3.2*	*2.7*	*3.7*	*-8.9*	*0.4*	*4.4*	*3.1*	*19.1*
	Diff. (NEW-OLD)	*2.7*	*2.0*	*2.3*	*-0.8*	*0.2*	*-0.4*	*-0.8*	*-0.3*	*0.1*	*-0.8*	*-1.3*	*4.8*	*2.7*	*1.8*	*2.0*	*-3.8*
Expenditure on Gross Domestic Product, (GI																	
GDE	NEW	1,816,981	1,799,634	1,920,028	2,015,543	2,019,272	1,943,294	2,047,184	2,099,710	2,112,786	2,007,577	2,097,395	1,949,516	2,153,184	2,135,253	2,204,053	2,279,632
(MB)	OLD	1,028,287	1,020,819	1,062,678	1,116,849	1,150,050	1,117,245	1,136,437	1,160,457	1,186,795	1,149,925	1,178,761	1,056,724	1,194,165	1,200,300	1,212,080	1,262,029
	Diff. (NEW-OLD)	788,694	778,815	857,350	898,694	869,222	826,049	910,747	939,253	925,991	857,652	918,634	892,792	959,019	934,953	991,973	1,017,603
Growth Rate	*NEW*	*-4.0*	*-3.3*	*-1.1*	*5.6*	*11.1*	*8.0*	*6.6*	*4.2*	*4.6*	*3.3*	*2.5*	*-7.2*	*1.9*	*6.4*	*5.1*	*16.9*
(Y-o-Y)	*OLD*	*-7.3*	*-5.2*	*-2.7*	*5.8*	*11.8*	*9.4*	*6.9*	*3.9*	*3.2*	*2.9*	*3.7*	*-8.9*	*0.6*	*4.4*	*2.8*	*19.4*
	Diff. (NEW-OLD)	*3.3*	*1.9*	*1.6*	*-0.3*	*-0.7*	*-1.5*	*-0.3*	*0.3*	*1.4*	*0.4*	*-1.3*	*1.8*	*1.3*	*2.0*	*2.3*	*-2.5*

Table 1 Comparison of GDP and Expenditure

		2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	Average
Gross Domestic Product, (GDP)										
GDP	NEW	3,285,046	3,133,167	3,187,993	3,303,833	3,322,087	3,216,000	3,232,991	3,375,943	1,868,561
(MB)	OLD	2,999,658	2,955,431	2,924,215	3,019,406	3,043,536	3,029,252	2,972,922	3,095,386	1,763,032
	Diff. (NEW-OLD)	285,388	177,736	263,778	284,427	278,551	186,748	260,069	280,557	105,528
Growth Rate	*NEW*	*7.8*	*4.6*	*4.5*	*1.3*	*1.1*	*2.6*	*1.4*	*2.2*	***7.0***
(Y-o-Y)	*OLD*	*7.2*	*5.1*	*4.4*	*1.9*	*1.5*	*2.5*	*1.7*	*2.5*	***6.8***
	Diff. (NEW-OLD)	*0.6*	*-0.5*	*0.1*	*-0.6*	*-0.3*	*0.1*	*-0.3*	*-0.3*	***0.2***
Expenditure on Gross Domestic Product, (GI										
GDE	NEW	3,195,494	3,118,220	3,195,855	3,266,304	3,251,288	3,195,695	3,286,555	3,436,798	1,848,565
(MB)	OLD	2,970,511	2,941,934	2,997,999	3,079,043	3,044,554	3,025,845	3,078,246	3,229,067	1,761,956
	Diff. (NEW-OLD)	224,983	176,286	197,856	187,261	206,734	169,850	208,309	207,731	86,609
Growth Rate	*NEW*	*8.0*	*5.6*	*5.4*	*3.1*	*1.7*	*2.5*	*2.8*	*5.2*	***7.1***
(Y-o-Y)	*OLD*	*8.9*	*5.9*	*4.8*	*3.2*	*2.5*	*2.9*	*2.7*	*4.9*	***6.9***
	Diff. (NEW-OLD)	*-0.9*	*-0.3*	*0.6*	*-0.2*	*-0.7*	*-0.4*	*0.2*	*0.3*	***0.2***

Table 2 Comparison of Expenditure on Gros

		2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	Average
Gross Domestic Product, (GDP)										
GDP	NEW	2,396,078	2,218,944	2,188,092	2,351,134	2,384,300	2,236,705	2,208,222	2,400,898	1,642,188
(MB)	OLD	1,287,283	1,229,012	1,224,258	1,299,241	1,281,360	1,234,447	1,231,230	1,328,581	924,995
	Diff. (NEW-OLD)	1,108,795	989,932	963,834	1,051,893	1,102,940	1,002,258	976,992	1,072,317	717,193
Growth Rate	*NEW*	*5.2*	*2.7*	*2.6*	*0.7*	*-0.5*	*0.8*	*0.9*	*2.1*	***3.8***
(Y-o-Y)	*OLD*	*5.4*	*2.9*	*2.7*	*0.6*	*-0.5*	*0.4*	*0.6*	*2.3*	***3.6***
	Diff. (NEW-OLD)	*-0.1*	*-0.2*	*-0.1*	*0.1*	*0.0*	*0.4*	*0.4*	*-0.1*	***0.1***
Expenditure on Gross Domestic Product, (GI										
GDE	NEW	2,263,995	2,183,688	2,274,013	2,307,066	2,248,819	2,196,853	2,294,960	2,352,161	1,625,115
(MB)	OLD	1,261,490	1,232,498	1,242,016	1,272,124	1,254,332	1,235,400	1,245,744	1,303,649	920,185
	Diff. (NEW-OLD)	1,002,505	951,190	1,031,997	1,034,942	994,487	961,453	1,049,216	1,048,512	704,930
Growth Rate	*NEW*	*5.1*	*2.3*	*3.2*	*1.2*	*-0.7*	*0.6*	*0.9*	*2.0*	***3.6***
(Y-o-Y)	*OLD*	*5.6*	*2.7*	*2.5*	*0.8*	*-0.6*	*0.2*	*0.3*	*2.5*	***3.5***
	Diff. (NEW-OLD)	*-0.5*	*-0.4*	*0.7*	*0.4*	*-0.1*	*0.4*	*0.6*	*-0.5*	***0.1***

Table 3 Expenditure on Gross Domestic Product at Current Market Prices (Original)

Millions of Baht	1993 Q1	1993 Q2	1993 Q3	1993 Q4	1994 Q1	1994 Q2	1994 Q3	1994 Q4	1995 Q1	1995 Q2	1995 Q3	1995 Q4
Private Consumption Expenditure	409,948	420,339	421,080	444,285	455,898	477,278	482,833	507,146	520,007	541,100	541,968	560,600
General Government Consumption Expenditure	81,874	85,513	100,490	91,143	97,836	95,853	116,395	97,645	117,353	113,797	130,929	112,429
Gross Fixed Capital Formation	307,330	315,866	333,443	318,206	338,356	377,968	374,381	384,919	432,457	415,003	441,202	454,106
Change in Inventories	-2,296	-1,790	903	22,487	21,254	-15,546	-7,913	35,704	-2,421	52,435	16,419	-1,422
Exports of Goods and Services	278,949	278,051	314,353	330,152	329,352	332,489	356,983	391,962	425,287	421,084	438,776	466,527
- Goods	205,875	215,573	247,373	252,612	252,087	267,850	290,442	307,670	323,096	336,523	355,259	366,782
- Services	73,074	62,478	66,980	77,540	77,265	64,639	66,541	84,292	102,191	84,561	83,517	99,745
Imports of Goods and Services	310,261	323,054	326,538	375,829	359,134	393,327	394,492	439,608	474,231	502,686	498,758	558,220
- Goods	248,020	253,455	254,573	274,295	276,876	297,426	302,621	334,908	369,465	386,963	392,587	431,270
- Services	62,241	69,599	71,965	101,534	82,258	95,901	91,871	104,700	104,766	115,723	106,171	126,950
Expenditure on Gross Domestic Product	**765,544**	**774,925**	**843,731**	**830,444**	**883,562**	**874,715**	**928,187**	**977,768**	**1,018,452**	**1,040,733**	**1,070,536**	**1,034,020**
Statistical Discrepancy	22,473	7,289	-11,569	30,602	31,080	18,298	-24,772	252	37,560	-1,267	-36,581	54,156
Gross Domestic Product, (GDP)	**788,017**	**782,214**	**832,162**	**861,046**	**914,642**	**893,013**	**903,415**	**978,020**	**1,056,012**	**1,039,466**	**1,033,955**	**1,088,176**

Table 4 Growth rate of Expenditure on Gross Domestic Product at Current Market Prices (Original), (YoY)

Percent	1993 Q1	1993 Q2	1993 Q3	1993 Q4	1994 Q1	1994 Q2	1994 Q3	1994 Q4	1995 Q1	1995 Q2	1995 Q3	1995 Q4
Private Consumption Expenditure					*11.2*	*13.5*	*14.7*	*14.1*	*14.1*	*13.4*	*12.2*	*10.5*
General Government Consumption Expenditure					*19.5*	*12.1*	*15.8*	*7.1*	*19.9*	*18.7*	*12.5*	*15.1*
Gross Fixed Capital Formation					*10.1*	*19.7*	*12.3*	*21.0*	*27.8*	*9.8*	*17.8*	*18.0*
Change in Inventories					*1,025.7*	*-768.5*	*-976.3*	*58.8*	*-111.4*	*437.3*	*307.5*	*-104.0*
Exports of Goods and Services					*18.1*	*19.6*	*13.6*	*18.7*	*29.1*	*26.6*	*22.9*	*19.0*
- Goods					*22.4*	*24.3*	*17.4*	*21.8*	*28.2*	*25.6*	*22.3*	*19.2*
- Services					*5.7*	*3.5*	*-0.7*	*8.7*	*32.3*	*30.8*	*25.5*	*18.3*
Imports of Goods and Services					*15.8*	*21.8*	*20.8*	*17.0*	*32.0*	*27.8*	*26.4*	*27.0*
- Goods					*11.6*	*17.3*	*18.9*	*22.1*	*33.4*	*30.1*	*29.7*	*28.8*
- Services					*32.2*	*37.8*	*27.7*	*3.1*	*27.4*	*20.7*	*15.6*	*21.3*
Expenditure on Gross Domestic Product					***15.4***	***12.9***	***10.0***	***17.7***	***15.3***	***19.0***	***15.3***	***5.8***
Statistical Discrepancy												
Gross Domestic Product, (GDP)					***16.1***	***14.2***	***8.6***	***13.6***	***15.5***	***16.4***	***14.4***	***11.3***

Table 3 Expenditure on Gross Domestic Product at Current Ma

Millions of Baht	1996 Q1	1996 Q2	1996 Q3	1996 Q4	1997 Q1	1997 Q2	1997 Q3	1997 Q4	1998 Q1	1998 Q2	1998 Q3	1998 Q4
Private Consumption Expenditure	561,977	604,305	609,183	623,106	611,100	642,856	625,200	617,335	602,846	608,284	598,815	619,592
General Government Consumption Expenditure	128,768	128,804	143,413	136,363	140,161	136,421	153,828	138,776	141,625	137,213	173,903	161,494
Gross Fixed Capital Formation	458,021	461,635	491,787	520,765	428,778	413,292	448,039	340,197	287,491	238,078	273,026	242,879
Change in Inventories	-1,601	29,881	20,691	-8,256	2,866	-374	-20,460	2,108	-22,743	-12,683	-56,287	-6,093
Exports of Goods and Services	461,125	441,700	442,540	464,545	471,972	467,382	589,362	743,399	776,676	645,169	671,389	630,719
- Goods	346,294	336,993	341,392	354,223	352,614	353,651	478,706	604,862	620,539	521,922	543,555	495,066
- Services	114,831	104,707	101,148	110,322	119,358	113,731	110,656	138,537	156,137	123,247	127,834	135,653
Imports of Goods and Services	530,629	539,304	511,737	517,564	507,766	512,196	584,172	600,985	551,118	488,658	493,201	455,929
- Goods	415,522	413,698	395,954	394,010	391,419	390,245	454,881	450,760	429,209	375,415	374,133	333,700
- Services	115,107	125,606	115,783	123,554	116,347	121,951	129,291	150,225	121,909	113,243	119,068	122,229
Expenditure on Gross Domestic Product	**1,077,661**	**1,127,021**	**1,195,877**	**1,218,959**	**1,147,111**	**1,147,381**	**1,211,797**	**1,240,830**	**1,234,777**	**1,127,403**	**1,167,645**	**1,192,662**
Statistical Discrepancy	55,158	30,509	-40,670	-25,910	21,580	16,382	-42,023	-32,759	11,229	2,609	-41,147	6,381
Gross Domestic Product, (GDP)	**1,132,819**	**1,157,530**	**1,155,207**	**1,193,049**	**1,168,691**	**1,163,763**	**1,169,774**	**1,208,071**	**1,246,006**	**1,130,012**	**1,126,498**	**1,199,043**

