

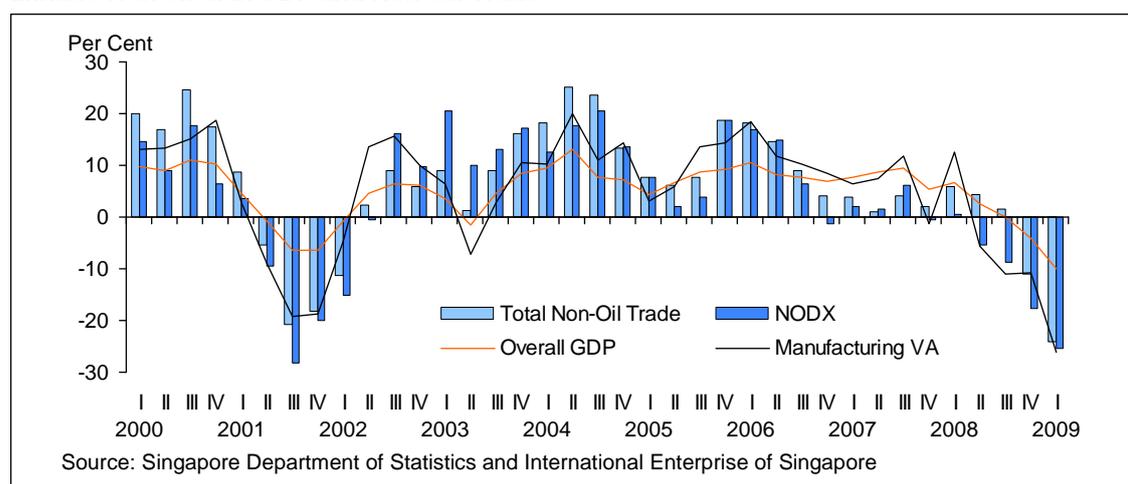
### Box 1.1: Explaining the Greater Impact of Trade on GDP: Comparison with the 2001 Recession

Fluctuations in Singapore's real GDP are closely correlated to changes in trade figures, because of Singapore's nature as an externally-oriented and open economy. In the first quarter of 2009, nominal trade fell by a sharp 24 per cent. Although this decline was similar to the decline experienced at the bottom of the 2001 recession (-21 per cent), the decline in real GDP in the first quarter of 2009 (-10 per cent) was more severe than its corresponding decline in 2001 (-6.4 per cent) ([Exhibit 1](#)).

To some extent, the sharper decline in GDP in recent months reflects the broad-based nature of the current recession. In 2001, sectors not directly related to trade, such as financial services and information & communications, still managed to contribute positively to GDP growth, thereby partly offsetting the impact of the decline in exports. In 2009, however, there has been no such offsetting effect. Some non-trade related sectors, in particular financial services, have experienced sharp declines as well.

But it has also become clear that trade-related activities have had a bigger impact on the economy since 2001. This box seeks to explain the greater impact of trade on real GDP in the current recession, by examining its impact on the manufacturing and services sectors in turn.

**Exhibit 1: Growth in GDP and Non-Oil Trade**



#### Impact on Manufacturing

As illustrated in [Exhibit 1](#), although the fall in nominal Non-Oil Domestic Exports (NODX) in the first quarter of 2009 was similar to its fall in the third quarter of 2001, the decline in manufacturing real value-added (VA) was significantly larger (-26 per cent in the first quarter of 2009 vs. -19 per cent in the third quarter of 2001). There are two main reasons for this.

