

Advanced Manufacturing in China

Annual Competitiveness Analysis
on Greater China Economies

Editors: Lian Huiyuan Yi Xin

Advanced Manufacturing in China: Annual Competitiveness Analysis on Greater China Economies

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**Advanced Manufacturing in China: Annual Competitiveness Analysis on Greater
China Economies**

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About ACI

The Asia Competitiveness Institute (ACI) was established in August 2006 as a Research Centre at the Lee Kuan Yew School of Public Policy (LKYSPP), National University of Singapore (NUS). It aims to build intellectual leadership and network for understanding and developing competitiveness and sustainable growth in Asia. ACI seeks to contribute to the enhancement of inclusive growth, living standards and institutional governance through competitiveness research on sub-national economies in Asia. It identifies mitigating issues and challenges for potential public policy interventions through close collaboration with regional governments, business corporations, policy think tanks and academics. ACI's three key research pillars include (I) competitiveness analysis at the level of sub-national economies, (II) emerging sustainable development landscape in 16 Asia economies, and (III) Asia's long-term growth strategies and public policy analysis.

ACI's value propositions can be encapsulated in its acronym:

Analytical inputs to initiate policies for policy-makers and business leaders in Asia

Capacity building to improve productivity and efficiency

Intellectual leadership to create pragmatic models of competitiveness and inclusive growth

Vision and Mission

- ACI's over-arching vision is to build up its research credibility with policy impact, contributing as a professional, world-class think-tank.
- ACI's mission is to establish our niche as a leading policy think-tank by identifying development trends, opportunities and challenges among Asian economies and business corporations.
- ACI endeavours to articulate sound recommendations, promote discussion and shape research agenda in the arena of public policy among Asian governments.
- ACI undertakes evidence-based analysis of public policy issues and decisions, in order to provide an assessment of their effectiveness as well as their economic and societal impact.

Preface

This thirteenth edition of the Greater China Competitiveness Research Series, produced by the Asia Competitiveness Institute (ACI) at the Lee Kuan Yew School of Public Policy, National University of Singapore, continues our evidence-based analysis of sub-national competitiveness in Greater China. As one of ACI's flagship projects, this volume examines China's emerging growth configuration centred on advanced manufacturing, and the growing importance of a predictable, rules-based external environment.

In 2025, China's economy achieved a growth rate of 5%, adding nearly one trillion USD to its economy. Yet the composition of this growth has entered a new phase. Net exports consistently emerged as a primary driver, supported mainly by strong net export growth to ASEAN, while consumption and investment remained weak.

At the same time, China's export structure continues to shift away from labour-intensive consumer goods towards advanced manufacturing sectors. This volume provides a sub-national examination of these sectors through city-level case studies of semiconductor and electric vehicle supply chains in China's two export powerhouses, the Greater Bay Area and the Yangtze River Delta.

This transition is underpinned by a structural shift in China's labour force. As the college-educated population expands rapidly despite overall population decline, China's comparative advantage is quickly moving towards advanced manufacturing, with lasting implications for its growth model and trade engagement.

The shift also brings new pressures. As skilled labour outpaces domestic absorption, internal stability will depend on scaling advanced manufacturing exports. Yet, such expansion is increasingly constrained by rising trade and geopolitical frictions, underscoring the need for rules-based frameworks to manage these risks. In this context, the policy chapter provides evidence that the expansion of the Information Technology Agreement, an MFN-based WTO plurilateral, helped cushion China's high-tech exports during 2020–2024, while stimulating import growth and easing trade imbalances.

As China's growth becomes more externally anchored, the stability of its advanced manufacturing trade will increasingly depend not only on market access, but also on the proactive development and strengthening of robust, rules-based frameworks. I am confident that this publication will deepen our understanding of China's subnational economies and their external engagement, while offering policy-relevant insights that contribute to ongoing discussions on regional economic development.