Table 4 Growth rate of Expenditure on Gross Domestic Produc

Percent	1996 Q1	1996 Q2	1996 Q3	1996 Q4	1997 Q1	1997 Q2	1997 Q3	1997 Q4	1998 Q1	1998 Q2	1998 Q3	1998 Q4
Private Consumption Expenditure	*8.1*	*11.7*	*12.4*	*11.1*	*8.7*	*6.4*	*2.6*	*-0.9*	*-1.4*	*-5.4*	*-4.2*	*0.4*
General Government Consumption Expenditure	*9.7*	*13.2*	*9.5*	*21.3*	*8.8*	*5.9*	*7.3*	*1.8*	*1.0*	*0.6*	*13.1*	*16.4*
Gross Fixed Capital Formation	*5.9*	*11.2*	*11.5*	*14.7*	*-6.4*	*-10.5*	*-8.9*	*-34.7*	*-33.0*	*-42.4*	*-39.1*	*-28.6*
Change in Inventories	*33.9*	*-43.0*	*26.0*	*-480.6*	*279.0*	*-101.3*	*-198.9*	*125.5*	*-893.5*	*-3,291.2*	*-175.1*	*-389.0*
Exports of Goods and Services	*8.4*	*4.9*	*0.9*	*-0.4*	*2.4*	*5.8*	*33.2*	*60.0*	*64.6*	*38.0*	*13.9*	*-15.2*
- Goods	*7.2*	*0.1*	*-3.9*	*-3.4*	*1.8*	*4.9*	*40.2*	*70.8*	*76.0*	*47.6*	*13.5*	*-18.2*
- Services	*12.4*	*23.8*	*21.1*	*10.6*	*3.9*	*8.6*	*9.4*	*25.6*	*30.8*	*8.4*	*15.5*	*-2.1*
Imports of Goods and Services	*11.9*	*7.3*	*2.6*	*-7.3*	*-4.3*	*-5.0*	*14.2*	*16.1*	*8.5*	*-4.6*	*-15.6*	*-24.1*
- Goods	*12.5*	*6.9*	*0.9*	*-8.6*	*-5.8*	*-5.7*	*14.9*	*14.4*	*9.7*	*-3.8*	*-17.8*	*-26.0*
- Services	*9.9*	*8.5*	*9.1*	*-2.7*	*1.1*	*-2.9*	*11.7*	*21.6*	*4.8*	*-7.1*	*-7.9*	*-18.6*
Expenditure on Gross Domestic Product	***5.8***	***8.3***	***11.7***	***17.9***	***6.4***	***1.8***	***1.3***	***1.8***	***7.6***	***-1.7***	***-3.6***	***-3.9***
Statistical Discrepancy												
Gross Domestic Product, (GDP)	***7.3***	***11.4***	***11.7***	***9.6***	***3.2***	***0.5***	***1.3***	***1.3***	***6.6***	***-2.9***	***-3.7***	***-0.7***

Table 3 Expenditure on Gross Domestic Product at Current Ma

Millions of Baht	1999 Q1	1999 Q2	1999 Q3	1999 Q4	2000 Q1	2000 Q2	2000 Q3	2000 Q4	2001 Q1	2001 Q2	2001 Q3	2001 Q4
Private Consumption Expenditure	609,272	618,761	644,718	674,895	671,262	669,651	682,669	720,899	728,779	742,903	748,742	772,926
General Government Consumption Expenditure	148,882	158,351	172,409	170,292	164,305	162,655	189,185	172,132	171,047	177,725	198,975	172,466
Gross Fixed Capital Formation	223,497	248,745	263,842	241,517	289,572	250,540	284,724	268,974	312,573	304,001	312,604	272,399
Change in Inventories	14,654	-2,315	-40,485	16,813	23,598	22,076	-36,640	26,844	42,472	4,980	-30,977	17,309
Exports of Goods and Services	628,982	625,559	692,836	755,931	746,880	735,051	874,782	930,571	837,246	844,237	857,128	842,139
- Goods	469,853	508,014	562,807	609,375	609,927	608,115	736,657	776,244	691,891	708,576	716,153	685,910
- Services	159,129	117,545	130,029	146,556	136,953	126,936	138,125	154,327	145,355	135,661	140,975	156,229
Imports of Goods and Services	437,502	513,281	552,311	617,254	612,594	653,231	778,416	818,063	772,930	781,151	766,339	727,154
- Goods	333,550	386,891	425,050	476,213	484,257	513,061	612,649	655,606	621,204	621,508	607,578	579,217
- Services	103,952	126,390	127,261	141,041	128,337	140,170	165,767	162,457	151,726	159,643	158,761	147,937
Expenditure on Gross Domestic Product	**1,187,785**	**1,135,820**	**1,181,009**	**1,242,194**	**1,283,023**	**1,186,742**	**1,216,304**	**1,301,357**	**1,319,187**	**1,292,695**	**1,320,133**	**1,350,085**
Statistical Discrepancy	22,012	12,700	1,189	7,112	-9,131	36,603	26,374	28,551	26,801	23,215	-7,513	20,410
Gross Domestic Product, (GDP)	**1,209,797**	**1,148,520**	**1,182,198**	**1,249,306**	**1,273,892**	**1,223,345**	**1,242,678**	**1,329,908**	**1,345,988**	**1,315,910**	**1,312,620**	**1,370,495**

Table 4 Growth rate of Expenditure on Gross Domestic Produc

Percent	1999 Q1	1999 Q2	1999 Q3	1999 Q4	2000 Q1	2000 Q2	2000 Q3	2000 Q4	2001 Q1	2001 Q2	2001 Q3	2001 Q4
Private Consumption Expenditure	*1.1*	*1.7*	*7.7*	*8.9*	*10.2*	*8.2*	*5.9*	*6.8*	*8.6*	*10.9*	*9.7*	*7.2*
General Government Consumption Expenditure	*5.1*	*15.4*	*-0.9*	*5.4*	*10.4*	*2.7*	*9.7*	*1.1*	*4.1*	*9.3*	*5.2*	*0.2*
Gross Fixed Capital Formation	*-22.3*	*4.5*	*-3.4*	*-0.6*	*29.6*	*0.7*	*7.9*	*11.4*	*7.9*	*21.3*	*9.8*	*1.3*
Change in Inventories	*164.4*	*81.7*	*28.1*	*375.9*	*61.0*	*1,053.6*	*9.5*	*59.7*	*80.0*	*-77.4*	*15.5*	*-35.5*
Exports of Goods and Services	*-19.0*	*-3.0*	*3.2*	*19.9*	*18.7*	*17.5*	*26.3*	*23.1*	*12.1*	*14.9*	*-2.0*	*-9.5*
- Goods	*-24.3*	*-2.7*	*3.5*	*23.1*	*29.8*	*19.7*	*30.9*	*27.4*	*13.4*	*16.5*	*-2.8*	*-11.6*
- Services	*1.9*	*-4.6*	*1.7*	*8.0*	*-13.9*	*8.0*	*6.2*	*5.3*	*6.1*	*6.9*	*2.1*	*1.2*
Imports of Goods and Services	*-20.6*	*5.0*	*12.0*	*35.4*	*40.0*	*27.3*	*40.9*	*32.5*	*26.2*	*19.6*	*-1.6*	*-11.1*
- Goods	*-22.3*	*3.1*	*13.6*	*42.7*	*45.2*	*32.6*	*44.1*	*37.7*	*28.3*	*21.1*	*-0.8*	*-11.7*
- Services	*-14.7*	*11.6*	*6.9*	*15.4*	*23.5*	*10.9*	*30.3*	*15.2*	*18.2*	*13.9*	*-4.2*	*-8.9*
Expenditure on Gross Domestic Product	***-3.8***	***0.7***	***1.1***	***4.2***	***8.0***	***4.5***	***3.0***	***4.8***	***2.8***	***8.9***	***8.5***	***3.7***
Statistical Discrepancy												
Gross Domestic Product, (GDP)	***-2.9***	***1.6***	***4.9***	***4.2***	***5.3***	***6.5***	***5.1***	***6.5***	***5.7***	***7.6***	***5.6***	***3.1***

Table 3 Expenditure on Gross Domestic Product at Current Ma

Millions of Baht	2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4
Private Consumption Expenditure	776,409	798,010	799,925	836,858	859,603	862,357	877,115	915,323	944,531	972,923	966,966	1,001,279
General Government Consumption Expenditure	190,492	182,784	204,331	182,386	187,691	200,987	225,245	202,625	208,365	229,021	246,309	228,271
Gross Fixed Capital Formation	316,277	314,934	342,263	290,733	349,622	362,110	383,556	359,706	391,216	428,242	448,077	461,591
Change in Inventories	22,565	12,262	-14,775	27,986	39,899	-2,428	-14,051	26,954	34,206	13,858	2,669	6,099
Exports of Goods and Services	820,135	833,325	898,844	946,700	946,261	913,278	979,831	1,047,196	1,059,950	1,108,574	1,182,636	1,236,709
- Goods	653,932	685,419	735,073	763,239	770,198	791,463	812,775	858,680	859,141	930,312	1,002,168	1,031,182
- Services	166,203	147,906	163,771	183,461	176,063	121,815	167,056	188,516	200,809	178,262	180,468	205,527
Imports of Goods and Services	722,618	773,232	811,663	826,752	839,697	832,676	885,236	927,664	975,758	1,061,005	1,120,155	1,115,794
- Goods	563,768	600,126	637,021	643,757	663,834	663,181	701,855	740,837	766,490	845,110	891,714	886,805
- Services	158,850	173,106	174,642	182,995	175,863	169,495	183,381	186,827	209,268	215,895	228,441	228,989
Expenditure on Gross Domestic Product	**1,403,260**	**1,368,083**	**1,418,925**	**1,457,911**	**1,543,379**	**1,503,628**	**1,566,460**	**1,624,140**	**1,662,510**	**1,691,613**	**1,726,502**	**1,818,155**
Statistical Discrepancy	27,029	40,668	88	53,614	30,342	21,315	-8,285	36,323	30,565	-8,390	-5,476	38,792
Gross Domestic Product, (GDP)	**1,430,289**	**1,408,751**	**1,419,013**	**1,511,525**	**1,573,721**	**1,524,943**	**1,558,175**	**1,660,463**	**1,693,075**	**1,683,223**	**1,721,026**	**1,856,947**