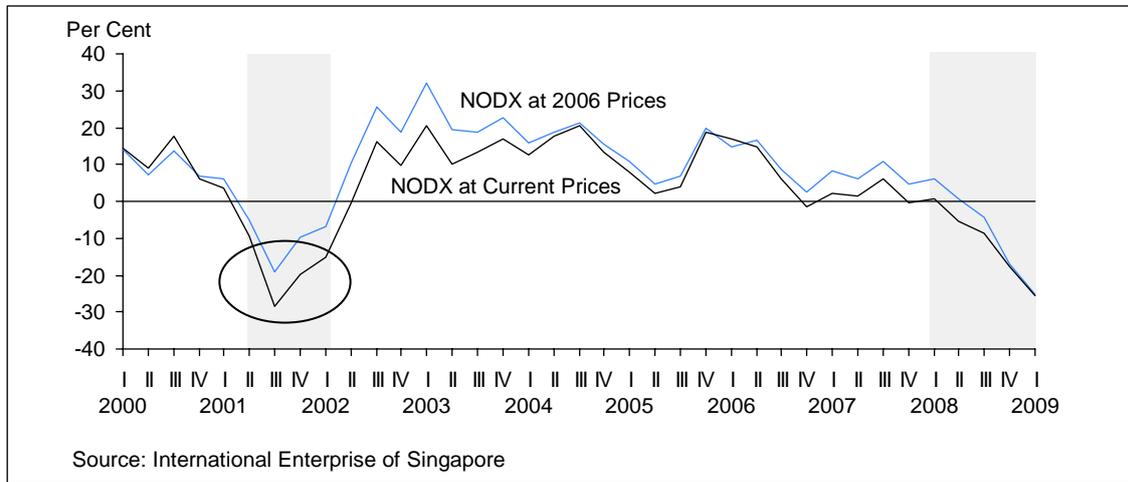
*First, unlike the 2001 recession, the decline in nominal NODX in the current recession was underpinned by a decline in real NODX.*

As observed in earlier studies published in the Economic Survey of Singapore, a decline in export prices in 2001 had led to a divergence between real and nominal NODX.<sup>1</sup> For instance, the decline in real NODX during the third quarter of 2001 was 19 per cent on-year, smaller than the 28 per cent decline in nominal NODX. In contrast, the first quarter of 2009 saw similar declines in real and nominal NODX at around 25 per cent on-year ([Exhibit 2](#)).

<sup>1</sup> See for example, "Singapore's Trade and Investment Trends: A Comparison With Past Downturns" in Economic Survey of Singapore 2008, and "Explaining the Divergence Between GDP and Trade Growth" in the Economic Survey of Singapore 2007.

This implies that, unlike the third quarter of 2001, the decline in headline NODX in the first quarter of 2009 was largely due to an adjustment in real output rather than an adjustment in prices. This corresponded with a more severe fall in manufacturing output during the first quarter of 2009.

**Exhibit 2: Previous declines in NODX were magnified by price effects**



*Second, the higher share of pharmaceuticals in total NODX may have increased the real value-added content of exports.*

Within Singapore’s NODX, pharmaceutical exports have one of the highest direct value-added content. Based on the 2000 Input-Output tables for Singapore, every dollar of pharmaceutical output contributed 62 cents of direct value-added to the Singapore economy, compared to 26 cents for every dollar of non-oil manufacturing output (Exhibit 3A). This means that declines in pharmaceutical exports would have a much larger impact on Singapore’s GDP compared to a similar decline in non-pharmaceutical exports.

The share of pharmaceuticals in NODX has increased. In 2001, pharmaceuticals comprised 4.8 per cent of NODX; this share had grown to 9.7 per cent in 2008 (Exhibit 3B). Swings in pharmaceutical exports would therefore have a more discernible impact on NODX. In fact, half of the decline in total NODX in 2008 resulted from a steep decline in pharmaceutical exports. This decline, combined with the high direct VA of pharmaceuticals, amplified the effect of the NODX decline on overall GDP.

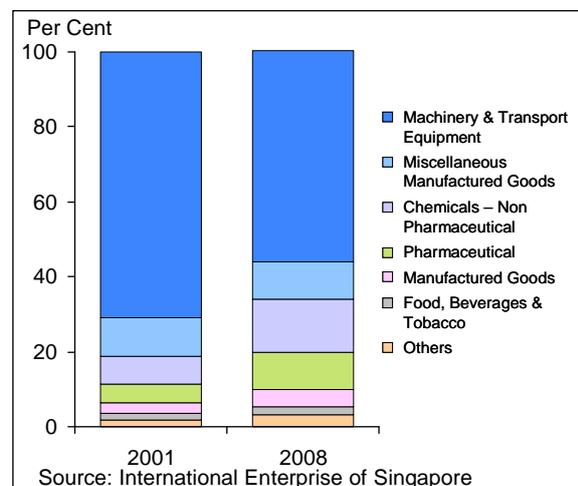
**Exhibit 3: Pharmaceutical share of NODX doubled from 2001, with larger impact on GDP**

**(A) Direct Value-Added Coefficient of Selected Sectors**

	Direct VA Multiplier
Manufacturing (Oil)	0.077
Manufacturing (Non-Oil)	0.259
Electronics	0.204
Pharmaceuticals	0.619

