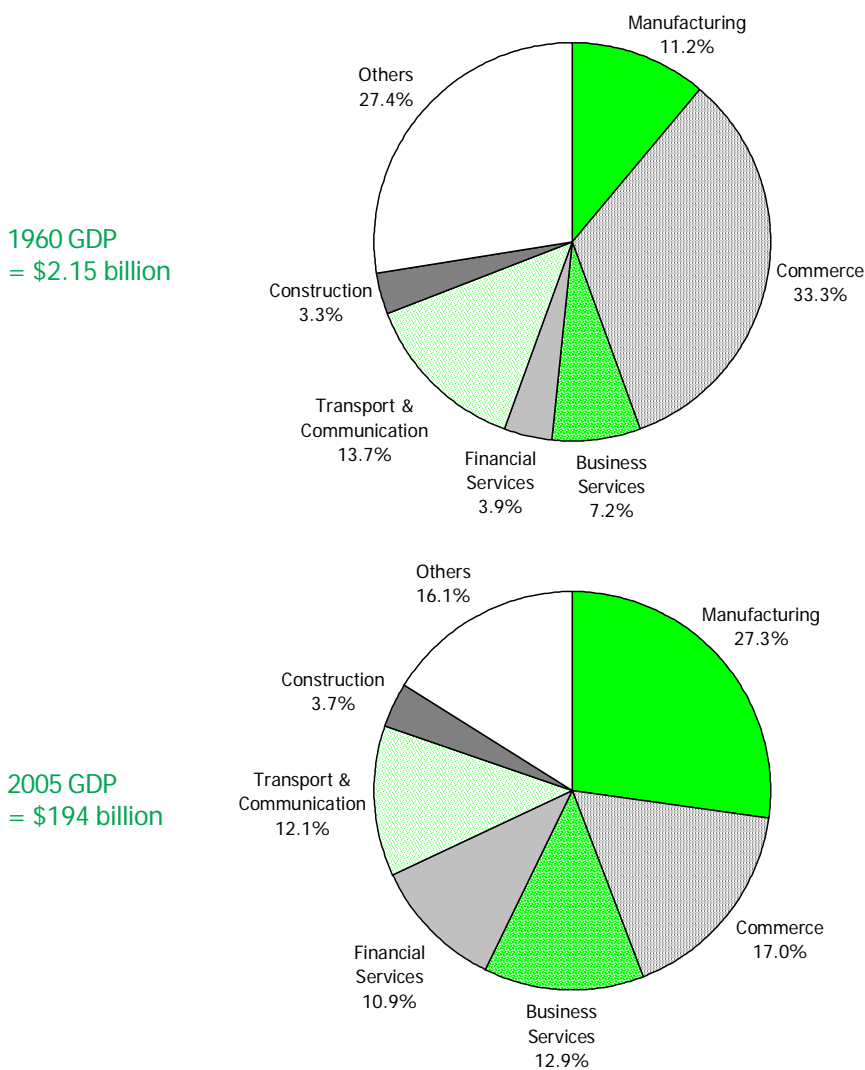


# Singapore's Manufacturing Sector 1991–2005\*

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Manufacturing sector is one of the key growth drivers of Singapore's economy, accounting for more than a quarter of Singapore's Gross Domestic Product (GDP) and more than half of our exports. Its share of GDP has grown from 11 per cent in 1960 to 27 per cent in 2005 (Chart 1).