Table 4 Growth rate of Expenditure on Gross Domestic Produc

Percent	2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4
Private Consumption Expenditure	*6.5*	*7.4*	*6.8*	*8.3*	*10.7*	*8.1*	*9.6*	*9.4*	*9.9*	*12.8*	*10.2*	*9.4*
General Government Consumption Expenditure	*11.4*	*2.8*	*2.7*	*5.8*	*-1.5*	*10.0*	*10.2*	*11.1*	*11.0*	*13.9*	*9.4*	*12.7*
Gross Fixed Capital Formation	*1.2*	*3.6*	*9.5*	*6.7*	*10.5*	*15.0*	*12.1*	*23.7*	*11.9*	*18.3*	*16.8*	*28.3*
Change in Inventories	*-46.9*	*146.2*	*52.3*	*61.7*	*76.8*	*-119.8*	*4.9*	*-3.7*	*-14.3*	*670.8*	*119.0*	*-77.4*
Exports of Goods and Services	*-2.0*	*-1.3*	*4.9*	*12.4*	*15.4*	*9.6*	*9.0*	*10.6*	*12.0*	*21.4*	*20.7*	*18.1*
- Goods	*-5.5*	*-3.3*	*2.6*	*11.3*	*17.8*	*15.5*	*10.6*	*12.5*	*11.5*	*17.5*	*23.3*	*20.1*
- Services	*14.3*	*9.0*	*16.2*	*17.4*	*5.9*	*-17.6*	*2.0*	*2.8*	*14.1*	*46.3*	*8.0*	*9.0*
Imports of Goods and Services	*-6.5*	*-1.0*	*5.9*	*13.7*	*16.2*	*7.7*	*9.1*	*12.2*	*16.2*	*27.4*	*26.5*	*20.3*
- Goods	*-9.2*	*-3.4*	*4.8*	*11.1*	*17.7*	*10.5*	*10.2*	*15.1*	*15.5*	*27.4*	*27.1*	*19.7*
- Services	*4.7*	*8.4*	*10.0*	*23.7*	*10.7*	*-2.1*	*5.0*	*2.1*	*19.0*	*27.4*	*24.6*	*22.6*
Expenditure on Gross Domestic Product	***6.4***	***5.8***	***7.5***	***8.0***	***10.0***	***9.9***	***10.4***	***11.4***	***7.7***	***12.5***	***10.2***	***11.9***
Statistical Discrepancy												
Gross Domestic Product, (GDP)	***6.3***	***7.1***	***8.1***	***10.3***	***10.0***	***8.2***	***9.8***	***9.9***	***7.6***	***10.4***	***10.5***	***11.8***

Table 3 Expenditure on Gross Domestic Product at Current Ma

Millions of Baht	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4
Private Consumption Expenditure	1,013,298	1,051,702	1,073,152	1,113,727	1,123,042	1,149,043	1,137,065	1,165,100	1,161,401	1,190,579	1,181,966	1,235,502
General Government Consumption Expenditure	243,126	250,785	283,324	262,407	274,554	280,657	312,747	266,321	306,507	309,270	349,366	298,816
Gross Fixed Capital Formation	507,591	534,881	541,457	526,224	560,829	581,711	558,209	554,542	549,760	588,351	578,835	593,538
Change in Inventories	96,954	92,770	-50,617	67,101	7,736	4,213	-33,875	35,788	-10,321	1,772	-6,460	18,618
Exports of Goods and Services	1,144,549	1,240,937	1,428,744	1,394,234	1,377,475	1,379,008	1,519,580	1,493,108	1,468,926	1,471,838	1,573,194	1,737,097
- Goods	955,325	1,056,512	1,228,965	1,165,872	1,138,028	1,159,273	1,296,076	1,244,864	1,196,856	1,238,402	1,332,056	1,444,895
- Services	189,224	184,425	199,779	228,362	239,447	219,735	223,504	248,244	272,070	233,436	241,138	292,202
Imports of Goods and Services	1,190,906	1,382,698	1,362,888	1,351,804	1,314,466	1,388,172	1,417,091	1,375,267	1,279,367	1,370,823	1,393,824	1,492,616
- Goods	964,415	1,128,384	1,097,236	1,074,402	1,028,925	1,106,430	1,120,336	1,068,413	981,047	1,076,415	1,089,279	1,148,671
- Services	226,491	254,314	265,652	277,402	285,541	281,742	296,755	306,854	298,320	294,408	304,545	343,945
Expenditure on Gross Domestic Product	**1,814,612**	**1,788,377**	**1,913,172**	**2,011,889**	**2,029,170**	**2,006,460**	**2,076,635**	**2,139,592**	**2,196,906**	**2,190,987**	**2,283,077**	**2,390,955**
Statistical Discrepancy	51,445	40,429	-10,375	4,860	85,359	40,101	-1,947	25,285	61,279	-3,593	-47,062	3,758
Gross Domestic Product, (GDP)	**1,866,057**	**1,828,806**	**1,902,797**	**2,016,749**	**2,114,529**	**2,046,561**	**2,074,688**	**2,164,877**	**2,258,185**	**2,187,394**	**2,236,015**	**2,394,713**

Table 4 Growth rate of Expenditure on Gross Domestic Produc

Percent	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4
Private Consumption Expenditure	*7.3*	*8.1*	*11.0*	*11.2*	*10.8*	*9.3*	*6.0*	*4.6*	*3.4*	*3.6*	*3.9*	*6.0*
General Government Consumption Expenditure	*16.7*	*9.5*	*15.0*	*15.0*	*12.9*	*11.9*	*10.4*	*1.5*	*11.6*	*10.2*	*11.7*	*12.2*
Gross Fixed Capital Formation	*29.7*	*24.9*	*20.8*	*14.0*	*10.5*	*8.8*	*3.1*	*5.4*	*-2.0*	*1.1*	*3.7*	*7.0*
Change in Inventories	*183.4*	*569.4*	*-1,996.5*	*1,000.2*	*-92.0*	*-95.5*	*33.1*	*-46.7*	*-233.4*	*-57.9*	*80.9*	*-48.0*
Exports of Goods and Services	*8.0*	*11.9*	*20.8*	*12.7*	*20.4*	*11.1*	*6.4*	*7.1*	*6.6*	*6.7*	*3.5*	*16.3*
- Goods	*11.2*	*13.6*	*22.6*	*13.1*	*19.1*	*9.7*	*5.5*	*6.8*	*5.2*	*6.8*	*2.8*	*16.1*
- Services	*-5.8*	*3.5*	*10.7*	*11.1*	*26.5*	*19.1*	*11.9*	*8.7*	*13.6*	*6.2*	*7.9*	*17.7*
Imports of Goods and Services	*22.0*	*30.3*	*21.7*	*21.2*	*10.4*	*0.4*	*4.0*	*1.7*	*-2.7*	*-1.2*	*-1.6*	*8.5*
- Goods	*25.8*	*33.5*	*23.0*	*21.2*	*6.7*	*-1.9*	*2.1*	*-0.6*	*-4.7*	*-2.7*	*-2.8*	*7.5*
- Services	*8.2*	*17.8*	*16.3*	*21.1*	*26.1*	*10.8*	*11.7*	*10.6*	*4.5*	*4.5*	*2.6*	*12.1*
Expenditure on Gross Domestic Product	***9.1***	***5.7***	***10.8***	***10.7***	***11.8***	***12.2***	***8.5***	***6.3***	***8.3***	***9.2***	***9.9***	***11.7***
Statistical Discrepancy												
Gross Domestic Product, (GDP)	***10.2***	***8.6***	***10.6***	***8.6***	***13.3***	***11.9***	***9.0***	***7.3***	***6.8***	***6.9***	***7.8***	***10.6***

Table 3 Expenditure on Gross Domestic Product at Current Ma

Millions of Baht	2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4
Private Consumption Expenditure	1,275,004	1,325,821	1,308,742	1,297,177	1,255,553	1,272,751	1,275,842	1,321,093	1,358,127	1,419,185	1,412,902	1,439,587
General Government Consumption Expenditure	321,758	325,410	397,515	347,483	367,871	378,338	416,697	378,738	417,443	424,122	453,220	417,123
Gross Fixed Capital Formation	630,380	654,563	655,210	627,110	501,169	548,719	584,583	597,548	608,767	659,151	661,283	663,967
Change in Inventories	50,776	-11,220	45,873	87,230	-159,180	-40,622	-98,927	59,913	146,483	-40,850	-351	42,136
Exports of Goods and Services	1,660,525	1,738,118	1,931,491	1,602,207	1,453,333	1,393,855	1,618,765	1,724,105	1,750,569	1,754,963	1,809,070	1,830,952
- Goods	1,348,501	1,485,037	1,669,292	1,328,256	1,176,633	1,176,629	1,380,319	1,424,063	1,426,284	1,546,424	1,556,992	1,530,483
- Services	312,024	253,081	262,199	273,951	276,700	217,226	238,446	300,042	324,285	208,539	252,078	300,469
Imports of Goods and Services	1,548,983	1,649,371	1,893,211	1,608,215	1,099,130	1,244,503	1,403,896	1,538,841	1,589,146	1,629,551	1,680,380	1,648,196
- Goods	1,206,211	1,301,753	1,508,642	1,238,939	811,309	937,701	1,082,823	1,204,756	1,247,587	1,269,948	1,318,226	1,287,174
- Services	342,772	347,618	384,569	369,276	287,821	306,802	321,073	334,085	341,559	359,603	362,154	361,022
Expenditure on Gross Domestic Product	**2,389,460**	**2,383,321**	**2,445,620**	**2,352,992**	**2,319,616**	**2,308,538**	**2,393,064**	**2,542,556**	**2,692,243**	**2,587,020**	**2,655,744**	**2,745,569**
Statistical Discrepancy	59,045	61,787	18,717	-4,010	38,396	33,425	1,379	17,041	56,642	63,503	-605	2,287
Gross Domestic Product, (GDP)	**2,448,505**	**2,445,108**	**2,464,337**	**2,348,982**	**2,358,012**	**2,341,963**	**2,394,443**	**2,559,597**	**2,748,885**	**2,650,523**	**2,655,139**	**2,747,856**

Table 4 Growth rate of Expenditure on Gross Domestic Produc

Percent	2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4
Private Consumption Expenditure	*9.8*	*11.4*	*10.7*	*5.0*	*-1.5*	*-4.0*	*-2.5*	*1.8*	*8.2*	*11.5*	*10.7*	*9.0*
General Government Consumption Expenditure	*5.0*	*5.2*	*13.8*	*16.3*	*14.3*	*16.3*	*4.8*	*9.0*	*13.5*	*12.1*	*8.8*	*10.1*
Gross Fixed Capital Formation	*14.7*	*11.3*	*13.2*	*5.7*	*-20.5*	*-16.2*	*-10.8*	*-4.7*	*21.5*	*20.1*	*13.1*	*11.1*
Change in Inventories	*592.0*	*-733.2*	*810.1*	*368.5*	*-413.5*	*-262.0*	*-315.7*	*-31.3*	*192.0*	*-0.6*	*99.6*	*-29.7*
Exports of Goods and Services	*13.0*	*18.1*	*22.8*	*-7.8*	*-12.5*	*-19.8*	*-16.2*	*7.6*	*20.5*	*25.9*	*11.8*	*6.2*
- Goods	*12.7*	*19.9*	*25.3*	*-8.1*	*-12.7*	*-20.8*	*-17.3*	*7.2*	*21.2*	*31.4*	*12.8*	*7.5*
- Services	*14.7*	*8.4*	*8.7*	*-6.2*	*-11.3*	*-14.2*	*-9.1*	*9.5*	*17.2*	*-4.0*	*5.7*	*0.1*
Imports of Goods and Services	*21.1*	*20.3*	*35.8*	*7.7*	*-29.0*	*-24.5*	*-25.8*	*-4.3*	*44.6*	*30.9*	*19.7*	*7.1*
- Goods	*23.0*	*20.9*	*38.5*	*7.9*	*-32.7*	*-28.0*	*-28.2*	*-2.8*	*53.8*	*35.4*	*21.7*	*6.8*
- Services	*14.9*	*18.1*	*26.3*	*7.4*	*-16.0*	*-11.7*	*-16.5*	*-9.5*	*18.7*	*17.2*	*12.8*	*8.1*
Expenditure on Gross Domestic Product	***8.8***	***8.8***	***7.1***	***-1.6***	***-2.9***	***-3.1***	***-2.1***	***8.1***	***16.1***	***12.1***	***11.0***	***8.0***
Statistical Discrepancy												
Gross Domestic Product, (GDP)	***8.4***	***11.8***	***10.2***	***-1.9***	***-3.7***	***-4.2***	***-2.8***	***9.0***	***16.6***	***13.2***	***10.9***	***7.4***

