

Background:

Preliminary estimates of National Account statistics were first compiled for 1984 through 1986 and were published in 1990. These estimates provided benchmarks that were used by the Asian Development Bank, International Monetary Fund and the World Bank in producing aggregated estimates of Gross Domestic Product for Samoa for some years. However, these estimates were never treated as official statistics.

In the early 1990's the Government of Samoa embarked on a program of structural reform. One of the many initiatives in the reform program was to strengthen statistics as basis for economic management and policy formulation. In this regard, Ministry of Finance under its Institutional Strengthening Project initiated the generation and compilation of National Accounts Statistics, and this series started in 1994 and was available on both annual and quarterly basis.

The compilation of these estimates is a dynamic process, and therefore needs to adapt to reflect a variety of measures and indicators consistent with developments and structural changes in the economy over a period of time. It is therefore expected that some revisions and updates will be made to the historical series as new data source are brought into the model and as various benchmarks and assumptions are validated and updated.

In this regard, Ministry of Finance in a joint effort with the ADB Technical Assistance conducted a review of the National Accounts Framework for Samoa in April 2004. The initial focus was on rebasing real GDP to 2002 prices, including a detailed review of the full range of data sources and methods used in estimating GDP, and the introduction of revised benchmarks. This review produced the following outcomes:

- The system for estimating GDP by industry at current and constant prices has been fully reviewed: new benchmarks were introduced wherever available; significant improvements have been made to the underlying methods and assumptions; and a template was developed for a substantially improved form of detailed systems documentation. The review also resulted in a number of key developments:
- The constant price estimates have been re-based from 1994 prices to average 2002 prices – as a result there were (moderate) revisions to recent real growth rates which are now based on much more recent patterns of economic activity;
- Samoa is the first Pacific Island country to have official quarterly estimates of seasonally adjusted real GDP on a quarterly basis, and these have been supplemented by quarterly “trend” estimates, another first for the Pacific;
- Initial estimates of labour productivity were developed, and it is planned to continue their production on an annual basis.

Summary of methodological changes since the previous Annual Report

Current price estimates of GDP by industry

As part of the review of the system used for estimating GDP at current and constant prices a number of methodological changes were made that have resulted in relatively minor revisions to previously published growth rates. There have been no conceptual changes to the estimates, all changes to current price values are due to one or more of three factors:

- improved data sources;
- more up to date benchmarks;
- improved assumptions.

As noted below, growth rates in the constant price series have undergone revisions due not only to these three factors but also due to the additional factor of changes to the underlying price weights as part of the rebase from 1994 prices to 2002 prices.

Rebase to 2002 prices

In order to eliminate the direct effects of price change, estimates of economic activity are often expressed at constant prices – in effect, all of the underlying component transactions are revalued from “current prices” to the values they would have been had, if they used the prices which prevailed in the chosen “base year”. In this way all periods in the time series use the same underlying prices, thereby removing the direct effects of period-to-period price change¹. However, as the base year prices act as weights by which all of the component quantities are brought together in an aggregate measure of GDP “at constant prices”, it is necessary to “rebase” the series at constant prices from time to time to ensure that the weights being used are as representative as possible of the current structure of the economy. The internationally recognised standard for rebasing series is every five years.

The current series of GDP estimates was first published in 1998 with a base year of 1994. In April 2004 the base year was updated from 1994 to 2002, and estimates at constant prices were recompiled using the new base year back to March quarter 1998. Just as it is desirable to have estimates for recent years compiled with a relatively recent base year, it is correspondingly inappropriate to allow the effects of rebasing to revise previously estimated growth rates for periods now well in the past. This is the reason for only estimating on the 2002 base year back to 1998 – constant price estimates for earlier years have been derived by splicing estimates at 1994 prices on to the estimates at 2002 prices. The splice period used was 1998, and splicing has been done at the industry and total GDP level².

It is almost inevitable that rebasing constant price series will result in revisions to aggregate growth rates. Consistent with this known effect, as a result of the rebase to 2002 prices there were some relatively minor revisions to real annual growth rates – these can be seen in the first chart in the following section on *Overview of results*.

Seasonal adjustment of quarterly real GDP estimates³

Quarterly time series such as those in national accounts publications are affected by three influences - calendar (mostly seasonal), trend and irregular. When interpreting a quarterly series, it is generally helpful to take account of the seasonal and other regular calendar-related

¹ The reference to “direct” effects of price change is intended to flag that constant price series do still include “indirect” effects such as shifts in consumer preferences due to changes in relative prices.

² As a result, the spliced estimates at the industry level do not sum exactly to the spliced estimates of total GDP. This loss of additivity is well recognised, and it is regarded as more important that the total series be spliced in its own right in order to avoid unjustifiable revisions to overall growth rates.

³ Some of the notes in this section have drawn on explanatory notes provided by the Australian Bureau of Statistics in its publication “Australian National Accounts - Concepts, Sources and Methods” (5216.0).

influences. The seasonal adjustment process removes these influences, and the remaining (seasonally adjusted) series reflects the trend and irregular influences. The irregular component refers to changes attributable to irregular events such as lumpy imports or one-off conferences.

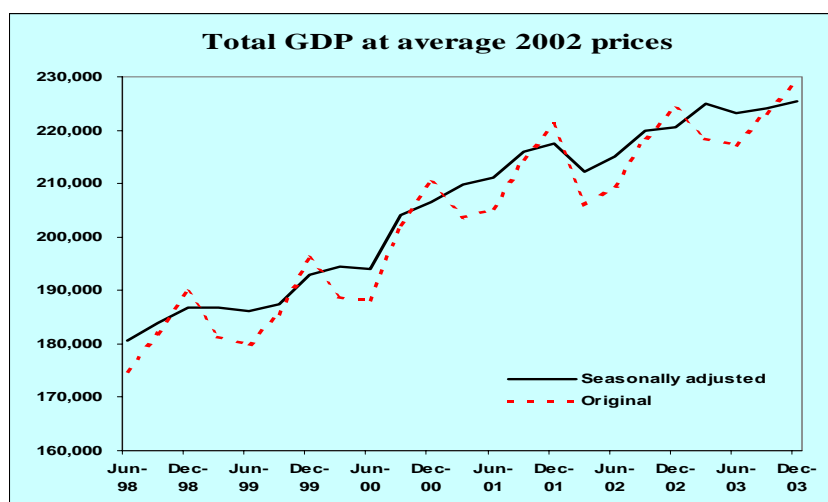
Seasonal effects usually reflect the influence of:

- the seasons themselves, either directly or through production series related to them (such as crop production);
- social conventions (such as the incidence of holidays); or
- administrative practices (such as the timing of tax payments).

Other types of calendar variation occur as a result of influences such as the number and composition of days in the calendar period (trading day), accounting or recording practices adopted by businesses, the effect of regular payday on activity levels or the incidence of movable holidays (such as Easter).

Statistical techniques can be used to evaluate the effects of normal seasonal and other calendar influences operating on a series. If significant stable seasonal or calendar variation is detected, then the estimated effects may be removed from the series to produce a seasonally adjusted series. The quarterly estimates of Samoa's GDP by industry have been seasonally adjusted using the X12-A software made freely available by the US Bureau of the Census⁴.

The following chart compares the original quarterly values of GDP at average 2002 prices with the corresponding newly derived seasonally adjusted estimates.

