Information Paper Series

Singapore's Growth Cycle Chronology, Composite Leading and Coincident Indices

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SINGAPORE'S GROWTH CYCLE CHRONOLOGY, COMPOSITE LEADING AND COINCIDENT INDICATORS

Singapore Department of Statistics
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SINGAPORE'S GROWTH CYCLE CHRONOLOGY, COMPOSITE LEADING AND COINCIDENT INDICATORS

I INTRODUCTION

1 Traditionally, emphasis has been placed on the Composite Leading Index (CLI), which serves as a useful forewarning tool for analysts, economists and policymakers on the overall health of the economy. Following the onset of the COVID-19 pandemic, there has been increasing interest on Singapore's growth cycle chronology, as well as demands for closer monitoring of Singapore's overall economic activity, to more promptly identify and reflect changes to the latest economic situation.

2 To facilitate the tracking of the prevailing state of Singapore's economy, the Singapore Department of Statistics (DOS) has released the quarterly Composite Coincident Index (CCI)[1] with effect from the Second Quarter of Economic Survey of Singapore 2025. The CCI is an aggregate of five macroeconomic indicators that move in tandem with business cycles and is generally regarded as a comprehensive representation of a country's overall economic activity.

3 Both the CLI and the CCI were first developed in the late 1980s following the 1985 economic recession. Since then, both indices have undergone several rounds of comprehensive reviews periodically[2], ensuring their adequacy and continued relevance in anticipating and identifying Singapore's growth cycles.

4 The Singapore economy had undergone an extended period of slow growth between 2010 and 2012, lasting for almost 2.5 years, before entering an economic recession in 2014. Since its recovery from end 2015 and the subsequent close to four years of economic stability and expansion, Singapore experienced its steepest recession in 2019, since the global financial crisis (GFC) in 2008. The latest preliminary findings suggest that the Singapore economy faced another round of growth moderation from 2022 to 2024.

5 This paper provides an update to Singapore's growth cycle chronology and examines the performance of Singapore's CLI for recent periods.

II SINGAPORE'S GROWTH CYCLE CHRONOLOGY

6 Singapore's economic activity is characterised by growth cycles and has generally been on an upward trend with relatively stable growths (Exhibit 1). The growth cycles identified from the CCI determines Singapore's growth cycle chronology. It is an aggregation of economic indicators that generally moves in

[1] Quarterly CCI data can be downloaded via the SingStat Table Builder.
[2] Comprehensive reviews were conducted in 1991, 2004, 2011 and 2023. The latest review was featured in the second issue of the Statistics Singapore Newsletter in 2023.

tandem with aggregate economic activity. These indicators are reviewed periodically, ensuring that they continue to exhibit coincident relationship with the growth cycles of the economy, thus tracking the prevailing state of aggregate economic activity (Exhibit 2).

Exhibit 1: Types of Business Cycles

Classical Cycle	Growth Cycle	Growth Rate Cycle
characterised by		
absolute expansions and contractions in the levels of aggregate economic activity	**deviations from the long-term trend growth rate** of the economy	**fluctuations in the growth rate** of aggregate economic activity

Exhibit 2: Singapore Composite Coincident Indicators

Composite Coincident Indicators
Gross Domestic Product in Chained Dollars
Index of Industrial Production
Non-Oil Domestic Exports at Constant Prices
Total Employment
Retail Sales Index Excluding Motor Vehicles in Chained Volume Terms

7 Exhibit 3 presents Singapore's growth cycle chronology from 1974 to 2024. Since the short-lived economic recovery in 2009, Singapore experienced four growth cycle recessions (Exhibit 4).