Table 3 Expenditure on Gross Domestic Product at Current Ma

Millions of Baht	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4
Private Consumption Expenditure	1,473,165	1,520,393	1,515,081	1,469,453	1,535,708	1,623,690	1,654,972	1,703,686	1,668,413	1,706,695	1,685,394	1,658,283
General Government Consumption Expenditure	436,456	452,416	501,432	433,918	462,309	500,523	556,378	506,094	488,494	540,453	623,658	524,409
Gross Fixed Capital Formation	739,096	758,834	723,473	699,891	805,093	844,687	819,629	851,437	849,893	866,738	786,316	768,643
Change in Inventories	79,314	-52,366	-35,188	116,231	138,891	50,661	-113,521	91,234	182,144	54,347	-104,698	143,009
Exports of Goods and Services	2,017,879	1,973,105	2,159,676	1,792,067	2,059,213	2,107,626	2,224,538	2,170,941	2,137,281	2,061,557	2,285,184	2,257,331
- Goods	1,665,851	1,687,800	1,841,015	1,480,402	1,665,068	1,774,222	1,850,186	1,731,090	1,668,456	1,662,296	1,823,832	1,773,384
- Services	352,028	285,305	318,661	311,665	394,145	333,404	374,352	439,851	468,825	399,261	461,352	483,947
Imports of Goods and Services	1,849,700	1,913,679	2,083,109	1,903,142	2,041,745	2,174,166	2,110,733	2,154,554	2,130,731	2,111,570	2,079,999	2,085,371
- Goods	1,467,093	1,514,996	1,675,964	1,502,166	1,642,488	1,751,189	1,709,495	1,728,626	1,716,151	1,688,349	1,654,305	1,652,228
- Services	382,607	398,683	407,145	400,976	399,257	422,977	401,238	425,928	414,580	423,221	425,694	433,143
Expenditure on Gross Domestic Product	**2,896,210**	**2,738,703**	**2,781,365**	**2,608,418**	**2,959,469**	**2,953,021**	**3,031,263**	**3,168,838**	**3,195,494**	**3,118,220**	**3,195,855**	**3,266,304**
Statistical Discrepancy	62,495	70,700	68,978	73,616	88,587	41,827	19,608	92,042	89,552	14,947	-7,862	37,529
Gross Domestic Product, (GDP)	**2,958,705**	**2,809,403**	**2,850,343**	**2,682,034**	**3,048,056**	**2,994,848**	**3,050,871**	**3,260,880**	**3,285,046**	**3,133,167**	**3,187,993**	**3,303,833**

Table 4 Growth rate of Expenditure on Gross Domestic Produc

Percent	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4
Private Consumption Expenditure	*8.5*	*7.1*	*7.2*	*2.1*	*4.2*	*6.8*	*9.2*	*15.9*	*8.6*	*5.1*	*1.8*	*-2.7*
General Government Consumption Expenditure	*4.6*	*6.7*	*10.6*	*4.0*	*5.9*	*10.6*	*11.0*	*16.6*	*5.7*	*8.0*	*12.1*	*3.6*
Gross Fixed Capital Formation	*21.4*	*15.1*	*9.4*	*5.4*	*8.9*	*11.3*	*13.3*	*21.7*	*5.6*	*2.6*	*-4.1*	*-9.7*
Change in Inventories	*-45.9*	*-28.2*	*-9,925.1*	*175.8*	*75.1*	*196.7*	*-222.6*	*-21.5*	*31.1*	*7.3*	*7.8*	*56.7*
Exports of Goods and Services	*15.3*	*12.4*	*19.4*	*-2.1*	*2.0*	*6.8*	*3.0*	*21.1*	*3.8*	*-2.2*	*2.7*	*4.0*
- Goods	*16.8*	*9.1*	*18.2*	*-3.3*	*0.0*	*5.1*	*0.5*	*16.9*	*0.2*	*-6.3*	*-1.4*	*2.4*
- Services	*8.6*	*36.8*	*26.4*	*3.7*	*12.0*	*16.9*	*17.5*	*41.1*	*18.9*	*19.8*	*23.2*	*10.0*
Imports of Goods and Services	*16.4*	*17.4*	*24.0*	*15.5*	*10.4*	*13.6*	*1.3*	*13.2*	*4.4*	*-2.9*	*-1.5*	*-3.2*
- Goods	*17.6*	*19.3*	*27.1*	*16.7*	*12.0*	*15.6*	*2.0*	*15.1*	*4.5*	*-3.6*	*-3.2*	*-4.4*
- Services	*12.0*	*10.9*	*12.4*	*11.1*	*4.4*	*6.1*	*-1.5*	*6.2*	*3.8*	*0.1*	*6.1*	*1.7*
Expenditure on Gross Domestic Product	***7.6***	***5.9***	***4.7***	***-5.0***	***2.2***	***7.8***	***9.0***	***21.5***	***8.0***	***5.6***	***5.4***	***3.1***
Statistical Discrepancy												
Gross Domestic Product, (GDP)	***7.6***	***6.0***	***7.4***	***-2.4***	***3.0***	***6.6***	***7.0***	***21.6***	***7.8***	***4.6***	***4.5***	***1.3***

Table 3 Expenditure on Gross Domestic Product at Current Ma

Millions of Baht	2014 Q1	2014 Q2	2014 Q3	2014 Q4	Average
Private Consumption Expenditure	1,655,699	1,754,645	1,760,509	1,710,384	996,107
General Government Consumption Expenditure	510,926	562,225	627,154	548,052	271,221
Gross Fixed Capital Formation	789,133	845,069	817,251	787,694	495,907
Change in Inventories	55,257	-92,831	-56,746	32,068	11,945
Exports of Goods and Services	2,277,019	2,175,898	2,242,978	2,399,956	1,185,837
- Goods	1,808,199	1,808,446	1,827,392	1,856,402	974,752
- Services	468,820	367,452	415,586	543,554	211,085
Imports of Goods and Services	2,036,746	2,049,311	2,104,591	2,041,356	1,112,451
- Goods	1,604,273	1,617,113	1,674,076	1,606,351	875,757
- Services	432,473	432,198	430,515	435,005	236,695
Expenditure on Gross Domestic Product	**3,251,288**	**3,195,695**	**3,286,555**	**3,436,798**	**1,848,565**
Statistical Discrepancy	70,799	20,305	-53,564	-60,855	19,996
Gross Domestic Product, (GDP)	**3,322,087**	**3,216,000**	**3,232,991**	**3,375,943**	**1,868,561**

Table 4 Growth rate of Expenditure on Gross Domestic Produc

Percent	2014 Q1	2014 Q2	2014 Q3	2014 Q4	Average
Private Consumption Expenditure	*-0.8*	*2.8*	*4.5*	*3.1*	*6.7*
General Government Consumption Expenditure	*4.6*	*4.0*	*0.6*	*4.5*	*8.8*
Gross Fixed Capital Formation	*-7.1*	*-2.5*	*3.9*	*2.5*	*5.5*
Change in Inventories	*-69.7*	*-270.8*	*45.8*	*-77.6*	*-148.2*
Exports of Goods and Services	*6.5*	*5.5*	*-1.8*	*6.3*	*10.5*
- Goods	*8.4*	*8.8*	*0.2*	*4.7*	*11.0*
- Services	*0.0*	*-8.0*	*-9.9*	*12.3*	*9.4*
Imports of Goods and Services	*-4.4*	*-2.9*	*1.2*	*-2.1*	*9.8*
- Goods	*-6.5*	*-4.2*	*1.2*	*-2.8*	*10.2*
- Services	*4.3*	*2.1*	*1.1*	*0.4*	*8.9*
Expenditure on Gross Domestic Product	***1.7***	***2.5***	***2.8***	***5.2***	***6.8***
Statistical Discrepancy					
Gross Domestic Product, (GDP)	***1.1***	***2.6***	***1.4***	***2.2***	***6.7***

Table 5 Expenditure on Gross Domestic Product ,CVM (reference year 2002) (Original)

Millions of Baht	1993 Q1	1993 Q2	1993 Q3	1993 Q4	1994 Q1	1994 Q2	1994 Q3	1994 Q4	1995 Q1	1995 Q2	1995 Q3	1995 Q4
Private Consumption Expenditure	577,276	588,182	583,478	610,586	613,104	634,024	634,111	664,117	677,196	693,414	683,753	701,731
General Government Consumption Expenditure	111,819	116,963	137,745	125,080	128,859	126,162	153,572	124,600	139,038	137,207	159,073	134,606
Gross Fixed Capital Formation	489,903	499,025	528,543	514,354	522,250	570,852	574,384	598,532	633,755	618,856	636,883	645,499
Change in Inventories	-3,129	-2,440	1,231	30,647	27,546	-20,149	-10,256	46,275	-3,064	66,374	20,783	-1,800
Exports of Goods and Services	397,868	397,561	454,124	494,639	450,487	458,131	497,235	566,914	539,280	536,025	570,653	630,032
- Goods	304,217	322,313	375,678	402,935	360,857	387,974	427,395	475,682	423,385	447,085	486,831	528,608
- Services	91,814	77,340	82,445	94,718	91,117	75,640	76,984	97,182	115,412	94,020	91,530	108,054
Imports of Goods and Services	451,456	475,695	495,676	595,710	513,942	563,947	585,181	708,312	667,284	715,691	708,627	824,495
- Goods	381,655	396,438	414,415	475,013	419,524	452,228	481,920	594,278	552,805	588,901	596,709	689,819
- Services	77,580	86,182	88,772	124,591	99,871	115,781	110,475	125,361	123,543	135,508	123,962	147,573
Expenditure on Gross Domestic Product (sum up)	1,112,665	1,118,763	1,205,933	1,178,716	1,224,338	1,206,494	1,263,795	1,286,749	1,309,374	1,332,547	1,358,182	1,279,306
Residual (GDE (Sum up) - GDE CVM)	*39,389*	*43,732*	*48,967*	*43,049*	*46,161*	*54,921*	*53,590*	*44,003*	*46,517*	*43,570*	*49,008*	*37,999*
% Residual (GDE Sum up) to GDE CVM	*3.7*	*4.1*	*4.2*	*3.8*	*3.9*	*4.8*	*4.4*	*3.5*	*3.7*	*3.4*	*3.7*	*3.1*
Expenditure on Gross Domestic Product (GDE)	***1,073,276***	***1,075,031***	***1,156,966***	***1,135,667***	***1,178,177***	***1,151,573***	***1,210,205***	***1,242,746***	***1,262,857***	***1,288,977***	***1,309,174***	***1,241,307***
Statistical Discrepancy	-5,986	-35,116	-70,480	11,634	1,327	-5,351	-74,385	-16,155	2,742	-32,623	-77,224	73,616
Gross Domestic Product, (GDP)	1,067,290	1,039,915	1,086,486	1,147,301	1,179,504	1,146,222	1,135,820	1,226,591	1,265,599	1,256,354	1,231,950	1,314,923
Residual (GDP (Sum up) - GDP CVM)	*11,251*	*15,696*	*18,485*	*13,243*	*16,619*	*16,123*	*15,582*	*19,292*	*15,260*	*16,350*	*15,779*	*14,907*
% Residual (GDP Sum up) to GDP CVM	*1.1*	*1.5*	*1.7*	*1.2*	*1.4*	*1.4*	*1.4*	*1.6*	*1.2*	*1.3*	*1.3*	*1.1*
Gross Domestic Product (Sum up)	***1,078,541***	***1,055,611***	***1,104,971***	***1,160,544***	***1,196,123***	***1,162,345***	***1,151,402***	***1,245,883***	***1,280,859***	***1,272,704***	***1,247,729***	***1,329,830***

Table 6 Growth rate of Expenditure on Gross Domestic Product ,CVM (reference year 2002) (YoY)