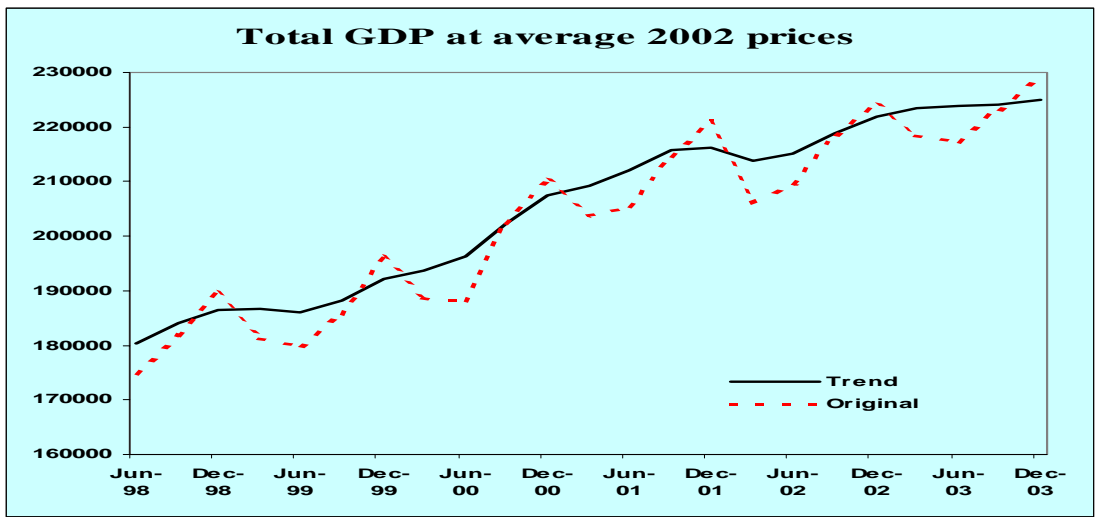


Seasonally adjusted estimates of quarterly GDP, by industry, will be presented in future issues of Quarterly Economic Review for every fourth quarters

Trend estimates of quarterly real GDP

In cases where the removal of only the seasonal element from a time series may not be sufficient to allow identification of changes in its trend, a statistical technique is used to damp the irregular element. This technique is known as smoothing, and the resulting smoothed series are known as trend series. The following chart clearly illustrates the newly derived trend estimates of quarterly GDP at average 2002 prices.

⁴ The Windows XP version of the X12-A software was downloaded from the website www.census.gov/srd/www/x12a/x12down_pc.html - this software is an international standard for seasonal analysis and is in widespread use in many developed statistical systems.



Smoothing, to derive trend estimates, is achieved by applying moving averages to seasonally adjusted series. A number of different types of moving averages may be used; in Samoa’s case, a five term Henderson moving average has been applied. The use of Henderson moving averages leads to smoother data series relative to series that have been seasonally adjusted only. The Henderson moving average is symmetric in the body of the series, but asymmetric forms of the average are applied at the ends of the time series. While asymmetric weights do enable trend estimates for recent periods to be produced, it should be noted that they also generally result in revisions to latest estimates when actual observations become available for subsequent periods.

The actual values used in deriving 5 term Henderson moving averages are shown below: *N* denotes a particular quarter, *N-1* denotes the preceding quarter, and so on.

5 term Henderson weights					
	N-4	N-3	N-2	N-1	N
N	0	0	-0.073	0.403	0.670
N-1	0	-0.073	0.294	0.522	0.257
N-2	-0.073	0.294	0.558	0.294	-0.073

It can be seen that the two most recent quarters apply asymmetric weights eg, if December 2003 were the latest quarter, its trend value would be derived as:
 $0.67*(Dec\ 2003) + 0.403*(Sept\ 2003) - 0.073*(June\ 2003)$.

Trend estimates of quarterly GDP, by industry, will be presented along with their seasonally adjusted counterparts in every fourth quarter issues of the Quarterly Economic Review.

Estimates of labour productivity

With the cooperation of the National Provident Fund it has been possible to derive quarterly time series of paid employment, by industry. By relating these estimates to the series of quarterly GDP at constant prices it is possible to derive a series of real value added per person employed. While a measure such as this does incorporate an effective assumption all growth in output is being attributed to labour ie, it does not allow for changes in other factors of production, particularly plant and equipment, it does provide a first basis for further analysis of underlying trends in the Samoan economy.

The first estimates of labour productivity are still very much of a provisional nature, but are presented below as a first step in the process of refining them and making them available for further analysis. The scope of the estimates has been limited to exclude the public sector due to



the use of fixed productivity assumptions in the calculation of value added by Public Administration. As shown by the trend line⁵ real value added per paid employee has grown strongly in recent years.



⁵ The trend line has been fitted by Excel exponential trend function.

This Annual National Accounts Report presents the revised GDP estimates, prior to the preliminary estimates released in the Quarterly Economic Review for 2003. Revisions made to the estimates were primarily due to the latest benchmark data being available.

Overview of the results

Following the slowdown in economic activities in 2002, the Samoan economy has rebounded at a moderate rate to produce a total GDP of \$938.6 million, up by 6.0% from a revised \$885.3 million in 2002. At this level it is equivalent to a per capita income of \$5217.

The 2003 analysis of gross domestic product in real values was \$915.9 million, an increase of 3.5%. This follows revised growth rate of 1.3% in 2002, after two successive years of strong economic performance registering 6.8% and 6.1% growth in 2000 and 2001. This represents an average annual rate of real growth of 4.0% over the last five years.

Gross Domestic Product of Samoa, 1999 - 2003 Market Prices

<i>(Million SAT)</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>
At current prices	691.9	758.6	834.7	885.3	938.6
At constant 2002 prices	771.2	823.5	873.5	885.3	915.9
Real annual growth	2.5%	6.8%	6.1%	1.3%	3.5%

Other manufacturing was the biggest contributor accounting for 1.3 percentage points. The impressive performance by the industry has reflected new developments in Foreign Owned Companies, namely the 23.5% increase in the Yazaki exports to Australia, and a 200% increase in garment exported in 2003. Other industries making significant contributions were Finance and Business Services that contributed 0.8%, Transport and Communications and Agriculture both contributed 0.7 percentage points.

On the downside, Fishing had a negative contribution of 0.8 percentage points to the economy and had a corresponding effect on the Commerce industry, which increased by only 0.6 percent, well below its normal trend.

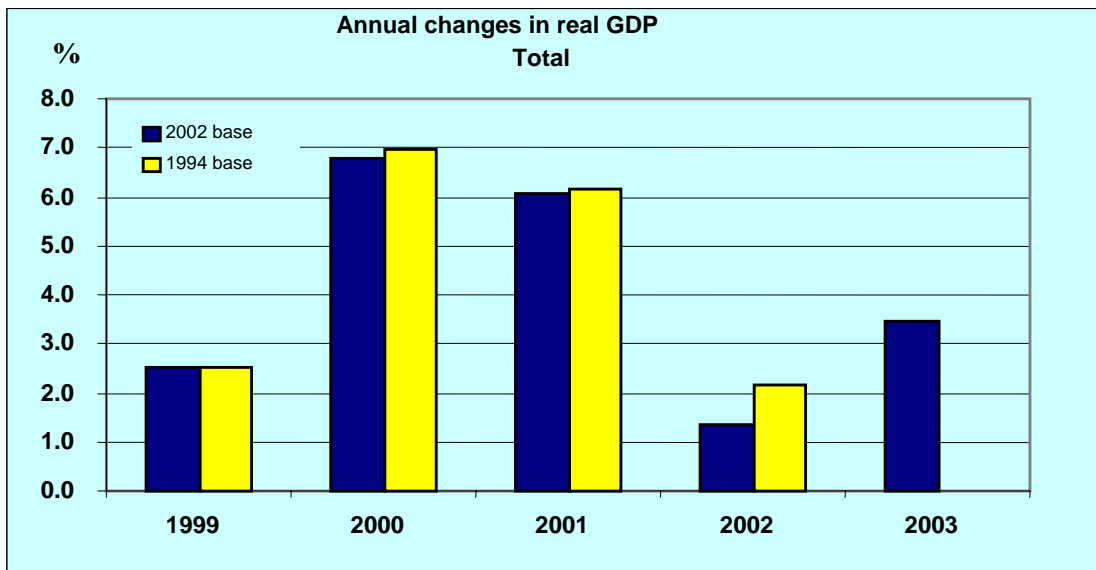
The Monetary Sector production aggregated a total value added of \$813.1 million equivalent to 86.6% of total production. In constant 2002 prices, the monetary sector amounted to \$790.4 million representing a real increase of 3.9% over 2002.

The Non-Monetary Sector, principally consisting of subsistence agriculture, contributed \$125.5 million. In constant 2002 prices, Non Monetary production was estimated at \$125.5 million. The sector performance improved by 0.8% when compared to 2002.