CHART 1 MANUFACTURING SECTOR'S SHARE OF GDP  
1960 AND 2005

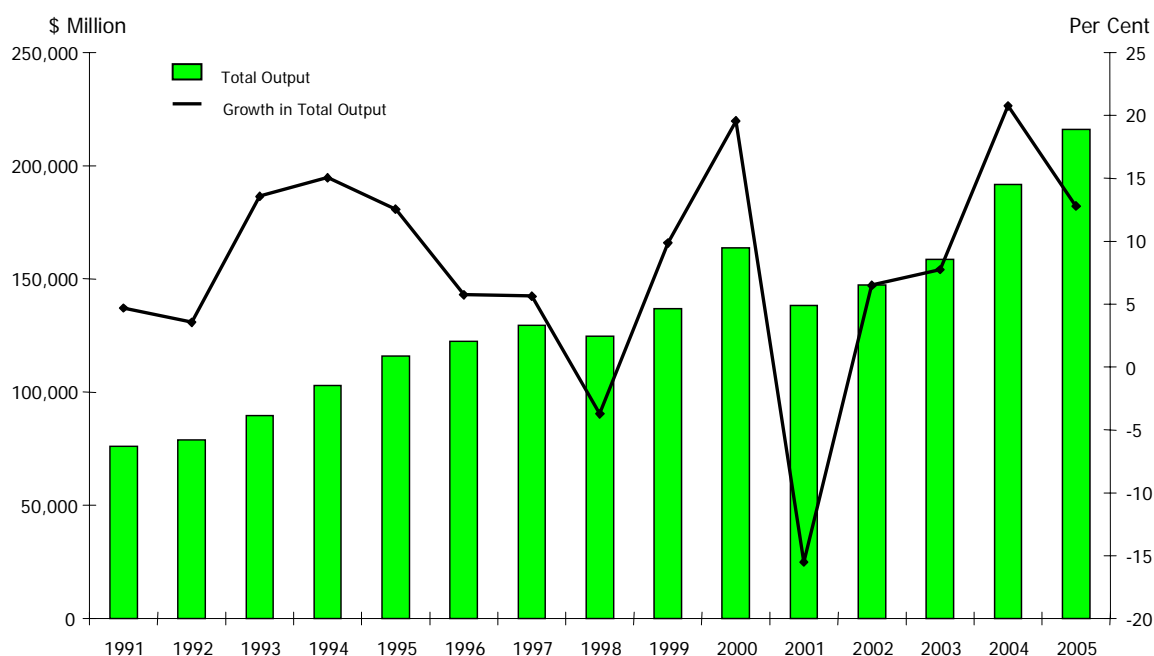


\* Figures for the year 2005 are preliminary.

## Growth in Manufacturing Output

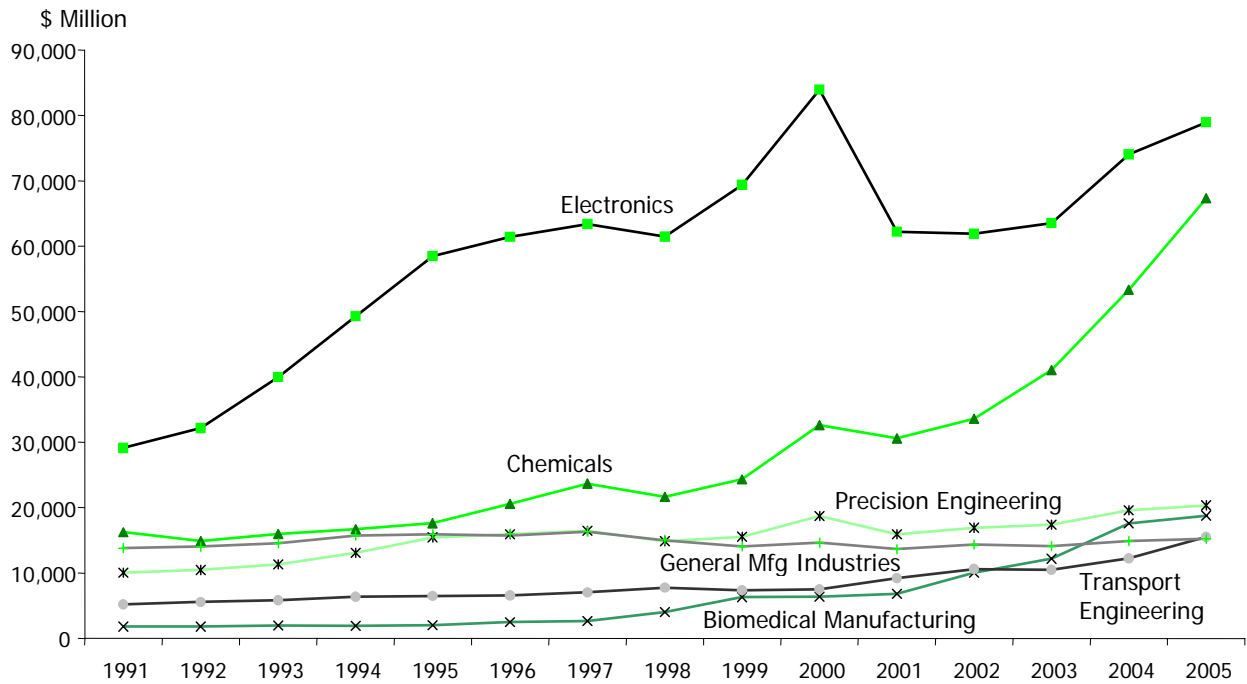
Total output in the manufacturing sector grew by about 7.7 per cent per annum in the past 15 years (Chart 2). The performance of the manufacturing sector showed a rising trend during this period except 1998 and 2001. The contraction of manufacturing output in 1998 was largely due to the shutdown of firms during the economic crisis, whereas the downturn in 2001 was attributed to sluggish global demand, particularly in electronics products.