Percent	1993 Q1	1993 Q2	1993 Q3	1993 Q4	1994 Q1	1994 Q2	1994 Q3	1994 Q4	1995 Q1	1995 Q2	1995 Q3	1995 Q4
Private Consumption Expenditure					*6.2*	*7.8*	*8.7*	*8.8*	*10.5*	*9.4*	*7.8*	*5.7*
General Government Consumption Expenditure					*15.2*	*7.9*	*11.5*	*-0.4*	*7.9*	*8.8*	*3.6*	*8.0*
Gross Fixed Capital Formation					*6.6*	*14.4*	*8.7*	*16.4*	*21.4*	*8.4*	*10.9*	*7.8*
Change in Inventories					*980.3*	*-725.8*	*-933.1*	*51.0*	*-111.1*	*429.4*	*302.6*	*-103.9*
Exports of Goods and Services					*13.2*	*15.2*	*9.5*	*14.6*	*19.7*	*17.0*	*14.8*	*11.1*
- Goods					*18.6*	*20.4*	*13.8*	*18.1*	*17.3*	*15.2*	*13.9*	*11.1*
- Services					*-0.8*	*-2.2*	*-6.6*	*2.6*	*26.7*	*24.3*	*18.9*	*11.2*
Imports of Goods and Services					*13.8*	*18.6*	*18.1*	*18.9*	*29.8*	*26.9*	*21.1*	*16.4*
- Goods					*9.9*	*14.1*	*16.3*	*25.1*	*31.8*	*30.2*	*23.8*	*16.1*
- Services					*28.7*	*34.3*	*24.4*	*0.6*	*23.7*	*17.0*	*12.2*	*17.7*
Expenditure on Gross Domestic Product (sum up)					*10.0*	*7.8*	*4.8*	*9.2*	*6.9*	*10.4*	*7.5*	*-0.6*
Expenditure on Gross Domestic Product (GDE)					***9.8***	***7.1***	***4.6***	***9.4***	***7.2***	***11.9***	***8.2***	***-0.1***
Statistical Discrepancy												
Gross Domestic Product (Sum up)					*10.9*	*10.1*	*4.2*	*7.4*	*7.1*	*9.5*	*8.4*	*6.7*
Gross Domestic Product, (GDP)					***10.5***	***10.2***	***4.5***	***6.9***	***7.3***	***9.6***	***8.5***	***7.2***

Table 5 Expenditure on Gross Domestic Product ,CVM (

Millions of Baht	1996 Q1	1996 Q2	1996 Q3	1996 Q4	1997 Q1	1997 Q2	1997 Q3	1997 Q4	1998 Q1	1998 Q2	1998 Q3	1998 Q4
Private Consumption Expenditure	688,460	733,804	731,153	741,401	712,799	748,710	707,307	685,180	652,024	641,400	624,186	645,289
General Government Consumption Expenditure	147,928	150,738	168,628	158,534	156,280	154,225	174,222	158,448	152,521	151,098	191,065	178,120
Gross Fixed Capital Formation	647,974	651,023	688,959	724,143	556,769	549,091	574,077	441,205	328,991	267,152	306,096	285,039
Change in Inventories	-1,877	35,033	24,259	-9,680	3,198	-417	-22,827	2,352	-22,812	-12,721	-56,456	-6,111
Exports of Goods and Services	547,339	521,708	528,852	576,043	550,886	552,848	592,939	674,053	650,363	616,795	652,998	706,405
- Goods	419,737	408,277	420,928	459,712	418,853	430,066	477,539	530,947	487,298	490,016	521,603	566,710
- Services	125,730	113,205	109,037	117,776	130,342	122,329	116,997	143,397	163,554	126,542	131,074	139,286
Imports of Goods and Services	685,463	702,352	683,442	750,106	632,958	656,583	647,479	639,281	497,855	500,327	514,532	559,779
- Goods	560,419	564,046	558,884	619,261	507,309	525,462	505,943	469,069	361,754	375,262	382,895	425,163
- Services	132,612	143,629	132,132	140,557	130,602	136,107	144,056	166,731	136,189	125,889	132,294	135,870
Expenditure on Gross Domestic Product (sum up)	1,334,921	1,384,405	1,451,948	1,432,068	1,340,330	1,342,435	1,377,316	1,325,729	1,263,633	1,162,336	1,202,379	1,247,300
Residual (GDE (Sum up) - GDE CVM)	*47,271*	*50,575*	*57,987*	*54,233*	*42,224*	*40,253*	*49,795*	*34,910*	*15,983*	*6,286*	*9,412*	*1,122*
% Residual (GDE Sum up) to GDE CVM	*3.7*	*3.8*	*4.2*	*3.9*	*3.3*	*3.1*	*3.8*	*2.7*	*1.3*	*0.5*	*0.8*	*0.1*
Expenditure on Gross Domestic Product (GDE)	***1,287,650***	***1,333,830***	***1,393,961***	***1,377,835***	***1,298,106***	***1,302,182***	***1,327,521***	***1,290,819***	***1,247,650***	***1,156,050***	***1,192,967***	***1,246,178***
Statistical Discrepancy	26,202	2,537	-70,955	4,275	20,882	6,949	-44,649	6,061	-3,439	-10,992	-36,971	18,873
Gross Domestic Product, (GDP)	1,313,852	1,336,367	1,323,006	1,382,110	1,318,988	1,309,131	1,282,872	1,296,880	1,244,211	1,145,058	1,155,996	1,265,051
Residual (GDP (Sum up) - GDP CVM)	*14,349*	*16,715*	*19,170*	*9,115*	*9,702*	*12,806*	*12,829*	*3,864*	*4,642*	*6,038*	*6,144*	*-3,494*
% Residual (GDP Sum up) to GDP CVM	*1.1*	*1.3*	*1.4*	*0.7*	*0.7*	*1.0*	*1.0*	*0.3*	*0.4*	*0.5*	*0.5*	*-0.3*
Gross Domestic Product (Sum up)	***1,328,201***	***1,353,082***	***1,342,176***	***1,391,225***	***1,328,690***	***1,321,937***	***1,295,701***	***1,300,744***	***1,248,853***	***1,151,096***	***1,162,140***	***1,261,557***

Table 6 Growth rate of Expenditure on Gross Domestic F

Percent	1996 Q1	1996 Q2	1996 Q3	1996 Q4	1997 Q1	1997 Q2	1997 Q3	1997 Q4	1998 Q1	1998 Q2	1998 Q3	1998 Q4
Private Consumption Expenditure	*1.7*	*5.8*	*6.9*	*5.7*	*3.5*	*2.0*	*-3.3*	*-7.6*	*-8.5*	*-14.3*	*-11.8*	*-5.8*
General Government Consumption Expenditure	*6.4*	*9.9*	*6.0*	*17.8*	*5.6*	*2.3*	*3.3*	*-0.1*	*-2.4*	*-2.0*	*9.7*	*12.4*
Gross Fixed Capital Formation	*2.2*	*5.2*	*8.2*	*12.2*	*-14.1*	*-15.7*	*-16.7*	*-39.1*	*-40.9*	*-51.3*	*-46.7*	*-35.4*
Change in Inventories	*38.7*	*-47.2*	*16.7*	*-437.8*	*270.4*	*-101.2*	*-194.1*	*124.3*	*-813.3*	*-2,950.6*	*-147.3*	*-359.8*
Exports of Goods and Services	*1.5*	*-2.7*	*-7.3*	*-8.6*	*0.6*	*6.0*	*12.1*	*17.0*	*18.1*	*11.6*	*10.1*	*4.8*
- Goods	*-0.9*	*-8.7*	*-13.5*	*-13.0*	*-0.2*	*5.3*	*13.4*	*15.5*	*16.3*	*13.9*	*9.2*	*6.7*
- Services	*8.9*	*20.4*	*19.1*	*9.0*	*3.7*	*8.1*	*7.3*	*21.8*	*25.5*	*3.4*	*12.0*	*-2.9*
Imports of Goods and Services	*2.7*	*-1.9*	*-3.6*	*-9.0*	*-7.7*	*-6.5*	*-5.3*	*-14.8*	*-21.3*	*-23.8*	*-20.5*	*-12.4*
- Goods	*1.4*	*-4.2*	*-6.3*	*-10.2*	*-9.5*	*-6.8*	*-9.5*	*-24.3*	*-28.7*	*-28.6*	*-24.3*	*-9.4*
- Services	*7.3*	*6.0*	*6.6*	*-4.8*	*-1.5*	*-5.2*	*9.0*	*18.6*	*4.3*	*-7.5*	*-8.2*	*-18.5*
Expenditure on Gross Domestic Product (sum up)	*2.0*	*3.9*	*6.9*	*11.9*	*0.4*	*-3.0*	*-5.1*	*-7.4*	*-5.7*	*-13.4*	*-12.7*	*-5.9*
Expenditure on Gross Domestic Product (GDE)	***2.0***	***3.5***	***6.5***	***11.0***	***0.8***	***-2.4***	***-4.8***	***-6.3***	***-3.9***	***-11.2***	***-10.1***	***-3.5***
Statistical Discrepancy												
Gross Domestic Product (Sum up)	*3.7*	*6.3*	*7.6*	*4.6*	*0.0*	*-2.3*	*-3.5*	*-6.5*	*-6.0*	*-12.9*	*-10.3*	*-3.0*
Gross Domestic Product, (GDP)	***3.8***	***6.4***	***7.4***	***5.1***	***0.4***	***-2.0***	***-3.0***	***-6.2***	***-5.7***	***-12.5***	***-9.9***	***-2.5***

Table 5 Expenditure on Gross Domestic Product ,CVM (

Millions of Baht	1999 Q1	1999 Q2	1999 Q3	1999 Q4	2000 Q1	2000 Q2	2000 Q3	2000 Q4	2001 Q1	2001 Q2	2001 Q3	2001 Q4
Private Consumption Expenditure	636,889	653,449	675,504	701,263	694,166	704,446	710,875	745,311	737,048	750,667	755,663	779,729
General Government Consumption Expenditure	156,766	172,374	185,489	182,444	167,918	169,695	198,356	180,336	171,876	179,345	204,636	179,055
Gross Fixed Capital Formation	250,204	279,217	310,058	294,498	299,121	270,462	301,282	298,173	292,784	289,547	314,207	293,951
Change in Inventories	15,261	-2,411	-42,162	17,509	24,276	22,711	-37,693	27,616	42,765	5,014	-31,191	17,429
Exports of Goods and Services	635,633	643,808	744,195	829,754	763,617	750,434	881,944	909,140	819,169	811,992	835,620	837,680
- Goods	474,227	520,954	607,647	676,821	625,753	622,828	744,337	755,644	671,394	675,412	693,777	680,802
- Services	163,601	121,417	134,395	150,595	137,309	127,283	137,578	153,136	147,380	136,270	141,513	156,426
Imports of Goods and Services	455,138	566,845	587,463	699,253	657,149	688,444	771,311	791,102	735,581	757,968	733,961	723,192
- Goods	341,963	429,791	449,309	545,860	521,021	541,508	597,889	621,857	580,469	597,333	573,537	573,629
- Services	113,558	137,183	137,940	152,150	135,941	146,721	173,141	168,995	154,752	160,295	160,288	149,093
Expenditure on Gross Domestic Product (sum up)	1,241,427	1,178,026	1,283,682	1,325,120	1,291,581	1,229,196	1,283,705	1,369,364	1,328,026	1,278,627	1,344,780	1,384,670
Residual (GDE (Sum up) - GDE CVM)	*6,762*	*5,861*	*4,226*	*-4,517*	*1,639*	*-1,612*	*149*	*-2,653*	*-406*	*667*	*276*	*-843*
% Residual (GDE Sum up) to GDE CVM	*0.5*	*0.5*	*0.3*	*-0.3*	*0.1*	*-0.1*	*0.0*	*-0.2*	*0.0*	*0.1*	*0.0*	*-0.1*
Expenditure on Gross Domestic Product (GDE)	***1,234,665***	***1,172,165***	***1,279,456***	***1,329,637***	***1,289,942***	***1,230,808***	***1,283,556***	***1,372,017***	***1,328,432***	***1,277,960***	***1,344,504***	***1,385,513***
Statistical Discrepancy	25,047	34,829	-33,445	-12,096	56,817	48,388	-7,281	-19,857	49,650	48,765	-21,816	22,356
Gross Domestic Product, (GDP)	1,259,712	1,206,994	1,246,011	1,317,541	1,346,759	1,279,196	1,276,275	1,352,160	1,378,082	1,326,725	1,322,688	1,407,869
Residual (GDP (Sum up) - GDP CVM)	*-849*	*2,127*	*4,753*	*-4,279*	*1,935*	*57*	*73*	*-1,660*	*967*	*-545*	*-2,651*	*4,475*
% Residual (GDP Sum up) to GDP CVM	*-0.1*	*0.2*	*0.4*	*-0.3*	*0.1*	*0.0*	*0.0*	*-0.1*	*0.1*	*0.0*	*-0.2*	*0.3*
Gross Domestic Product (Sum up)	***1,258,863***	***1,209,121***	***1,250,764***	***1,313,262***	***1,348,694***	***1,279,253***	***1,276,348***	***1,350,500***	***1,379,049***	***1,326,180***	***1,320,037***	***1,412,344***