Source: 2000 Input-Output Tables

**(B) % Share of Nominal NODX**



**Impact on Services**

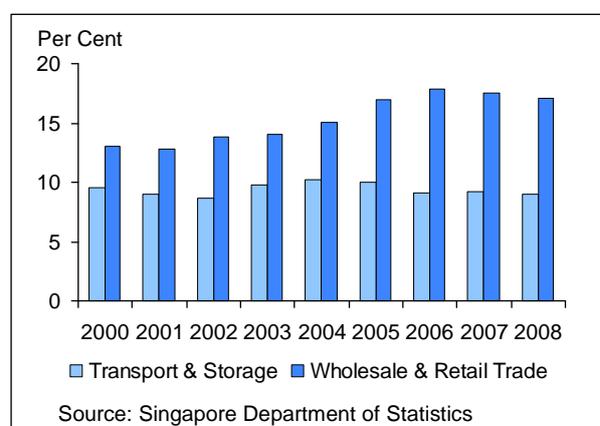
The impact of trade on Singapore's real VA in services is also larger now compared to the 2001 recession because of two reasons.

*First, trade-related services now constitute a larger share of our economy.*

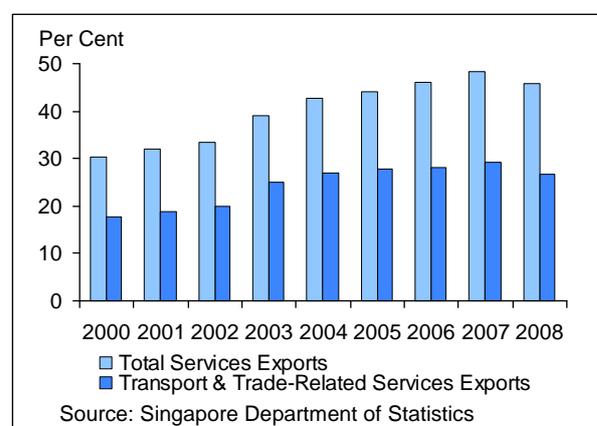
The share of trade-related service sectors in our economy has increased since 2001. The share of the wholesale and retail sector has grown from 13 per cent of GDP in 2001 to 17 per cent in 2008. Even though transport and storage's share of GDP has remained stable, transport- and trade-related service exports have increased as a proportion of nominal GDP. From 2000 to 2008, transport-related service exports increased from 13 per cent to 16 per cent of nominal GDP, while trade-related service exports rose from 5.4 per cent to 11 per cent of nominal GDP (Exhibit 4).

**Exhibit 4: Larger Role of Trade-Related Sectors**

**(A) GDP Share of Transport & Storage and Wholesale & Retail Trade Sectors**



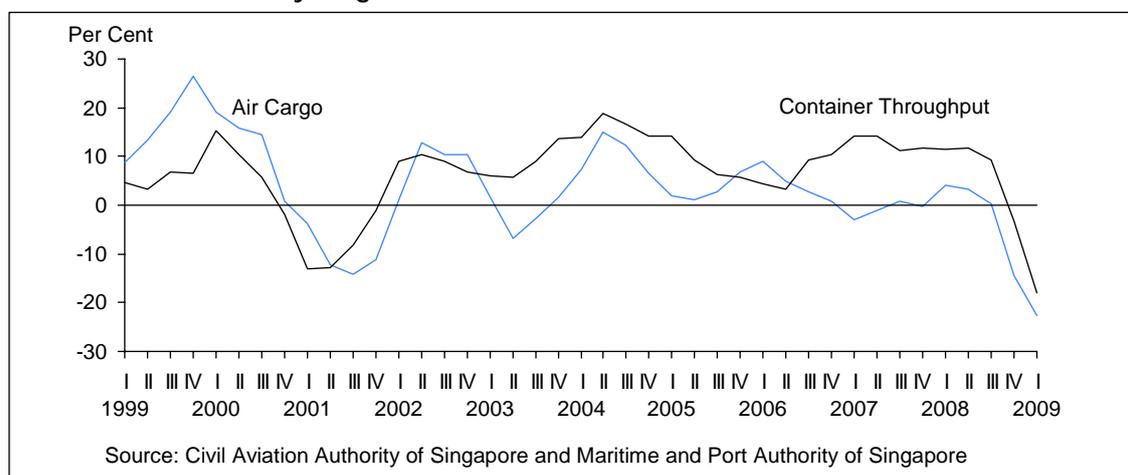
**(B) Services Exports as % of Nominal GDP**