Comparisons between two base periods:

A comparison of the 2002 base estimates of GDP with the 1994 base estimate shows the revised figures to be 0.1% lower in 2000 and 2001, 0.8% lower than in 2002. The aggregated result has reflected new benchmark information and some major improvements in the framework. However neither is wrong, but they are just different as it reflected different weighting patterns and structural conditions during the different base years. The comparison of these growth rates is depicted in the chart below

Comparison of different Growth Rates
1994 base & 2002 base

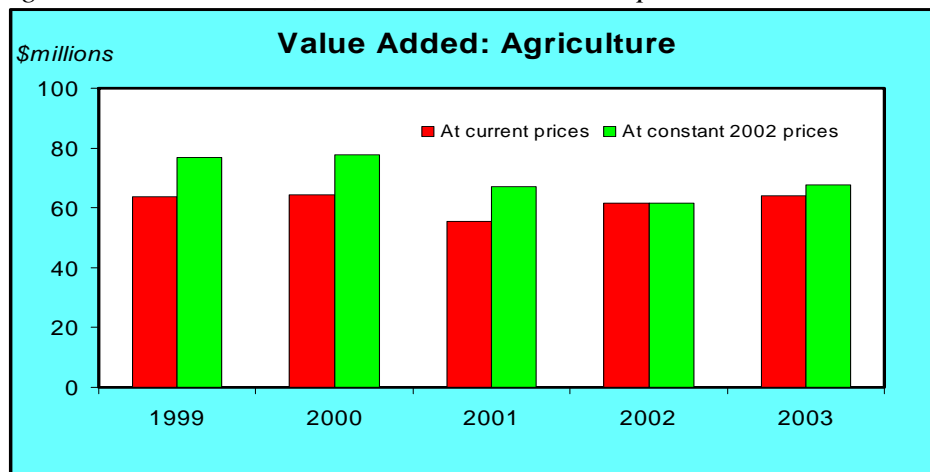


Summary of Results by Industry: 2003

Agriculture:

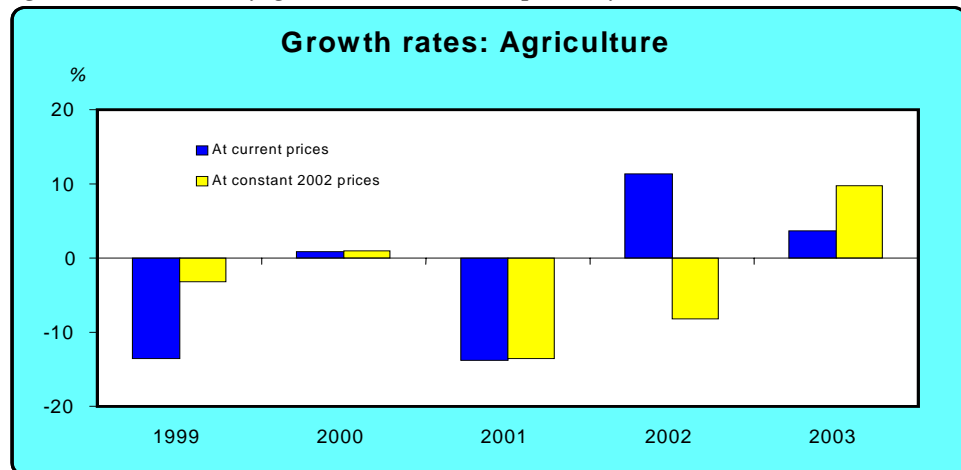
In current prices, the Agriculture industry produced a total value added of \$63.9 million, accounting for a 6.8% share of overall GDP. Monetary agriculture comprises of 29.6% of total production, improved by 22.6%, offsetting a slight decline in subsistence agriculture.

Chart 1: *Agriculture value added, at current and constant prices- 1999 - 2003*



Agriculture performance in real terms increased by 9.7% in 2003, a remarkable achievement after two years of negative growth. This was evident of the emerging recovery when compared to the past 5 years. This reflects extensive research in the Agriculture Sector towards pest and disease resistant types of crops, which has hindered growth in the sector over the past decade. The introduction of other new export commodities such as nonu together with the continuous transformation of coconut products also assisted growth.

Chart 2: *Agriculture industry growth rates in the past 5 years.*



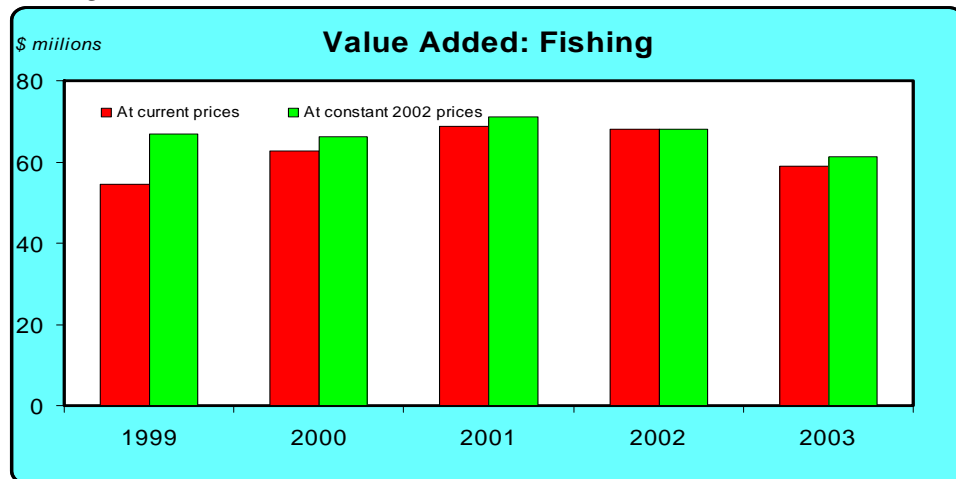
As shown by the chart, the Agriculture industry in the past years contributed negatively to overall growth despite numerous efforts to reinvigorate the sector. In this sense, the positive out-turn in 2003 is encouraging given its relative importance in supporting food security in the community.

Consistent with the notable performance by the industry, Fugalei Market survey results showed an increase of 24% in the average quantity of goods supplied to the market compared to 2002. This was translated to a 0.7 percentage point's contribution from agriculture to overall GDP growth.

Fishing:

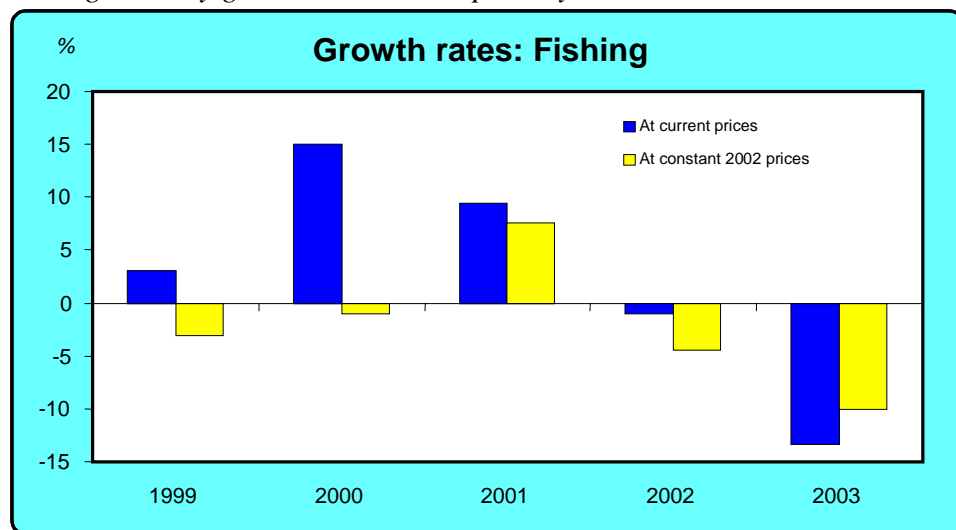
The Fishing industry is the 7th largest industry, and comprises of over 60% of total exports in the past two years. The Industry has played a substantial role in the development of other sectors of the economy in past years. However, the industry performance in nominal terms reversed in 2002 and continued to fall in 2003 to stand at \$58.9 million tala. Corresponding impact of changing weather patterns and the depreciation of the US dollar impacted on nominal fishing value added.

Chart 3: *Fishing - Value Added at Current and Constant Prices 1999 - 2003*



In 2002 prices, the results worsened in 2003, declining further by 10% compared to 2002, and contributed a -0.8 percentage points to the overall growth. Monetary fishing in particular declined by 19% the primary cause of the drop. This is reflected in fish exports declining by 39% as indicated by the export figures released by the Central Bank of Samoa. Non-monetary fishing however showed no significant change compared to last year.