Table 6 Growth rate of Expenditure on Gross Domestic F

Percent	1999 Q1	1999 Q2	1999 Q3	1999 Q4	2000 Q1	2000 Q2	2000 Q3	2000 Q4	2001 Q1	2001 Q2	2001 Q3	2001 Q4
Private Consumption Expenditure	*-2.3*	*1.9*	*8.2*	*8.7*	*9.0*	*7.8*	*5.2*	*6.3*	*6.2*	*6.6*	*6.3*	*4.6*
General Government Consumption Expenditure	*2.8*	*14.1*	*-2.9*	*2.4*	*7.1*	*-1.6*	*6.9*	*-1.2*	*2.4*	*5.7*	*3.2*	*-0.7*
Gross Fixed Capital Formation	*-23.9*	*4.5*	*1.3*	*3.3*	*19.6*	*-3.1*	*-2.8*	*1.2*	*-2.1*	*7.1*	*4.3*	*-1.4*
Change in Inventories	*166.9*	*81.0*	*25.3*	*386.5*	*59.1*	*1,042.0*	*10.6*	*57.7*	*76.2*	*-77.9*	*17.2*	*-36.9*
Exports of Goods and Services	*-2.3*	*4.4*	*14.0*	*17.5*	*20.1*	*16.6*	*18.5*	*9.6*	*7.3*	*8.2*	*-5.3*	*-7.9*
- Goods	*-2.7*	*6.3*	*16.5*	*19.4*	*32.0*	*19.6*	*22.5*	*11.6*	*7.3*	*8.4*	*-6.8*	*-9.9*
- Services	*0.0*	*-4.1*	*2.5*	*8.1*	*-16.1*	*4.8*	*2.4*	*1.7*	*7.3*	*7.1*	*2.9*	*2.1*
Imports of Goods and Services	*-8.6*	*13.3*	*14.2*	*24.9*	*44.4*	*21.5*	*31.3*	*13.1*	*11.9*	*10.1*	*-4.8*	*-8.6*
- Goods	*-5.5*	*14.5*	*17.3*	*28.4*	*52.4*	*26.0*	*33.1*	*13.9*	*11.4*	*10.3*	*-4.1*	*-7.8*
- Services	*-16.6*	*9.0*	*4.3*	*12.0*	*19.7*	*7.0*	*25.5*	*11.1*	*13.8*	*9.3*	*-7.4*	*-11.8*
Expenditure on Gross Domestic Product (sum up)	*-1.8*	*1.3*	*6.8*	*6.2*	*4.0*	*4.3*	*0.0*	*3.3*	*2.8*	*4.0*	*4.8*	*1.1*
Expenditure on Gross Domestic Product (GDE)	***-1.0***	***1.4***	***7.2***	***6.7***	***4.5***	***5.0***	***0.3***	***3.2***	***3.0***	***3.8***	***4.7***	***1.0***
Statistical Discrepancy												
Gross Domestic Product (Sum up)	*0.8*	*5.0*	*7.6*	*4.1*	*7.1*	*5.8*	*2.0*	*2.8*	*2.3*	*3.7*	*3.4*	*4.6*
Gross Domestic Product, (GDP)	***1.2***	***5.4***	***7.8***	***4.1***	***6.9***	***6.0***	***2.4***	***2.6***	***2.3***	***3.7***	***3.6***	***4.1***

Table 5 Expenditure on Gross Domestic Product ,CVM (

Millions of Baht	2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4
Private Consumption Expenditure	777,783	800,558	801,755	831,106	841,969	849,101	860,520	895,516	905,942	925,689	919,687	951,851
General Government Consumption Expenditure	190,701	182,900	204,525	181,867	182,701	196,266	220,488	199,488	197,790	203,926	222,259	206,100
Gross Fixed Capital Formation	301,351	310,082	347,713	305,061	325,899	339,059	386,250	372,777	362,769	391,734	433,656	461,737
Change in Inventories	22,565	12,262	-14,775	27,986	39,243	-2,388	-13,820	26,510	32,615	13,214	2,544	5,815
Exports of Goods and Services	825,701	835,356	901,314	936,633	915,768	894,119	966,235	1,042,475	1,047,481	1,067,902	1,106,761	1,155,155
- Goods	659,121	687,191	737,216	754,136	740,833	773,625	801,224	856,978	857,318	899,608	937,021	963,144
- Services	166,957	147,817	163,875	182,692	174,935	120,494	165,011	185,497	190,259	168,203	169,612	191,986
Imports of Goods and Services	728,613	777,457	815,329	812,867	813,292	823,549	890,206	955,002	986,365	1,056,310	1,069,090	1,077,312
- Goods	569,194	604,089	640,420	630,970	638,576	655,571	708,695	770,447	784,283	850,044	850,743	859,722
- Services	159,370	173,496	174,659	182,067	174,716	167,978	181,510	184,556	202,068	206,360	218,339	217,609
Expenditure on Gross Domestic Product (sum up)	1,389,914	1,363,225	1,425,230	1,469,811	1,492,288	1,452,608	1,529,468	1,581,763	1,560,342	1,545,970	1,615,697	1,703,302
Residual (GDE (Sum up) - GDE CVM)	*-43*	*630*	*125*	*-708*	*0*	*-1*	*-1*	*0*	*-1,313*	*-3,109*	*-2,670*	*-1,785*
% Residual (GDE Sum up) to GDE CVM	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*-0.1*	*-0.2*	*-0.2*	*-0.1*
Expenditure on Gross Domestic Product (GDE)	***1,389,957***	***1,362,595***	***1,425,105***	***1,470,519***	***1,492,288***	***1,452,609***	***1,529,469***	***1,581,763***	***1,561,655***	***1,549,079***	***1,618,367***	***1,705,087***
Statistical Discrepancy	51,074	48,620	-10,815	32,523	58,456	47,501	-18,463	40,749	90,274	45,817	-22,060	25,106
Gross Domestic Product, (GDP)	1,441,031	1,411,215	1,414,290	1,503,042	1,550,744	1,500,110	1,511,006	1,622,512	1,651,929	1,594,896	1,596,307	1,730,193
Residual (GDP (Sum up) - GDP CVM)	*173*	*-687*	*-1,346*	*1,864*	*-1*	*-1*	*1*	*0*	*1,574*	*1,376*	*1,740*	*-1,038*
% Residual (GDP Sum up) to GDP CVM	*0.0*	*0.0*	*-0.1*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*0.1*	*-0.1*
Gross Domestic Product (Sum up)	***1,441,204***	***1,410,528***	***1,412,944***	***1,504,906***	***1,550,743***	***1,500,109***	***1,511,007***	***1,622,512***	***1,653,503***	***1,596,272***	***1,598,047***	***1,729,155***

Table 6 Growth rate of Expenditure on Gross Domestic F

Percent	2002 Q1	2002 Q2	2002 Q3	2002 Q4	2003 Q1	2003 Q2	2003 Q3	2003 Q4	2004 Q1	2004 Q2	2004 Q3	2004 Q4
Private Consumption Expenditure	*5.5*	*6.6*	*6.1*	*6.6*	*8.3*	*6.1*	*7.3*	*7.7*	*7.6*	*9.0*	*6.9*	*6.3*
General Government Consumption Expenditure	*11.0*	*2.0*	*-0.1*	*1.6*	*-4.2*	*7.3*	*7.8*	*9.7*	*8.3*	*3.9*	*0.8*	*3.3*
Gross Fixed Capital Formation	*2.9*	*7.1*	*10.7*	*3.8*	*8.1*	*9.3*	*11.1*	*22.2*	*11.3*	*15.5*	*12.3*	*23.9*
Change in Inventories	*-47.2*	*144.6*	*52.6*	*60.6*	*73.9*	*-119.5*	*6.5*	*-5.3*	*-16.9*	*653.4*	*118.4*	*-78.1*
Exports of Goods and Services	*0.8*	*2.9*	*7.9*	*11.8*	*10.9*	*7.0*	*7.2*	*11.3*	*14.4*	*19.4*	*14.5*	*10.8*
- Goods	*-1.8*	*1.7*	*6.3*	*10.8*	*12.4*	*12.6*	*8.7*	*13.6*	*15.7*	*16.3*	*16.9*	*12.4*
- Services	*13.3*	*8.5*	*15.8*	*16.8*	*4.8*	*-18.5*	*0.7*	*1.5*	*8.8*	*39.6*	*2.8*	*3.5*
Imports of Goods and Services	*-0.9*	*2.6*	*11.1*	*12.4*	*11.6*	*5.9*	*9.2*	*17.5*	*21.3*	*28.3*	*20.1*	*12.8*
- Goods	*-1.9*	*1.1*	*11.7*	*10.0*	*12.2*	*8.5*	*10.7*	*22.1*	*22.8*	*29.7*	*20.0*	*11.6*
- Services	*3.0*	*8.2*	*9.0*	*22.1*	*9.6*	*-3.2*	*3.9*	*1.4*	*15.7*	*22.8*	*20.3*	*17.9*
Expenditure on Gross Domestic Product (sum up)	*4.7*	*6.6*	*6.0*	*6.1*	*7.4*	*6.6*	*7.3*	*7.6*	*4.6*	*6.4*	*5.6*	*7.7*
Expenditure on Gross Domestic Product (GDE)	***4.6***	***6.6***	***6.0***	***6.1***	***7.4***	***6.6***	***7.3***	***7.6***	***4.6***	***6.6***	***5.8***	***7.8***
Statistical Discrepancy												
Gross Domestic Product (Sum up)	*4.5*	*6.4*	*7.0*	*6.6*	*7.6*	*6.4*	*6.9*	*7.8*	*6.6*	*6.4*	*5.8*	*6.6*
Gross Domestic Product, (GDP)	***4.6***	***6.4***	***6.9***	***6.8***	***7.6***	***6.3***	***6.8***	***7.9***	***6.5***	***6.3***	***5.6***	***6.6***