*Second, disruptions in trade finance and global manufacturing activity have been more severe in this recession, thus affecting trade-related services more negatively.*

Unlike 2001, this recession is characterised by a global disruption in trade finance as well as a much sharper collapse in manufacturing activity around the world. As Singapore is an international transport hub, this has had a severe impact on the **transport and storage sector**. The year-on-year contraction in container throughput and air cargo in the first quarter of 2009 reached 18 per cent and 23 per cent respectively, exceeding the declines recorded during 2001 as well as the SARS Crisis in 2003 (Exhibit 5). Growth in air passengers handled also fell sharply by 7.8 per cent in the first quarter of 2009, contributing to the sector's overall decline.

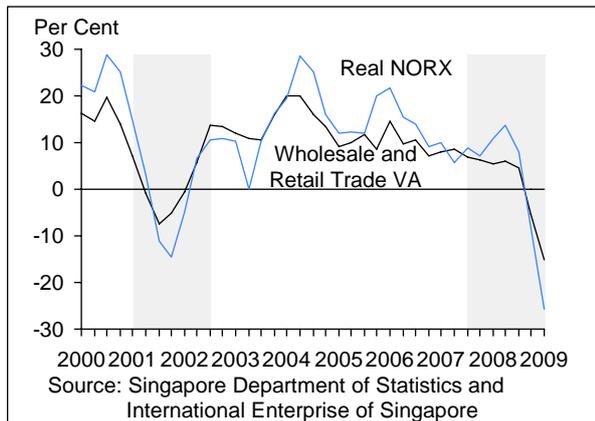
**Exhibit 5: Decline in Key Cargo Indicators**



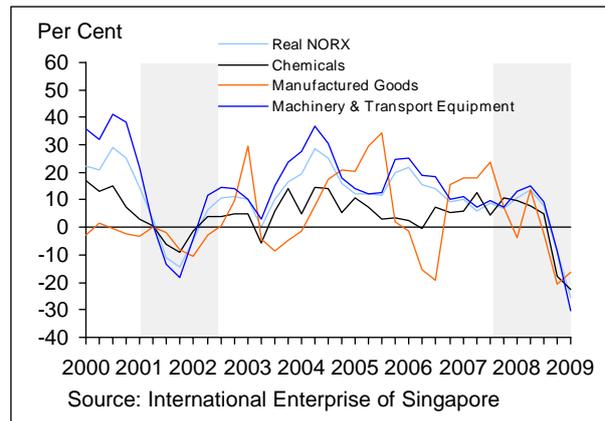
Similar factors affected the **wholesale and retail trade sector** in the first quarter of 2009, which also saw a more severe contraction compared to the trough in 2001. In particular, both offshore and re-export (NORX) trade were significantly affected during this downturn. Real NORX contracted by 25 per cent in the first quarter of 2009, much sharper than the 15 per cent contraction during the trough in the fourth quarter of 2001. Compared to the 2001 recession, the decline in real NORX has also been more broad-based, with sharp drops seen in all product segments ([Exhibit 6](#)).

#### Exhibit 6: Sharper and Broader-based Declines in NORX

(A) Real NORX versus Wholesale and Retail Trade VA



(B) Decline in Real NORX Across Key Segments



#### Conclusion

Although the decline in nominal trade figures in the first quarter of 2009 was broadly comparable to the decline during the trough of the 2001 recession, the contraction in real GDP in 2009 has been larger than the contraction in 2001. This article suggests a few possible reasons for this. In 2001, a decline in export prices contributed to the decline in NODX, but this time, the decline in NODX resulted from a steep decline in manufacturing output, reflecting the sharp collapse in external demand. The value-added content of NODX is likely to have increased since 2001 due to the greater share of pharmaceuticals in NODX. Finally, the contribution of trade-related activities, in particular wholesale trade, to the service sector has also grown. These factors have increased the correlation between trade and overall GDP. While this stronger correlation has affected Singapore negatively in the downturn, it also increases the likelihood of a faster recovery once global trade recovers.

#### Contributed by:

Dominic Soon, Economist  
Tee Koon Hui, Economist  
Economics and Strategy Division  
Ministry of Trade and Industry