Chart 4: *Fishing industry growth rates in the past 5 years.*



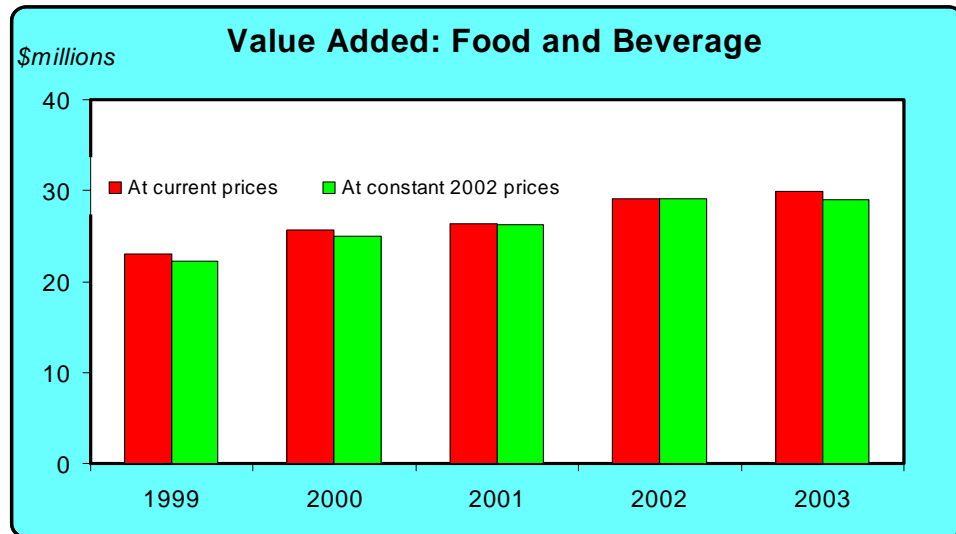
Illustrated in the chart above was the serious effect of the changing weather patterns leading to lower catches faced by the industry.

Food and Beverage Manufacturing:

Food and Beverage Manufacturing industry in current prices generated a total value added of \$29.9 million, an increase of 3.0% compared to 2002 levels. Despite of the Industry small size only 3.3%, the development of this industry is

monitored with keen interest in supporting small scale developments to assist rural areas.

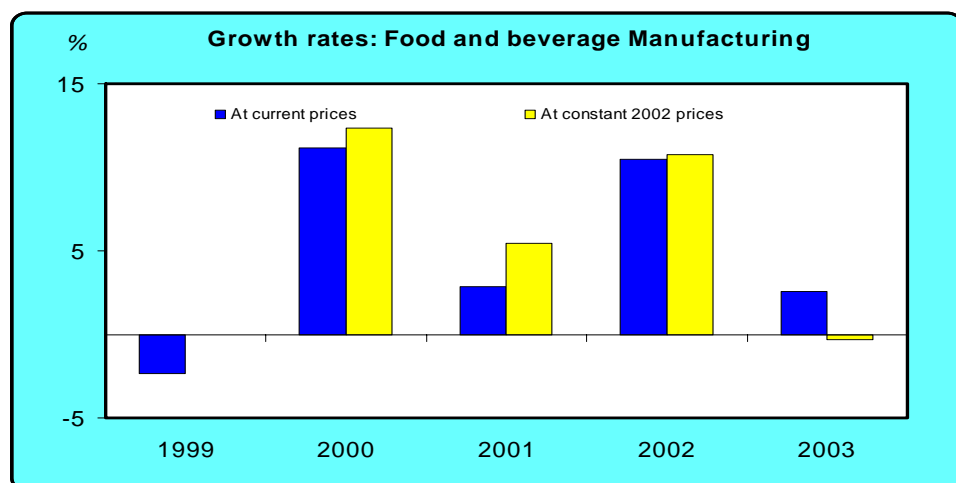
Chart 5: Food and Beverage Manufacturing - value added at Current and Constant Prices, 1999 - 2003



At constant 2002 prices, value added was estimated at \$29 million, a decline of 0.3 percent. The decline in the industry performance was a result of low production in some of the companies notably Vailima Breweries, Samoa Tropical Products and Dessico Samoa, which exports registered declines of 4%, 18% and 43.9% respectively.

Chart 6 shows performance of the industry largely influenced by demand of overseas markets. As shown in the chart, the industry declined slightly in 2003 after strong performance in the last 3 years

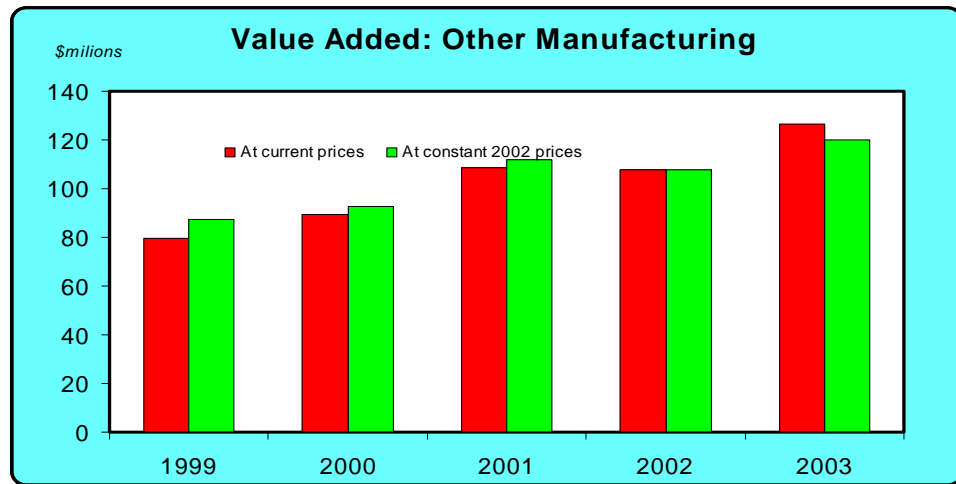
Chart 6: Food and Beverage Manufacturing – Growth rates 1999 - 2003



Other Manufacturing:

Other Manufacturing had a share of 13.3% of GDP rating it as the second largest industry behind Commerce. In nominal terms, the industry produced a total value added of \$125.3 million tala. The improved production by the industry relative to stagnant growth in other industries last year marks it as the highest contributor to growth, contributing 1.3 percentage points to overall growth. This was translated into an increase of 10.9% compared to 2002. This industry has a prominent role in employment creation.

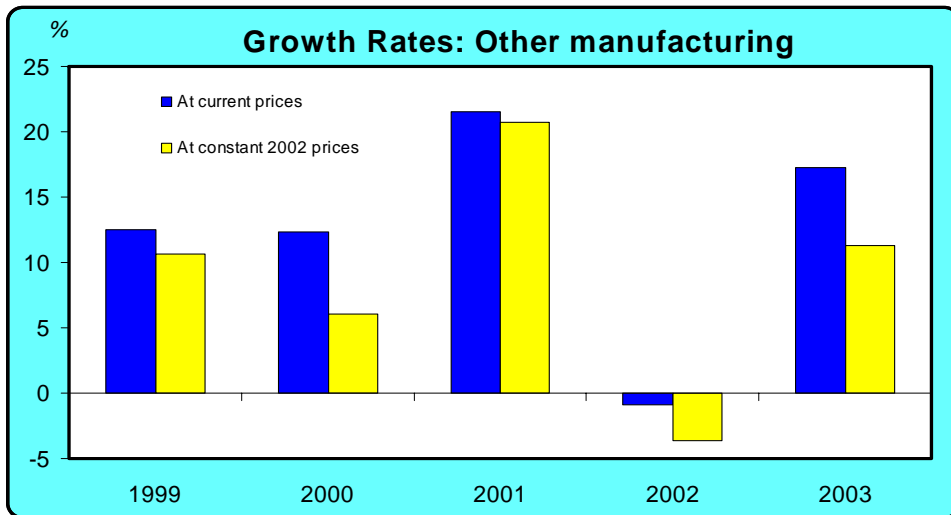
Chart 7: Other Manufacturing Value Added in Current and Constant Prices 1999 – 2003



Major developments in Foreign Owned Companies such as Yazaki and Pacific Cashmere boosted the industry performance. This was in line with the 23.5% increase in Yazaki exports, and a high surge in garment exports for 2003.