Table 5 Expenditure on Gross Domestic Product ,CVM (

Millions of Baht	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4
Private Consumption Expenditure	937,930	963,586	967,823	989,394	987,674	991,955	987,183	1,000,001	987,995	1,002,781	1,000,778	1,022,528
General Government Consumption Expenditure	212,930	218,730	246,263	218,511	221,189	226,177	252,712	216,656	241,499	244,804	277,775	231,046
Gross Fixed Capital Formation	425,876	450,294	494,883	514,438	453,548	475,472	497,595	508,144	449,685	473,933	511,527	533,566
Change in Inventories	88,369	84,556	-46,135	61,159	6,174	3,362	-27,035	28,562	-8,739	1,500	-5,470	15,764
Exports of Goods and Services	1,095,677	1,153,576	1,249,563	1,218,149	1,239,074	1,240,044	1,357,802	1,388,896	1,346,387	1,344,899	1,441,466	1,557,835
- Goods	912,769	979,257	1,062,880	1,005,101	1,018,925	1,040,497	1,155,014	1,164,949	1,101,522	1,137,189	1,226,199	1,299,419
- Services	182,828	174,530	186,947	212,802	221,270	199,615	202,064	224,045	245,148	207,803	215,327	258,615
Imports of Goods and Services	1,151,406	1,280,530	1,216,934	1,218,412	1,192,597	1,259,287	1,282,804	1,275,858	1,209,830	1,303,226	1,331,896	1,376,056
- Goods	937,248	1,041,503	968,131	958,918	929,389	1,002,684	1,013,604	996,874	940,100	1,040,075	1,060,277	1,071,381
- Services	214,726	239,632	248,722	259,098	264,098	256,988	269,795	279,868	270,431	263,824	272,314	305,465
Expenditure on Gross Domestic Product (sum up)	1,608,728	1,589,818	1,695,808	1,783,389	1,715,293	1,677,406	1,784,134	1,865,615	1,806,579	1,764,111	1,893,545	1,984,092
Residual (GDE (Sum up) - GDE CVM)	*-5,788*	*-9,652*	*-6,093*	*-3,137*	*-4,473*	*-7,253*	*-8,610*	*-4,582*	*-1,320*	*-7,959*	*-5,914*	*-668*
% Residual (GDE Sum up) to GDE CVM	*-0.4*	*-0.6*	*-0.4*	*-0.2*	*-0.3*	*-0.4*	*-0.5*	*-0.2*	*-0.1*	*-0.4*	*-0.3*	*0.0*
Expenditure on Gross Domestic Product (GDE)	***1,614,516***	***1,599,470***	***1,701,901***	***1,786,526***	***1,719,766***	***1,684,659***	***1,792,744***	***1,870,197***	***1,807,899***	***1,772,070***	***1,899,459***	***1,984,760***
Statistical Discrepancy	101,027	64,528	-29,796	10,433	90,304	53,650	-45,980	23,498	120,892	57,393	-57,262	-5,653
Gross Domestic Product, (GDP)	1,715,543	1,663,998	1,672,105	1,796,959	1,810,070	1,738,309	1,746,764	1,893,695	1,928,791	1,829,463	1,842,197	1,979,107
Residual (GDP (Sum up) - GDP CVM)	*3,813*	*3,672*	*2,578*	*-3,482*	*6,871*	*6,768*	*5,118*	*-2,839*	*8,364*	*7,708*	*5,795*	*-4,583*
% Residual (GDP Sum up) to GDP CVM	*0.2*	*0.2*	*0.2*	*-0.2*	*0.4*	*0.4*	*0.3*	*-0.1*	*0.4*	*0.4*	*0.3*	*-0.2*
Gross Domestic Product (Sum up)	***1,719,356***	***1,667,670***	***1,674,683***	***1,793,477***	***1,816,941***	***1,745,077***	***1,751,882***	***1,890,856***	***1,937,155***	***1,837,171***	***1,847,992***	***1,974,524***

Table 6 Growth rate of Expenditure on Gross Domestic F

Percent	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2	2007 Q3	2007 Q4
Private Consumption Expenditure	*3.5*	*4.1*	*5.2*	*3.9*	*5.3*	*2.9*	*2.0*	*1.1*	*0.0*	*1.1*	*1.4*	*2.3*
General Government Consumption Expenditure	*7.7*	*7.3*	*10.8*	*6.0*	*3.9*	*3.4*	*2.6*	*-0.8*	*9.2*	*8.2*	*9.9*	*6.6*
Gross Fixed Capital Formation	*17.4*	*14.9*	*14.1*	*11.4*	*6.5*	*5.6*	*0.5*	*-1.2*	*-0.9*	*-0.3*	*2.8*	*5.0*
Change in Inventories	*170.9*	*539.9*	*-1,913.5*	*951.7*	*-93.0*	*-96.0*	*41.4*	*-53.3*	*-241.5*	*-55.4*	*79.8*	*-44.8*
Exports of Goods and Services	*4.6*	*8.0*	*12.9*	*5.5*	*13.1*	*7.5*	*8.7*	*14.0*	*8.7*	*8.5*	*6.2*	*12.2*
- Goods	*6.5*	*8.9*	*13.4*	*4.4*	*11.6*	*6.3*	*8.7*	*15.9*	*8.1*	*9.3*	*6.2*	*11.5*
- Services	*-3.9*	*3.8*	*10.2*	*10.8*	*21.0*	*14.4*	*8.1*	*5.3*	*10.8*	*4.1*	*6.6*	*15.4*
Imports of Goods and Services	*16.7*	*21.2*	*13.8*	*13.1*	*3.6*	*-1.7*	*5.4*	*4.7*	*1.4*	*3.5*	*3.8*	*7.9*
- Goods	*19.5*	*22.5*	*13.8*	*11.5*	*-0.8*	*-3.7*	*4.7*	*4.0*	*1.2*	*3.7*	*4.6*	*7.5*
- Services	*6.3*	*16.1*	*13.9*	*19.1*	*23.0*	*7.2*	*8.5*	*8.0*	*2.4*	*2.7*	*0.9*	*9.1*
Expenditure on Gross Domestic Product (sum up)	*3.1*	*2.8*	*5.0*	*4.7*	*6.6*	*5.5*	*5.2*	*4.6*	*5.3*	*5.2*	*6.1*	*6.4*
Expenditure on Gross Domestic Product (GDE)	***3.4***	***3.3***	***5.2***	***4.8***	***6.5***	***5.3***	***5.3***	***4.7***	***5.1***	***5.2***	***6.0***	***6.1***
Statistical Discrepancy												
Gross Domestic Product (Sum up)	*4.0*	*4.5*	*4.8*	*3.7*	*5.7*	*4.6*	*4.6*	*5.4*	*6.6*	*5.3*	*5.5*	*4.4*
Gross Domestic Product, (GDP)	***3.9***	***4.3***	***4.7***	***3.9***	***5.5***	***4.5***	***4.5***	***5.4***	***6.6***	***5.2***	***5.5***	***4.5***

Table 5 Expenditure on Gross Domestic Product ,CVM (

Millions of Baht	2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4
Private Consumption Expenditure	1,025,661	1,041,291	1,021,617	1,039,249	1,013,088	1,016,912	1,010,388	1,035,643	1,038,121	1,075,798	1,080,424	1,085,477
General Government Consumption Expenditure	238,755	243,026	296,991	265,375	272,477	283,419	310,646	284,860	303,854	308,911	333,707	312,313
Gross Fixed Capital Formation	484,849	491,532	523,214	515,102	392,921	421,238	486,474	495,053	458,031	485,569	533,413	526,961
Change in Inventories	40,751	-9,005	36,816	70,008	-122,258	-31,200	-75,981	46,016	106,715	-29,760	-256	30,697
Exports of Goods and Services	1,499,498	1,511,797	1,617,296	1,418,433	1,235,487	1,181,821	1,393,522	1,477,601	1,448,850	1,464,556	1,529,901	1,592,609
- Goods	1,222,805	1,295,565	1,393,168	1,176,406	991,222	991,228	1,184,236	1,213,795	1,169,757	1,282,468	1,311,563	1,333,187
- Services	276,081	217,114	225,243	241,919	244,498	190,841	209,587	264,102	280,501	179,841	217,023	259,233
Imports of Goods and Services	1,402,691	1,427,534	1,572,173	1,413,734	971,704	1,083,918	1,211,176	1,329,762	1,355,737	1,377,724	1,448,870	1,463,541
- Goods	1,101,762	1,127,440	1,242,770	1,091,384	720,325	818,627	934,233	1,042,080	1,062,872	1,072,252	1,141,567	1,158,816
- Services	301,509	301,079	330,559	321,714	251,756	265,702	277,388	288,159	293,497	306,076	308,007	305,464
Expenditure on Gross Domestic Product (sum up)	1,885,631	1,851,004	1,923,720	1,894,961	1,819,867	1,788,109	1,913,729	2,009,230	2,000,610	1,924,499	2,026,300	2,083,588
Residual (GDE (Sum up) - GDE CVM)	*-7,832*	*-9,715*	*-18,518*	*-14,363*	*2,886*	*-11,525*	*-6,299*	*-6,313*	*-18,662*	*-18,795*	*-20,884*	*-16,122*
% Residual (GDE Sum up) to GDE CVM	*-0.4*	*-0.5*	*-1.0*	*-0.8*	*0.2*	*-0.6*	*-0.3*	*-0.3*	*-0.9*	*-1.0*	*-1.0*	*-0.8*
Expenditure on Gross Domestic Product (GDE)	***1,893,463***	***1,860,719***	***1,942,238***	***1,909,324***	***1,816,981***	***1,799,634***	***1,920,028***	***2,015,543***	***2,019,272***	***1,943,294***	***2,047,184***	***2,099,710***
Statistical Discrepancy	99,463	33,208	-58,648	30,589	90,013	34,464	-46,405	23,173	120,006	53,783	-65,238	9,942
Gross Domestic Product, (GDP)	1,992,926	1,893,927	1,883,590	1,939,913	1,906,994	1,834,098	1,873,623	2,038,716	2,139,278	1,997,077	1,981,946	2,109,652
Residual (GDP (Sum up) - GDP CVM)	*12,797*	*8,518*	*6,232*	*-10,988*	*2,833*	*2,372*	*2,433*	*-10,470*	*5,580*	*2,092*	*7,892*	*-2,990*
% Residual (GDP Sum up) to GDP CVM	*0.6*	*0.4*	*0.3*	*-0.6*	*0.1*	*0.1*	*0.1*	*-0.5*	*0.3*	*0.1*	*0.4*	*-0.1*
Gross Domestic Product (Sum up)	***2,005,723***	***1,902,445***	***1,889,822***	***1,928,925***	***1,909,827***	***1,836,470***	***1,876,056***	***2,028,246***	***2,144,858***	***1,999,169***	***1,989,838***	***2,106,662***

Table 6 Growth rate of Expenditure on Gross Domestic F

Percent	2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4
Private Consumption Expenditure	*3.8*	*3.8*	*2.1*	*1.6*	*-1.2*	*-2.3*	*-1.1*	*-0.3*	*2.5*	*5.8*	*6.9*	*4.8*
General Government Consumption Expenditure	*-1.1*	*-0.7*	*6.9*	*14.9*	*14.1*	*16.6*	*4.6*	*7.3*	*11.5*	*9.0*	*7.4*	*9.6*
Gross Fixed Capital Formation	*7.8*	*3.7*	*2.3*	*-3.5*	*-19.0*	*-14.3*	*-7.0*	*-3.9*	*16.6*	*15.3*	*9.6*	*6.4*
Change in Inventories	*566.3*	*-700.3*	*773.1*	*344.1*	*-400.0*	*-246.5*	*-306.4*	*-34.3*	*187.3*	*4.6*	*99.7*	*-33.3*
Exports of Goods and Services	*11.4*	*12.4*	*12.2*	*-8.9*	*-17.6*	*-21.8*	*-13.8*	*4.2*	*17.3*	*23.9*	*9.8*	*7.8*
- Goods	*11.0*	*13.9*	*13.6*	*-9.5*	*-18.9*	*-23.5*	*-15.0*	*3.2*	*18.0*	*29.4*	*10.8*	*9.8*
- Services	*12.6*	*4.5*	*4.6*	*-6.5*	*-11.4*	*-12.1*	*-7.0*	*9.2*	*14.7*	*-5.8*	*3.5*	*-1.8*
Imports of Goods and Services	*15.9*	*9.5*	*18.0*	*2.7*	*-30.7*	*-24.1*	*-23.0*	*-5.9*	*39.5*	*27.1*	*19.6*	*10.1*
- Goods	*17.2*	*8.4*	*17.2*	*1.9*	*-34.6*	*-27.4*	*-24.8*	*-4.5*	*47.6*	*31.0*	*22.2*	*11.2*
- Services	*11.5*	*14.1*	*21.4*	*5.3*	*-16.5*	*-11.8*	*-16.1*	*-10.4*	*16.6*	*15.2*	*11.0*	*6.0*
Expenditure on Gross Domestic Product (sum up)	*4.4*	*4.9*	*1.6*	*-4.5*	*-3.5*	*-3.4*	*-0.5*	*6.0*	*9.9*	*7.6*	*5.9*	*3.7*
Expenditure on Gross Domestic Product (GDE)	***4.7***	***5.0***	***2.3***	***-3.8***	***-4.0***	***-3.3***	***-1.1***	***5.6***	***11.1***	***8.0***	***6.6***	***4.2***
Statistical Discrepancy												
Gross Domestic Product (Sum up)	*3.5*	*3.6*	*2.3*	*-2.3*	*-4.8*	*-3.5*	*-0.7*	*5.1*	*12.3*	*8.9*	*6.1*	*3.9*
Gross Domestic Product, (GDP)	***3.3***	***3.5***	***2.2***	***-2.0***	***-4.3***	***-3.2***	***-0.5***	***5.1***	***12.2***	***8.9***	***5.8***	***3.5***