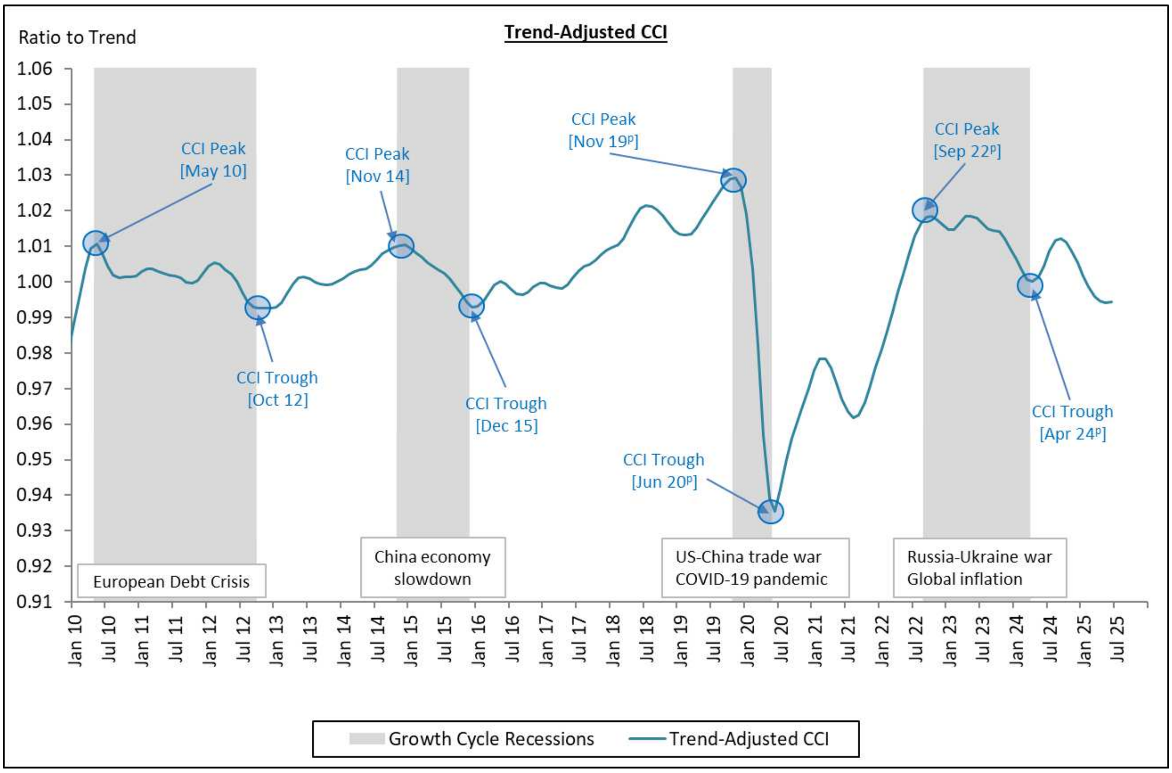
Exhibit 3: Growth Cycle Chronology of Singapore, 1974 – 2024

Dates of Peak and Trough			Average Duration in Months			
Peak (P)	Trough (T)	Peak (P)	Low-growth (P to T)	High-growth (T to P)	Full Cycle (P to P)	Full Cycle (T to T)
May-74	Dec-74	Feb-76	7	14	21	38
Feb-76	Feb-78	May-81	24	39	63	58
May-81	Dec-82	Aug-84	19	20	39	36
Aug-84	Dec-85	Jun-88	16	30	46	46
Jun-88	Oct-89	Aug-90	16	10	26	36
Aug-90	Oct-92	Sep-94	26	23	49	30
Sep-94	Apr-95	Jul-97	7	27	34	43
Jul-97	Nov-98	Aug-00	16	21	37	35
Aug-00	Oct-01	Apr-02	14	6	20	20
Apr-02	Jun-03	May-04	14	11	25	21
May-04	Mar-05	Mar-08	10	36	46	55
Mar-08	Oct-09	May-10	19	7	26	36
May-10	Oct-12	Nov-14	29	25	54	38
Nov-14	Dec-15	Nov 19[p]	13	47	60	54

Nov 19ᵖ	Jun 20ᵖ	Sep 22ᵖ	7	27	34	46
Sep 22ᵖ	Apr 24ᵖ	-	19	-	-	-

ᵖ: Recent peaks/ troughs are preliminary as the trend estimates may be revised when more data become available.

Exhibit 4: Singapore Growth Cycles, 2010 – 2025



8 The first growth cycle recession (peak-trough phase) began in mid 2010, when Singapore recorded its longest period of economic slowdown of 29 months since 1974. The slowdown in growth from May 2010 to Oct 2012 following the phenomenal recovery post GFC, was largely attributed to a more subdued global macroeconomic environment following the European debt crisis. Singapore, and other major Asian economies, experienced slower growth as global headwinds dampened trade flows and demand for exports. In particular, Singapore's electronics manufacturing cluster contracted in both 2011 and 2012, as a result of the weakened demand for semiconductor chips. The prolonged slowdown only bottomed out in late 2012 after the announcement from the European Central Bank on its unlimited support and bailout for affected eurozone member states, which restored market confidence and gradually brought back investments.