High demand for construction materials such as concrete blocks, ready-mix cement for ongoing construction activities also assisted the industry performance with an increase of 11.2 percent in other areas of manufacturing. Chart 8 illustrates a comeback in the industry, highlighting the significant role Yazaki plays in this industry and the Samoan economy as a whole

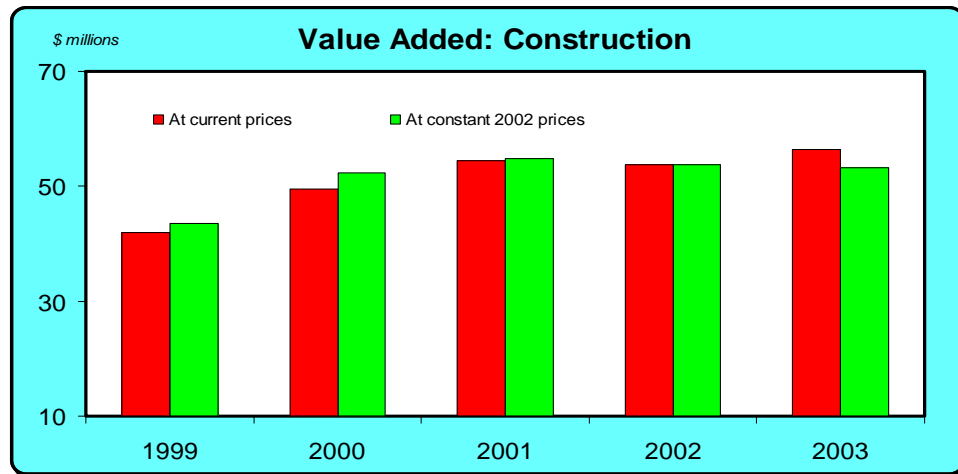
Chart 8: Other Manufacturing – Growth rates



Construction:

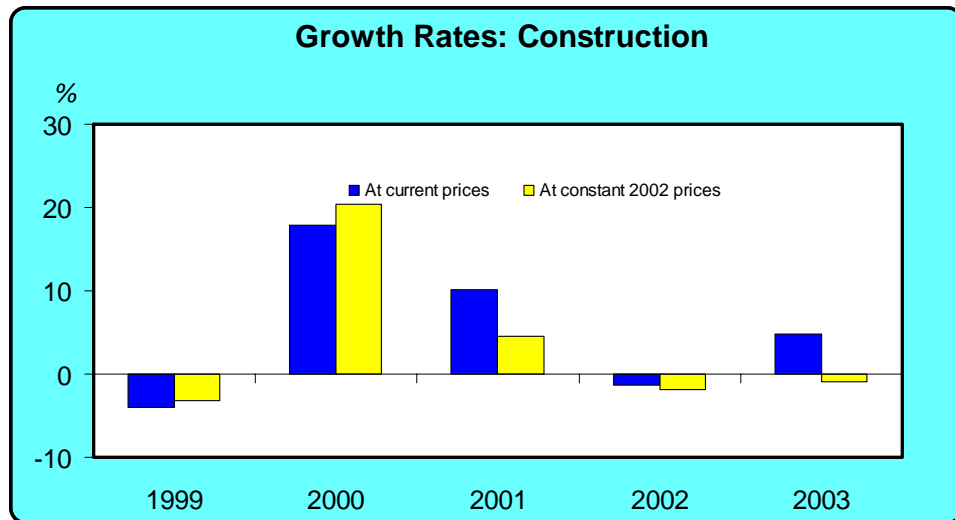
Construction revised value added in 2003 amounted to \$56.3 million, an increase of 4.8% compared to 2002. The industry performance slowed down in the last two quarters of 2001 and continued in 2002, with a 3.6% decline in real terms. The result in the past two years reflects the tailoring off of some of the major Public Sector investment projects as well as other private led investments.

Chart 9: Construction - value added at current and constant prices.



Despite a number of Construction activities, Latter Day Saints renovations and new church buildings program in particular together with the continuation of public sector infrastructural projects like school buildings, the industry in 2003 declined slightly by 0.9%. However the industry with a 5.4% percent increase in the fourth quarter compared to the corresponding quarter last year has shown sign of recovering. The industry performance is expected to expand again in 2004 with the number of construction activities in preparation of the South Pacific Games in 2007 compounded with planned private sector developments.

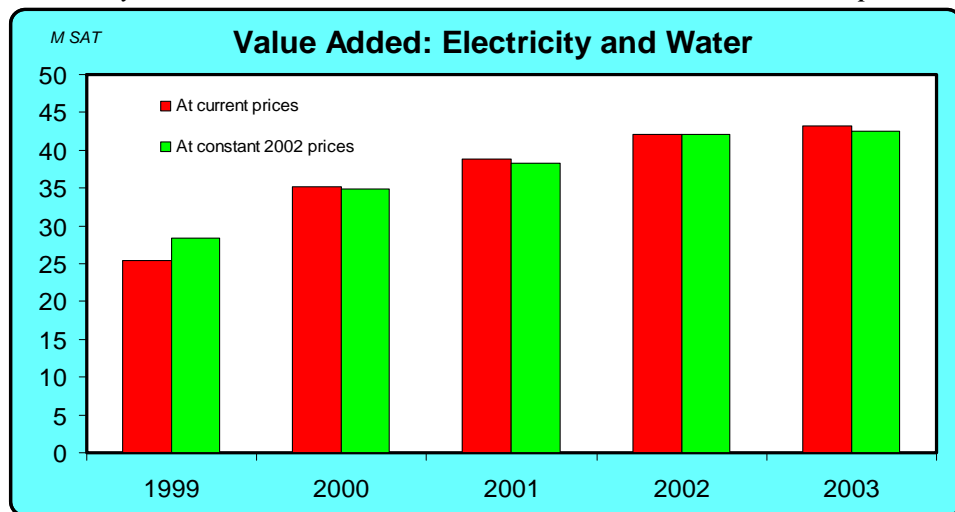
Chart 10: Construction - growth rates from 1999 - 2003



Electricity and Water:

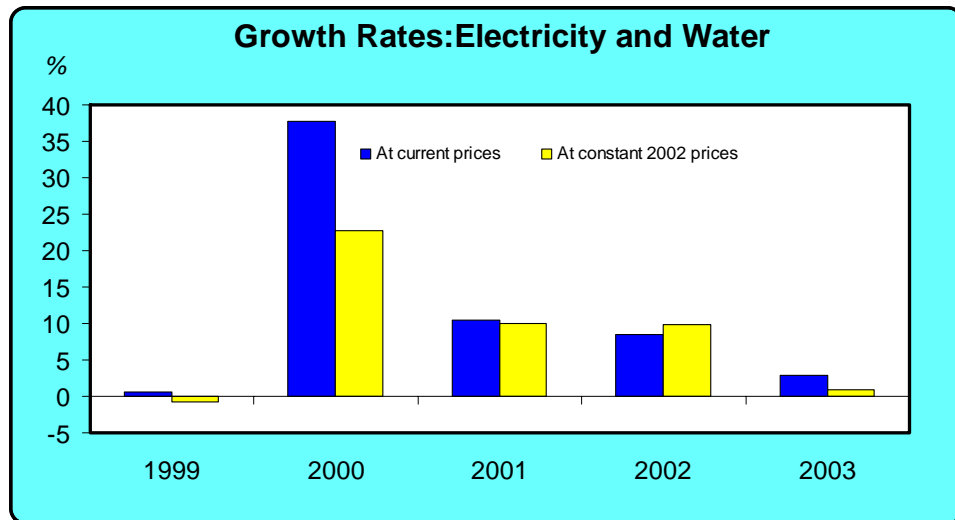
The Electricity and Water Industry consists entirely of two public sector units, the Water Authority and the Electric Power Corporation. In 2003, the industry production was at \$43.3 million. At this level, production increased by 2.8 percent

Chart 11: *Electricity & Water - Value Added in current and constant market prices*



In 2002 prices, the industry value added increased slightly to \$42.5 million from \$42.1 million in 2002. As can be seen in chart 11, total value added generated by the industry improved in 2002 and 2003. The performance is in line with the greater assistance of Institutional Strengthening Projects, and infrastructure works that has targeted the industry.

