

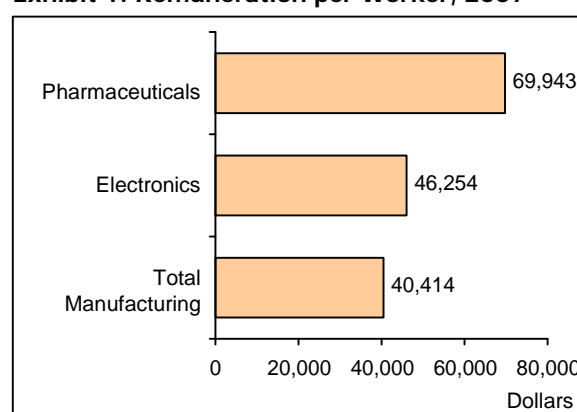
Box 2.1 Singapore's Pharmaceutical Manufacturing Sector

Pharmaceutical production has emerged as a key pillar of the manufacturing sector...

Pharmaceutical manufacturing has emerged as a key component of Singapore's manufacturing sector in recent years. Since 2000, a range of pharmaceutical companies such as GlaxoSmithKline, Merck, Sanofi-Aventis, Pfizer, Schering-Plough and Wyeth have opened facilities in Singapore. Many of them have been attracted here because of Singapore's strong physical and regulatory infrastructure, global connectivity and skilled manpower base.

As a result, pharmaceutical's share of manufacturing value-added in Singapore increased from 7.7 per cent in 2000 to 22 per cent in 2007. Jobs in pharmaceutical manufacturing are also high-paying ones. In 2007, workers in pharmaceutical manufacturing saw average wages of almost \$70,000. This was higher than the average wages in the electronics cluster and in the overall manufacturing sector (Exhibit 1).

Exhibit 1: Remuneration per Worker, 2007



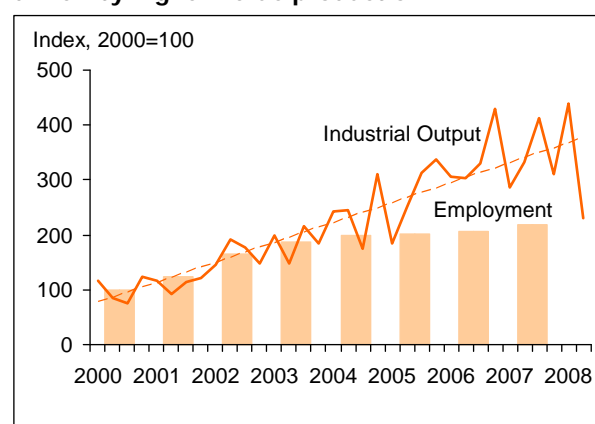
Pharmaceutical output is volatile in short-term...

In monthly or quarterly data, pharmaceutical output appears volatile because of firms' production schedules. Each manufacturing plant in Singapore produces a range of pharmaceutical products in distinct batches. The type of product to produce and the timing of the production depend on the parent company's supply chain decisions. As different pharmaceutical products have different market values, various companies' production schedules will affect the value of overall pharmaceutical output produced in a particular month or quarter. Moreover, between different batches of production, some downtime is needed for plant maintenance.

But long-term pharmaceutical output growth has been strong...

Despite short-term fluctuations in output, pharmaceutical output has been trending upwards since 2000. With Singapore's success in attracting investments, pharmaceutical output grew at a compound annual growth rate (CAGR) of 19 per cent between 2000 and 2007. Even in recent years, although relatively fewer pharmaceutical plants have commenced operations, output has continued to grow as pharmaceutical companies have started to produce higher-value products in Singapore (Exhibit 2).

Exhibit 2: Recent pharmaceutical output growth driven by higher-value production



and employment in pharmaceutical manufacturing has been steadily increasing...

In addition, although pharmaceutical output is volatile, employment has seen steady growth. Employment more than doubled from about 1,900 in 2000 to about 4,200 in 2007, with slower growth seen in recent years due to fewer plant openings. In particular, although 2007 saw a 2.1 per cent dip in output due to volatility throughout the year, pharmaceutical employment increased from about 4,000 to 4,200. These trends reflect the confidence that pharmaceutical manufacturers have in their operations in Singapore.

Outlook remains optimistic...

The outlook for pharmaceutical manufacturing remains optimistic. Existing manufacturing facilities are in the process of introducing new, innovative and higher-value products to be manufactured in Singapore. There is also a strong pipeline of pharmaceutical manufacturing facilities being constructed in Singapore. These include five biologics manufacturing investments – two by Lonza, and one each by GlaxoSmithKline Biologicals, Genentech and Novartis – which will help Singapore tap on the growing market for biologics-based pharmaceuticals. As EDB continues to attract more investments here, pharmaceuticals output will continue to grow and job creation will remain strong. Moreover, with more firms in a diverse and vibrant pharmaceutical manufacturing sector, individual firms' production decisions will have less impact on overall output, and short-term swings in pharmaceutical output will probably decrease.

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