9 Singapore's subsequent growth cycle recession took place in late 2014, predominantly driven by China's economic slowdown which had far-reaching effects on Singapore and the global economy. Singapore, being one of the more export-reliant economies, was adversely impacted with the reduced demand from

China[3] following its growth moderation. The slowdown in Singapore's economic growth eventually reversed towards the end of 2015, amidst an improvement in the global macroeconomic backdrop. Notably, Singapore registered an extended period of economic stability and growth spanning 47 months from Dec 2015.

10 Singapore faced its third and steepest growth cycle recession in late 2019, due to a confluence of factors including the US-China trade war and the COVID-19 pandemic which disrupted global supply chains, and severely impacted trade flows and international demand. Singapore entered a technical recession in the second quarter of 2020 following two consecutive quarters of quarter-on-quarter declines in the seasonally-adjusted real GDP, recording its worst full-year economic contraction in 2020 since independence. Fortunately, the plunge in overall economic activity only lasted 7 months, and Singapore economy rebounded by Jun 2020.

11 The last recessionary phase started in the second half of 2022, due to the Russia-Ukraine war which upset global energy markets and essential commodities supply chains, leading to soaring fuel prices and price hikes in staple food items, ultimately resulting in global inflation. The Singapore economy stabilised during the first half of 2024, following the gradual moderation in energy and commodity prices.

III THE COMPOSITE LEADING INDEX

12 The Composite Leading Indices (CLIs) have been compiled by many countries such as Japan, Korea and Malaysia, and international organisations (e.g., The Conference Board and the Organisation for Economic Co-operation and Development, to provide early signals and anticipate cyclical changes in the turning points of the business cycles. The CLI is a predictive tool to gauge if, and approximately when, an economic expansion or recession will occur. It thus serves as a useful advanced warning tool for economists and policymakers.

13 Singapore's CLI is an aggregation of nine economic indicators that exhibit leading relationships with the growth cycles of the economy (Exhibit 5). These CLI indicators are reviewed periodically and have been selected based on a set of key criteria including leading cyclical properties, economic significance, timeliness, periodicity and statistical quality of the data series.

Exhibit 5: Singapore's Composite Leading Indicators

Composite Leading Indicators
Total New Companies Formed
Money Supply (M2)
Stock Exchange of Singapore Indices

[3] According to data from the World Bank, China is the world's second largest economy when measured in terms of nominal GDP, and the world's largest after accounting for purchasing power parity.

Business Expectations for Stock of Finished Goods (Manufacturing)
Business Expectations for Wholesale Trade
US Purchasing Managers' Index (Manufacturing)
Total Non-Oil Seaborne Cargo Handled
Domestic Liquidity Indicator
Total Non-oil Retained Imports at Constant Prices

14 The CCI is used as the reference series to assess the performance of the CLI. The latest comprehensive review concluded by DOS suggests that the CLI remains relevant in identifying and anticipating Singapore's growth cycles.