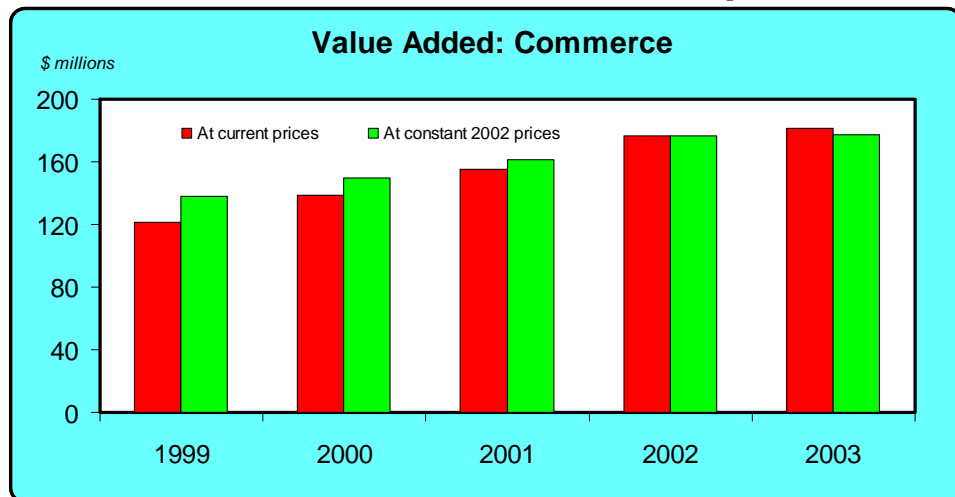
Chart 12: *Electricity & Water – Growth rates*



Commerce:

Commerce industry accounting for 19.3% of total GDP in 2003 continued to play a dominant role in the Samoan economy. Its value added was estimated at \$181.2 million, a 2.8% increase from the previous year. As shown in the chart, commerce value added in current prices grew at an annual average rate of 13.7% in the past 4 years until it slowed down in 2003. The prominence of wholesaling and the continuous proliferation of small stores around the country, assisted by the micro-credit scheme co-ordinated by the SBEC contributed in supporting the expansion of the industry.

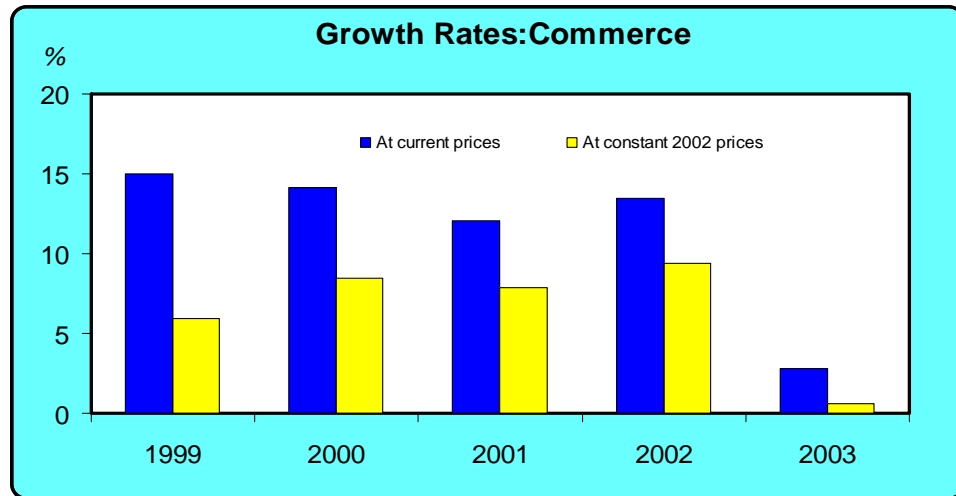
Chart 13: Commerce: annual value added at current and constant prices



At constant 2002 prices, Commerce industry value added slowed down with an increase 0.6 percent compared to 2002. This was translated into a 0.1 percent contribution to the overall GDP growth. The slowdown in the industry performance was primarily due to a big drop in imports down by \$47.3 million (10.4%). The zero increase in the inflow of private remittances relative to 2002 and the continuing contraction in the fishing industry all contributed to the low

growth in the industry. This is illustrated in the following chart.

Chart 14: *Commerce: Annual growth rates*

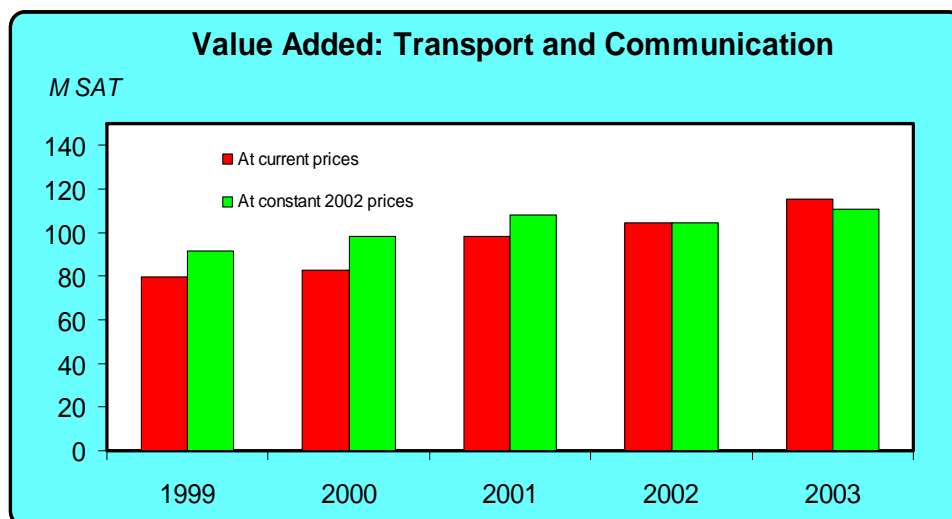


Transport and Communication

Transport and Communication industry plays a major role in the Samoan economy by providing technological support as well as facilitating the development of almost all sectors of the economy. Transport and Communication still ranks as the third highest industry behind Commerce and Other Manufacturing with a total value added of \$115.4 million a share of 12.3% of GDP in 2003.

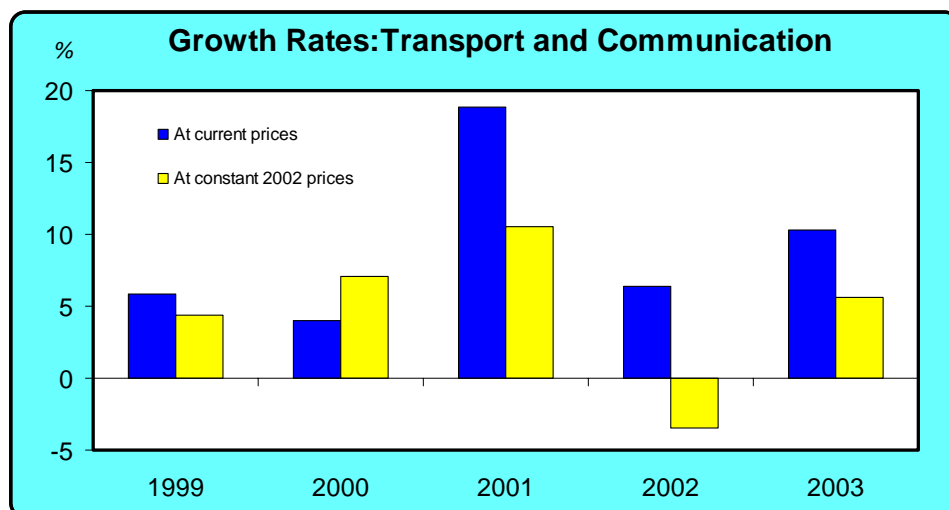
Information and Communication services in particular stimulated growth in this sector. This is attributed to the rising utilization of modern telecommunication mediums such as Internet and cellular phone new services such as PREMO and TALANOA.

Chart 15: *Transport and Communication: annual value added*



In real terms, the industry again recovered after a slowdown in 2002 registering a high growth rate of 5.1%. It's total value added in 2002 prices rose to \$109.9 million. In addition, airline service improved as people feel more confident to travel after the drop as a result of fear following September 11 terrorist attacks. Expansion in the tourism industry reflected by the increasing tourist arrivals boosted the land transport industry especially car rental services.