CHART 2 PERFORMANCE OF THE MANUFACTURING SECTOR  
1991–2005



Output of the major manufacturing clusters also demonstrated a general upward trend over the past 15 years (Chart 3). Specifically in 2005, growths were recorded in the clusters of biomedical manufacturing (20 per cent), chemicals (12 per cent), transport engineering (9 per cent), electronics (8 per cent), precision engineering (6 per cent), and general manufacturing industries (1 per cent). Overall, the manufacturing sector registered an increase of 13 per cent in output in 2005.

CHART 3 OUTPUT OF THE MANUFACTURING CLUSTERS  
1991–2005



### Sources of Growth in the Manufacturing Clusters

Expansion in the electronics cluster in 2005 was mainly due to increased production of semiconductors, mobile products, computer chips, and printers & related products. There was strong global demand, especially from the United States (US), European Union and Asia Pacific.

Growth of the chemicals cluster was the result of increased output in the petroleum and petrochemicals segments. Improved refining margins prompted more processing of crude petroleum into refined products. Output in the petrochemicals segment was boosted by the enlarged capacities in the production of a wider spectrum of petrochemicals. Furthermore, the specialty chemicals segment had higher output of solvents, coatings, mineral additives and industrial gases.

Output growth in the biomedical manufacturing sector was driven by expansion in the pharmaceuticals segment, where production of different product-mix increased. The medical technology segment also expanded to meet more shipments of medical devices and appliances to the US and European markets.

Increased output in the machinery & systems and the precision modules & components segments contributed to the growth of the precision engineering cluster. Greater demand stimulated the production of machinery such as industrial process control equipment, semiconductor testing equipment, refrigerating machinery, compressors and machine tools. In tandem with the buoyancy in the electronics cluster, new and existing orders from local and export markets boosted production in the precision modules & components segment. There were higher output of metal and plastic precision components, electronic wires, lead frames, die castings, electroplating services and metal stampings.

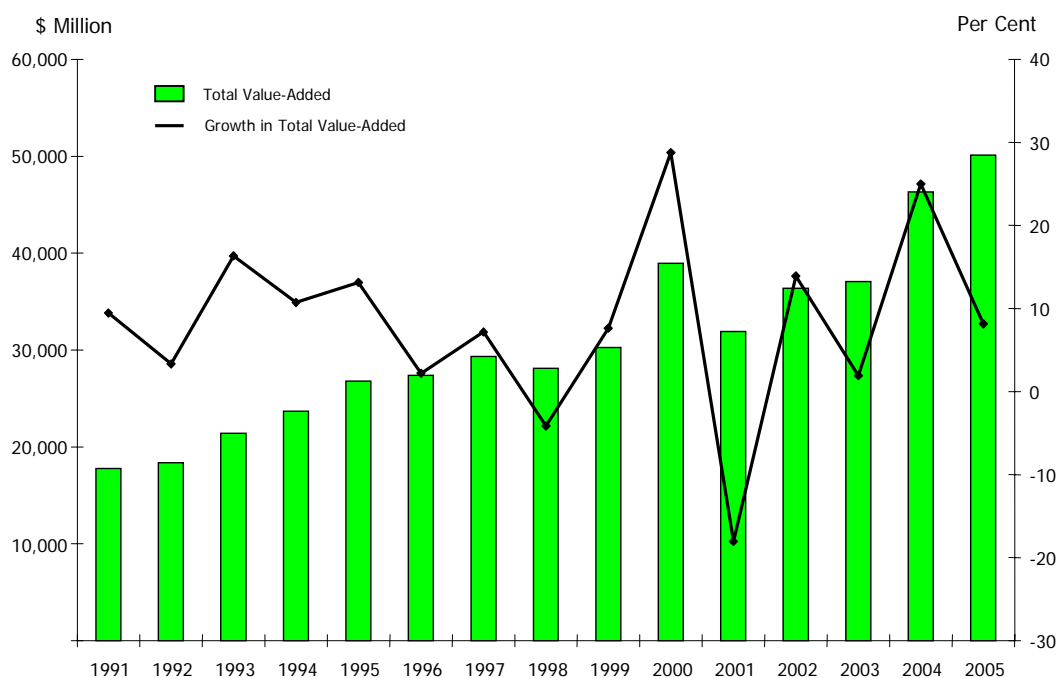
The transport engineering cluster's growth was largely due to increased output in the marine & offshore engineering and aerospace segments. The marine & offshore engineering segment expanded as shipyards completed more ship repairs, ship conversion and ship retrofitting works. The expansion in the aerospace segment was attributed to the increase in the manufacture of aviation parts and commercial aircraft repair works to cater to overseas orders.