Table 5 Expenditure on Gross Domestic Product ,CVM (

Millions of Baht	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4
Private Consumption Expenditure	1,098,668	1,098,232	1,100,504	1,057,980	1,118,554	1,156,944	1,172,100	1,183,915	1,184,169	1,183,347	1,165,770	1,137,278
General Government Consumption Expenditure	314,790	321,306	358,531	307,077	320,582	347,954	384,706	345,802	326,728	365,818	421,539	350,640
Gross Fixed Capital Formation	509,176	531,038	549,815	511,524	527,728	578,400	603,315	606,406	577,978	598,635	583,840	536,329
Change in Inventories	50,093	-33,073	-22,224	73,408	89,376	32,601	-73,051	58,709	118,815	35,452	-68,296	93,287
Exports of Goods and Services	1,678,749	1,640,523	1,791,875	1,478,930	1,675,298	1,690,555	1,778,396	1,780,400	1,774,195	1,713,416	1,820,038	1,809,312
- Goods	1,380,529	1,400,482	1,524,700	1,217,160	1,349,468	1,415,759	1,471,243	1,420,459	1,395,255	1,390,178	1,448,777	1,422,633
- Services	298,533	239,010	266,179	262,021	326,336	274,437	307,067	360,700	380,294	323,643	372,281	388,064
Imports of Goods and Services	1,557,088	1,570,654	1,703,179	1,513,552	1,614,700	1,708,180	1,669,422	1,730,832	1,760,284	1,753,339	1,658,694	1,643,897
- Goods	1,236,544	1,241,952	1,368,480	1,184,739	1,288,563	1,366,180	1,345,071	1,388,182	1,426,638	1,415,464	1,319,923	1,300,392
- Services	321,500	329,579	336,005	329,461	326,988	342,859	325,050	343,465	334,030	338,418	339,836	344,785
Expenditure on Gross Domestic Product (sum up)	2,093,745	1,985,464	2,073,020	1,914,970	2,116,493	2,097,056	2,195,259	2,244,344	2,222,571	2,143,191	2,264,152	2,283,054
Residual (GDE (Sum up) - GDE CVM)	*-19,041*	*-22,113*	*-24,375*	*-34,546*	*-36,691*	*-38,197*	*-8,794*	*-35,288*	*-41,424*	*-40,497*	*-9,861*	*-24,012*
% Residual (GDE Sum up) to GDE CVM	*-0.9*	*-1.1*	*-1.2*	*-1.8*	*-1.7*	*-1.8*	*-0.4*	*-1.5*	*-1.8*	*-1.9*	*-0.4*	*-1.0*
Expenditure on Gross Domestic Product (GDE)	***2,112,786***	***2,007,577***	***2,097,395***	***1,949,516***	***2,153,184***	***2,135,253***	***2,204,053***	***2,279,632***	***2,263,995***	***2,183,688***	***2,274,013***	***2,307,066***
Statistical Discrepancy	95,586	27,214	-67,620	74,095	123,532	25,533	-71,392	54,301	132,083	35,256	-85,921	44,068
Gross Domestic Product, (GDP)	2,208,372	2,034,791	2,029,775	2,023,611	2,276,716	2,160,786	2,132,661	2,333,933	2,396,078	2,218,944	2,188,092	2,351,134
Residual (GDP (Sum up) - GDP CVM)	*7,182*	*7,501*	*19,509*	*-26,870*	*3,044*	*19,563*	*23,676*	*-19,574*	*7,421*	*22,778*	*29,600*	*-28,143*
% Residual (GDP Sum up) to GDP CVM	*0.3*	*0.4*	*1.0*	*-1.3*	*0.1*	*0.9*	*1.1*	*-0.8*	*0.3*	*1.0*	*1.4*	*-1.2*
Gross Domestic Product (Sum up)	***2,215,554***	***2,042,292***	***2,049,284***	***1,996,741***	***2,279,760***	***2,180,349***	***2,156,337***	***2,314,359***	***2,403,499***	***2,241,722***	***2,217,692***	***2,322,991***

Table 6 Growth rate of Expenditure on Gross Domestic F

Percent	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4
Private Consumption Expenditure	*5.8*	*2.1*	*1.9*	*-2.5*	*1.8*	*5.3*	*6.5*	*11.9*	*5.9*	*2.3*	*-0.5*	*-3.9*
General Government Consumption Expenditure	*3.6*	*4.0*	*7.4*	*-1.7*	*1.8*	*8.3*	*7.3*	*12.6*	*1.9*	*5.1*	*9.6*	*1.4*
Gross Fixed Capital Formation	*11.2*	*9.4*	*3.1*	*-2.9*	*3.6*	*8.9*	*9.7*	*18.5*	*9.5*	*3.5*	*-3.2*	*-11.6*
Change in Inventories	*-53.1*	*-11.1*	*-8,581.3*	*139.1*	*78.4*	*198.6*	*-228.7*	*-20.0*	*32.9*	*8.7*	*6.5*	*58.9*
Exports of Goods and Services	*15.9*	*12.0*	*17.1*	*-7.1*	*-0.2*	*3.0*	*-0.8*	*20.4*	*5.9*	*1.4*	*2.3*	*1.6*
- Goods	*18.0*	*9.2*	*16.3*	*-8.7*	*-2.2*	*1.1*	*-3.5*	*16.7*	*3.4*	*-1.8*	*-1.5*	*0.2*
- Services	*6.4*	*32.9*	*22.7*	*1.1*	*9.3*	*14.8*	*15.4*	*37.7*	*16.5*	*17.9*	*21.2*	*7.6*
Imports of Goods and Services	*14.9*	*14.0*	*17.6*	*3.4*	*3.7*	*8.8*	*-2.0*	*14.4*	*9.0*	*2.6*	*-0.6*	*-5.0*
- Goods	*16.3*	*15.8*	*19.9*	*2.2*	*4.2*	*10.0*	*-1.7*	*17.2*	*10.7*	*3.6*	*-1.9*	*-6.3*
- Services	*9.5*	*7.7*	*9.1*	*7.9*	*1.7*	*4.0*	*-3.3*	*4.3*	*2.2*	*-1.3*	*4.5*	*0.4*
Expenditure on Gross Domestic Product (sum up)	*4.7*	*3.2*	*2.3*	*-8.1*	*1.1*	*5.6*	*5.9*	*17.2*	*5.0*	*2.2*	*3.1*	*1.7*
Expenditure on Gross Domestic Product (GDE)	***4.6***	***3.3***	***2.5***	***-7.2***	***1.9***	***6.4***	***5.1***	***16.9***	***5.1***	***2.3***	***3.2***	***1.2***
Statistical Discrepancy												
Gross Domestic Product (Sum up)	*3.3*	*2.2*	*3.0*	*-5.2*	*2.9*	*6.8*	*5.2*	*15.9*	*5.4*	*2.8*	*2.8*	*0.4*
Gross Domestic Product, (GDP)	***3.2***	***1.9***	***2.4***	***-4.1***	***3.1***	***6.2***	***5.1***	***15.3***	***5.2***	***2.7***	***2.6***	***0.7***

Table 5 Expenditure on Gross Domestic Product ,CVM (

Millions of Baht	2014 Q1	2014 Q2	2014 Q3	2014 Q4	Average
Private Consumption Expenditure	1,149,575	1,189,196	1,193,520	1,160,147	881,277
General Government Consumption Expenditure	336,968	373,195	415,830	358,831	227,122
Gross Fixed Capital Formation	515,905	568,210	599,355	553,343	468,628
Change in Inventories	35,650	-59,891	-36,610	20,689	9,936
Exports of Goods and Services	1,776,806	1,698,918	1,753,157	1,889,930	1,080,424
- Goods	1,404,278	1,407,831	1,425,336	1,458,786	888,564
- Services	373,479	292,717	329,199	431,769	192,414
Imports of Goods and Services	1,576,259	1,589,838	1,652,613	1,633,663	1,036,847
- Goods	1,232,527	1,251,050	1,314,868	1,291,370	821,390
- Services	343,958	339,153	338,374	342,768	217,281
Expenditure on Gross Domestic Product (sum up)	2,239,370	2,181,055	2,273,388	2,349,427	1,629,271
Residual (GDE (Sum up) - GDE CVM)	*-9,449*	*-15,798*	*-21,572*	*-2,734*	*4,155*
% Residual (GDE Sum up) to GDE CVM	*-0.4*	*-0.7*	*-0.9*	*-0.1*	*0.6*
Expenditure on Gross Domestic Product (GDE)	***2,248,819***	***2,196,853***	***2,294,960***	***2,352,161***	***1,625,115***
Statistical Discrepancy	135,481	39,852	-86,738	48,737	17,072
Gross Domestic Product, (GDP)	2,384,300	2,236,705	2,208,222	2,400,898	1,642,188
Residual (GDP (Sum up) - GDP CVM)	*2,648*	*17,637*	*29,722*	*-13,282*	*5,421*
% Residual (GDP Sum up) to GDP CVM	*0.1*	*0.8*	*1.3*	*-0.6*	*0.4*
Gross Domestic Product (Sum up)	***2,386,948***	***2,254,342***	***2,237,944***	***2,387,616***	***1,647,608***

Table 6 Growth rate of Expenditure on Gross Domestic F

Percent	2014 Q1	2014 Q2	2014 Q3	2014 Q4	Average
Private Consumption Expenditure	*-2.9*	*0.5*	*2.4*	*2.0*	***3.3***
General Government Consumption Expenditure	*3.1*	*2.0*	*-1.4*	*2.3*	***5.3***
Gross Fixed Capital Formation	*-10.7*	*-5.1*	*2.7*	*3.2*	***1.7***
Change in Inventories	*-70.0*	*-268.9*	*46.4*	*-77.8*	***-128.0***
Exports of Goods and Services	*0.1*	*-0.8*	*-3.7*	*4.5*	***7.0***
- Goods	*0.6*	*1.3*	*-1.6*	*2.5*	***7.1***
- Services	*-1.8*	*-9.6*	*-11.6*	*11.3*	***7.2***
Imports of Goods and Services	*-10.5*	*-9.3*	*-0.4*	*-0.6*	***6.4***
- Goods	*-13.6*	*-11.6*	*-0.4*	*-0.7*	***6.5***
- Services	*3.0*	*0.2*	*-0.4*	*-0.6*	***6.6***
Expenditure on Gross Domestic Product (sum up)	*0.8*	*1.8*	*0.4*	*2.9*	*3.2*
Expenditure on Gross Domestic Product (GDE)	***-0.7***	***0.6***	***0.9***	***2.0***	***3.4***
Statistical Discrepancy					
Gross Domestic Product (Sum up)	*-0.7*	*0.6*	*0.9*	*2.8*	*3.5*
Gross Domestic Product, (GDP)	***-0.5***	***0.8***	***0.9***	***2.1***	***3.6***

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