Chart 16: *Transport and Communication: annual growth rate*



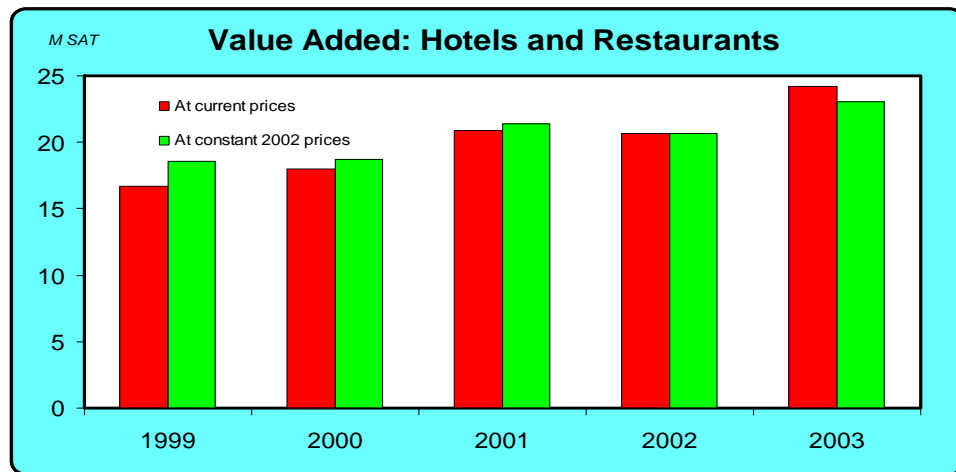
Transport and Communication is anticipated to grow continuously after recording an increase of 2.2 percentage point's contribution to real growth as compared to 2002, and it stills one of the highest contributor to growth for 2003. The continuous improvement in SamoaTel through, increasing in telephone lines available through their Fiber Optic project, the increase of internet services, high improvement and the reliable and well developed road transport system of buses and taxis all have assisted the industry performance. The successful development of large projects for the airports and the wharf extension for both inter-island and

international transportation has also contributed to the industry.

Hotels and Restaurants

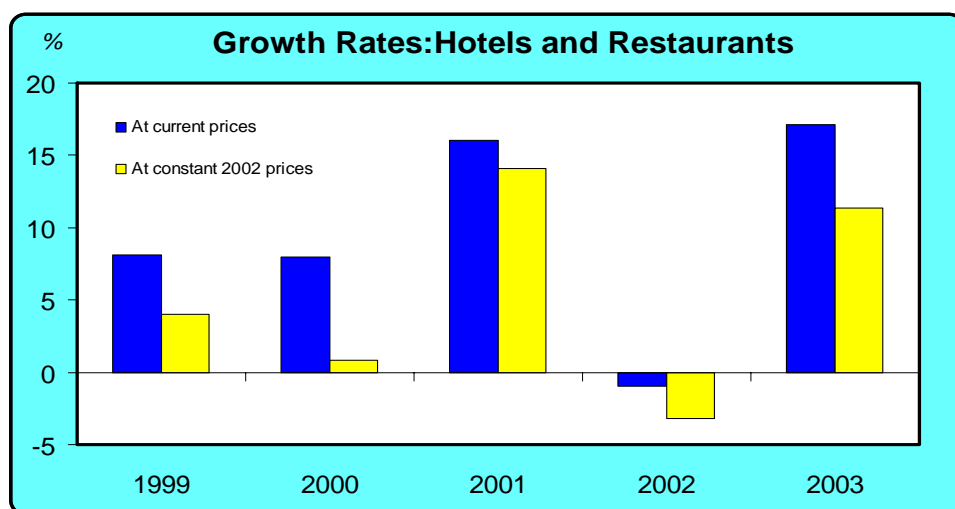
Although a relatively small component of the Samoan economy with a value added in nominal prices of only \$24.2 million, the Hotels and Restaurants industry production increased by 17.1% and contributed 0.4% percentage points to nominal GDP growth in 2003. Noticeable was the great contribution of the industry relayed in getting foreign exchange reserves, which increased by 14.2 percent in 2003. The expansion in the industry was a result of the increasing number of beach fale in rural areas and bar and restaurants established in the Apia beachfront.

Chart 17: *Hotels and Restaurants: annual value added*



In constant 2002 prices, Hotels and Restaurant's value added was estimated at \$23.4 million, an increase of 13.1% after a disappointing performance in 2002. Samoa Tourism Authority marketing strategies together with increasing regional meetings held in the country, all benefited the industry. Government's commitment in the development of the industry in strengthening the partnership between the village and the Samoa Tourism Authority with their beautification programs contributed positively to the industry growth.

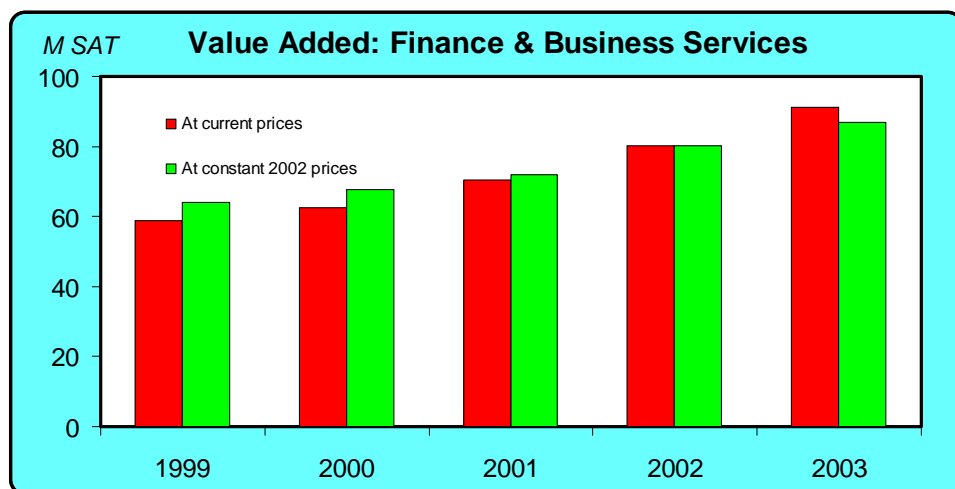
Chart 18: *Hotels and Restaurants: annual growth rate*



Finance and Business Services

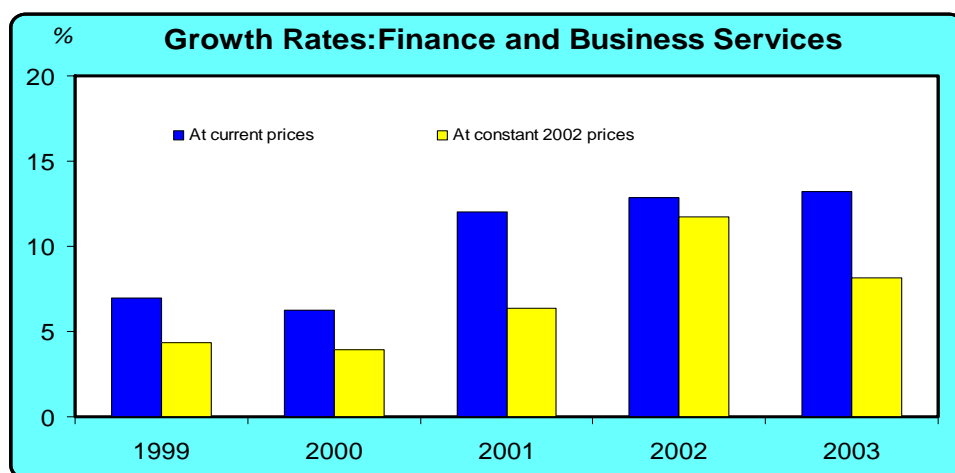
In 2003, the industry generated a total nominal value added of \$91.0 million. This was translated to a share of 9.7% up from 8.3% in 1999. The results reflected the impact of the Financial Sector Liberalisation reform that was implemented in 1998.

Chart 19: *Finance and Business Services: annual value added*



Finance and Business Services is considered one of the fastest growing industry in Samoa registering an increase of 8.3% in 2003, contributed 0.7 percentage points to real GDP growth for the year. Improved banking services through the expansion of credits, together with proliferation of money transfers and other small financial services boosted the industry performance. Growth in the industry is clearly illustrated in the chart below.