## Other Indicators of Growth

### Value-added

Value-added (VA) of the manufacturing sector registered an overall increasing trend, recording an average annual growth rate of 8.3 per cent during the period from 1991 to 2005 (Chart 4). Total VA stood at \$50 billion in 2005, with the electronics cluster remaining the largest contributor, accounting for almost one-third of total VA in 2005. Other clusters such as the biomedical manufacturing, chemicals, precision engineering, transport engineering clusters and general manufacturing industries contributed to between 9 per cent and 21 per cent of total manufacturing VA.

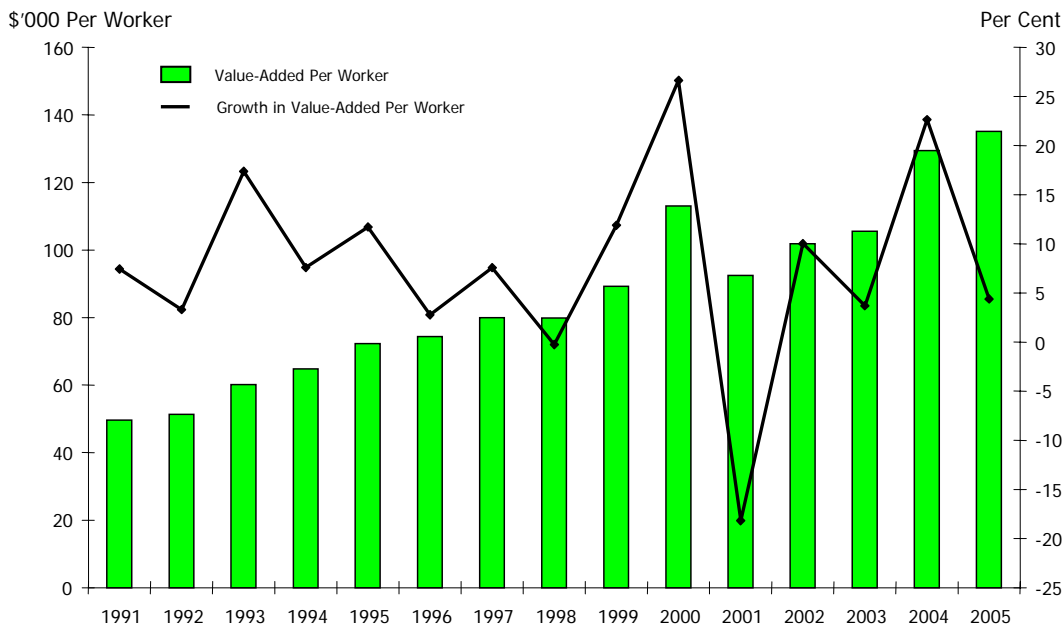
CHART 4 VALUE-ADDED IN THE MANUFACTURING SECTOR  
1991-2005



**Productivity**

Labour productivity in the manufacturing sector indicated a general upward trend between 1991 and 2005, registering an average annual growth rate of 4.4 per cent (Chart 5). In line with the output trends, productivity dipped in years 1998 and 2001, but registered strong growths in years 2000 and 2005. Value-added per worker, which is a proxy for labour productivity, amounted to \$135,100 in 2005.

CHART 5 PRODUCTIVITY IN THE MANUFACTURING SECTOR  
1991–2005



**Conclusion**

Singapore’s manufacturing evolved over the past 40 years from a labour-intensive to a research- and knowledge-based sector. With manufacturing moving up the value chain, complemented by robust supporting industries, the sector is expected to continue its growth trend in the next decade.