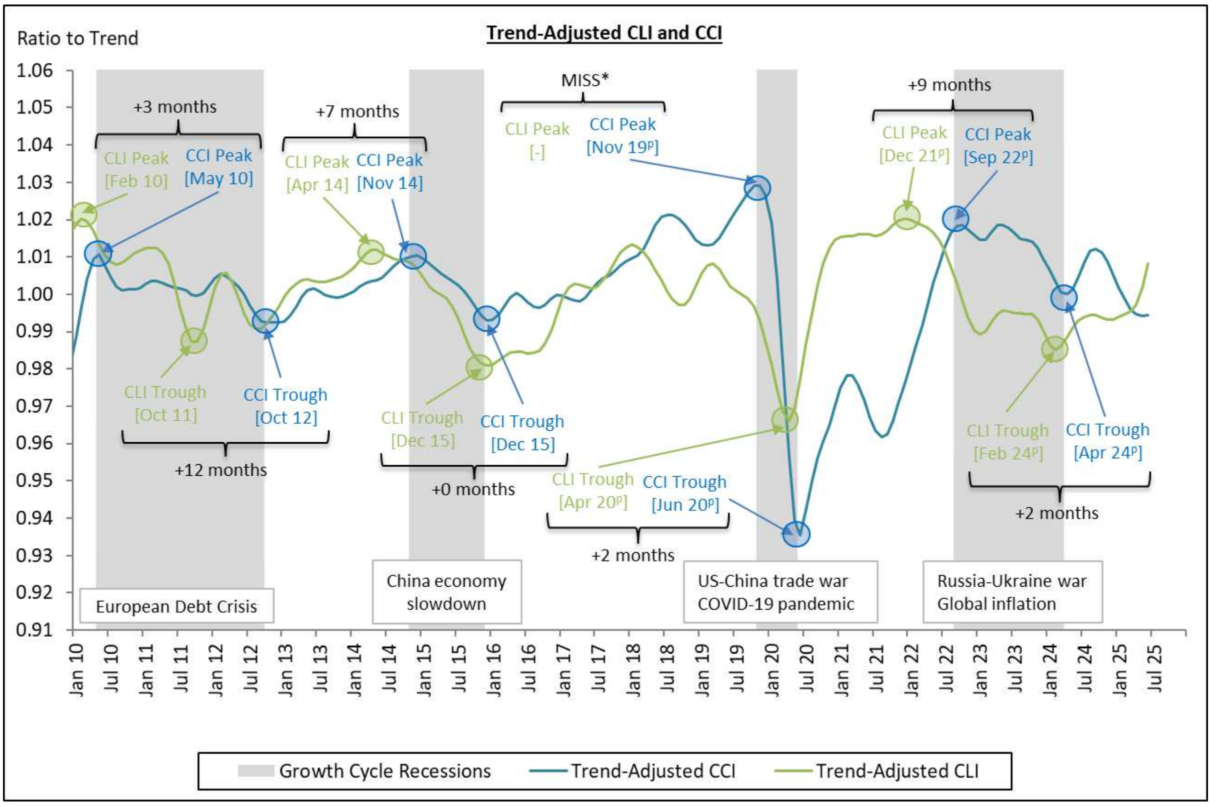
15 In the previous comprehensive review in 2011, Singapore's CLI had an average lead of 4.8 months over the CCI for the period 2003 to 2010. For the period 2010 to 2024, Singapore's CLI achieved similar performance, with an average lead of 5 months (Exhibit 6). In particular, for the most recent growth cycle recession that started in Sep 2022, the CLI peaked nine months before the CCI and bottomed out two months before the subsequent recovery. In addition, the CLI also accurately anticipated the 2010 slowdown and the 2014 recession with a three and seven months lead respectively. This leading cyclical relationship can also be observed from the chart (Exhibit 7).

Exhibit 6: Leads and Lags of CLI over CCI, 2010 – 2024

Growth Cycle	CCI Turning points	CLI Turning points	Lead[+]/Lag[-] (Months)
Peak	May-10	Feb-10	+3
Trough	Oct-12	Oct-11	+12
Peak	Nov-14	Apr-14	+7
Trough	Dec-15	Dec-15	0
Peak*	Nov-19	-	-
Trough	Jun-20	Apr-20	+2
Peak	Sep-22	Dec-21	+9
Trough	Apr-24	Feb-24	+2
Average (2010-2024)			+5

* CLI was unable to anticipate the growth cycle peak in Nov 2019.

Exhibit 7: CLI and CCI Growth Cycles, 2010 – 2025



* CLI was unable to anticipate the growth cycle peak in Nov 2019.

16 The CLI has been compared against the real GDP, which is a closely monitored indicator of economic performance, to assess whether it exhibits any leading cyclical relationship. In the assessment, a simple quarterly year-on-year growth[4] is adopted. For the period 2010 to 2024, the CLI recorded an average lead of 0.375 quarters over real GDP (Exhibit 8).