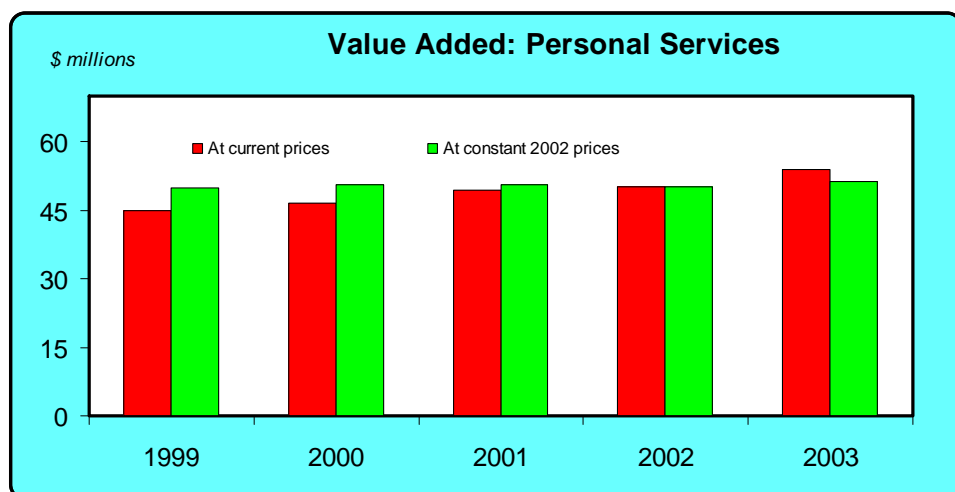
Chart 20: *Finance and Business Services: annual growth rates*



Personal and Other Services

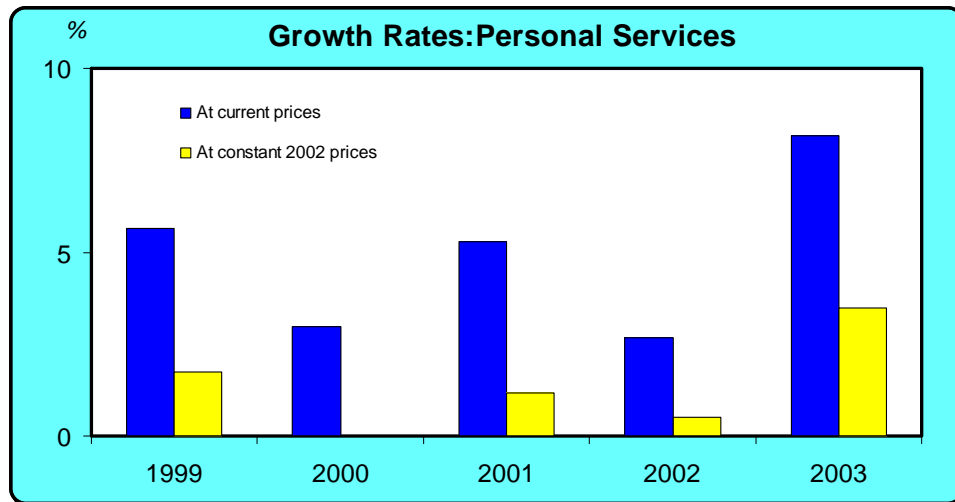
Personal and other Services comprised a wide variety of activities ranging from education, religions to hairdressers aggregated value added was \$53.9 million in nominal terms. Major structural changes experienced in the economy are reflected in this industry, as it becomes an increasingly significant component in the Samoan economy. This is a further indication of the level of development, and the Samoan economy being more monetised.

Chart 21: *Personal Services: annual value added*



In real terms, the industry value added was \$51.4 million. At that level it registered an increase of 2.4% compared to the 2002, and the biggest increase in the past four years. Chart 22 illustrates the industry growth rates.

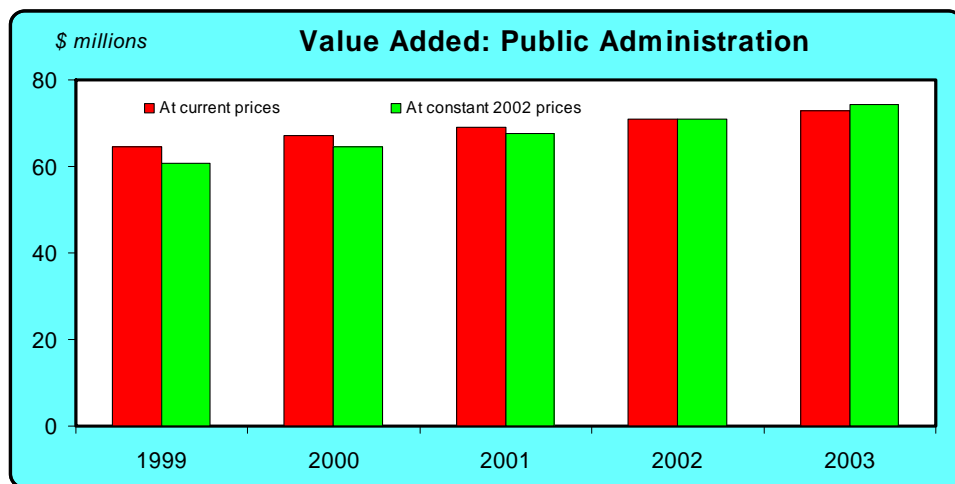
Chart 22: *Personal Services: annual growth rates*



Public Administration

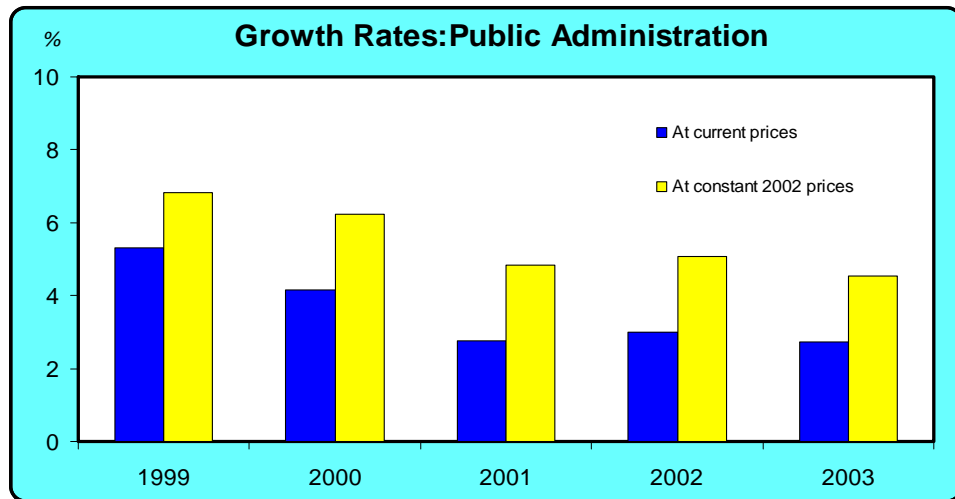
Public administration value added is the sum of the wages and salaries of all public servants. In 2003, Public Administration value added in nominal terms was \$72.9 million, a slight increase of 2.7% from 2002. This was equivalent to 7.8% of the GDP. In line with Chart 23 the industry has been growing steadily throughout the years.

Chart 23: *Public Administration: value added at current and constant prices*



In real terms there was a 4.5% real growth in public administration for the year. Ongoing Institutional Strengthening Projects in Ministries and Corporations have improved efficiency and effectiveness in the Sector. In terms of contribution to real GDP growth, public administration accounted for 0.4% of growth in 2003.

Chart 24: *Public Administration: annual growth rates*



Ownership of dwellings:

Ownership of Dwellings is one of the smallest industry and accounts for only 3.8 percent of total GDP. In 2003, this Industry recorded a total value added of only \$33.1 million, thus having very little impact on GDP growth.

Ownership of Dwellings consequently has provided a very stable share of GDP – around 3.7% of total GDP, the third smallest industry. By nature of the estimation techniques this “industry” shows consistent growth rates of 2.0% and has little impact on real overall growth rates.

Chart 25: *Ownership of Dwellings: annual value added*