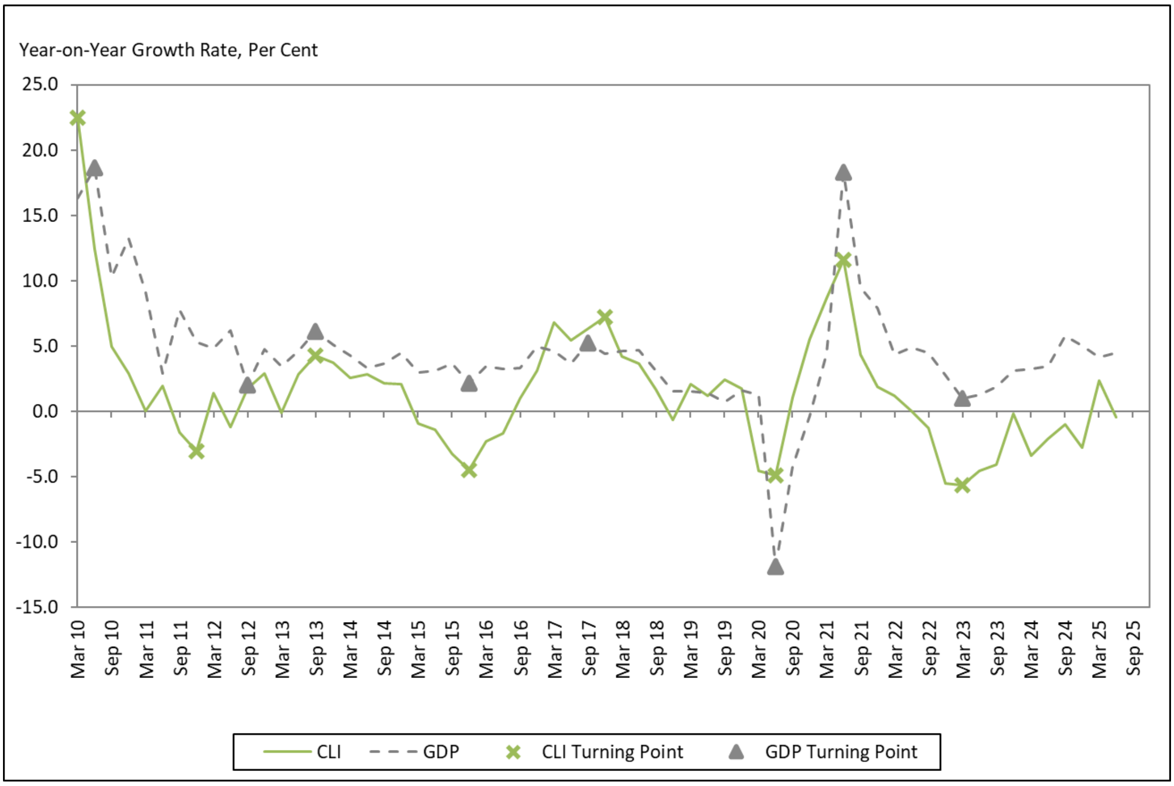
17 While the quarterly year-on-year growth provides a simple basis of comparison between the CLI and quarterly real GDP, it will generally be less responsive to shocks and abrupt changes. As such, the leading cyclical property of the CLI year-on-year to real GDP year-on-year may not be that apparent (Exhibit 9).

[4] Year-on-year growth transformation implicitly accounts for longer-term underlying trend and shorter-term regular seasonal variation.

Exhibit 8: Leads and Lags of Quarterly CLI over Real GDP, 2010 – 2024

Growth Cycle	GDP Turning points	CLI Turning points	Lead[+]/Lag[-] (Quarters)
Peak	2Q10	1Q10	+1
Trough	3Q12	4Q11	+3
Peak	3Q13	3Q13	0
Trough	4Q15	4Q15	0
Peak	3Q17	4Q17	-1
Trough	2Q20	2Q20	0
Peak	2Q21	2Q21	0
Trough	1Q23	1Q23	0
Average (2010-2024)			+0.375

Exhibit 9: Quarterly CLI and Real GDP Year-on-Year Growths, 2010 – 2025



IV CONCLUSION

18 Singapore's growth cycle chronology has been updated for the period 2010 to 2024, where four growth cycle recessions have been identified. The first slowdown in 2010 was attributed to spill-over effects from the European debt crisis to the Asia-Pacific region, which eventually bottomed out in late 2012. The second growth cycle recession that started in late 2014 and lasted for slightly more than a year, was driven by China's economic slowdown which impacted export-dependent economies including Singapore. In 2019, Singapore experienced the most severe economic recession due to a confluence of factors including the US-China trade war and impact from the COVID-19 pandemic which affected global demand and supply chains. The last economic slowdown took place in 2022, due to the Russia-Ukraine war which

disrupted global energy markets and commodities supply chains, consequently leading to global inflation.

19 Singapore’s CLI and CCI are reviewed periodically to ensure their adequacy and continued relevance in anticipating and identifying Singapore’s growth cycles. The latest empirical study shows that the CLI maintains its leading properties, and anticipates cyclical turning points of both the CCI and real GDP.

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