Professor Paul Cheung
Director, Asia Competitiveness Institute
Lee Kuan Yew School of Public Policy
National University of Singapore

Contents

<i>About Asia Competitiveness Institute</i>	i
<i>Preface</i>	ii
<i>Executive Summary</i>	vi
<i>Acknowledgements</i>	vii
<i>List of Abbreviations</i>	viii
<i>List of Economies and Regions</i>	ix
<i>List of Figures and Tables</i>	xi
Chapter 1: Introduction	1
<i>Yi Xin</i>	
1.1 China in 2025: The Growth Model in Transition	1
1.2 The Skills Surge and the Export Imperative	1
1.3 Trade Reallocation	5
1.4 Implications for Trade Policy	8
1.5 Sub-national Adjustment: Trade, Skills, Newborns	9
1.6 Synthesis: An Emerging Growth Configuration	13
1.7 Motivation and Roadmap of the Book	13
References	15
Chapter 2: 2025 Annual Update on Competitiveness Rankings and Simulation Studies for 34 Greater China Economies	16
<i>Lian Huiyuan and Adam Lee</i>	
2.1 Portrait of China's Growth in 2024 by Economy	16
2.1.1 Gross Regional Product	16
2.1.2 Private Consumption Expenditure	26
2.1.3 Gross Capital Formation	29
2.1.4 General Government Expenditure	32
2.1.5 Trade Balance	35
2.2 Research Methodology	40
2.2.1 Literature Review on Competitiveness	40
2.2.2 Four Environments and Eleven Sub-Environments	40
2.2.3 Indicators	43
2.2.4 Data Sources and Aggregation of Indicators Data for Regions	43

2.2.5	Standardised Score	45
2.2.6	<i>What-if</i> Competitiveness Simulation Analysis	46
2.3	ACI 2025 Competitiveness Rankings and Scores by Economy	47
2.3.1	Overall Competitiveness	47
2.3.2	Macroeconomic Stability	52
2.3.3	Government and Institutional Settings	57
2.3.4	Financial, Businesses and Manpower Conditions	61
2.3.5	Quality of Life and Infrastructure Development	65
2.4	ACI 2025 <i>What-if</i> Competitiveness Simulation Analysis by Economy . . .	70
2.4.1	<i>What-if</i> for Overall Competitiveness	70
2.4.2	<i>What-if</i> for Competitiveness in Four Environments	73
2.4.3	Policy Implications	87
	References	96

Chapter 3: 2025 Annual Update on Regional Competitiveness Rankings and Simulation Studies for Greater China 98

Lian Huiyuan and Adam Lee

3.1	Overview of Regional Disparities in China	98
3.1.1	Five Geographic Regions	101
3.1.2	Three Major Megalopolises	104
3.2	ACI 2025 Competitiveness Rankings and Scores by Region	107
3.2.1	Overall Competitiveness	107
3.2.2	Macroeconomic Stability	110
3.2.3	Government and Institutional Settings	114
3.2.4	Financial, Businesses and Manpower Conditions	118
3.2.5	Quality of Life and Infrastructure Development	122
3.3	Dual Powerhouses and Supply Chain Integration: EVs in YRD and Semiconductors in GBA	127
3.3.1	Diverging Growth Patterns in China's Dual Powerhouses	127
3.3.2	Contrasting Supply Chain Architectures: EVs in YRD and Semiconductors in GBA	132
3.3.3	Institutional Foundations of Supply Chain Integration in YRD and GBA	143
	References	150

Chapter 4: Stabilising China's Advanced Manufacturing Trade: The Role of WTO Information Technology Agreement Expansion (2020-2024) 152

Yi Xin

4.1	Introduction	152
4.1.1	Why ITA Matters for Stabilising Advanced Manufacturing Trade . .	153
4.1.2	What Existing Evidence Does Not Explain	154
4.2	Institutional and Policy Background	155
4.2.1	Origins of ITA and Its Strategic Purpose	155

4.2.2	What ITA Covers and Enables	156
4.2.3	Where Advanced Manufacturing Fits In China's 15th FYP	158
4.3	China's Advanced Manufacturing Trade Networks	161
4.3.1	Who China Trades With	162
4.3.2	Sub-national Origins of China's Trades	165
4.4	Data and Identification	173
4.5	The First Effect: Cushioning High-Tech Exports Amid Uncertainty	174
4.5.1	Econometric Specifications	174
4.5.2	Gains Are Modest but Systemically Important (3-5%)	175
4.5.3	Effects Are Broad-Based, With Exceptions (US)	177
4.5.4	Results Hold Across Specifications	178
4.6	The Second Effect: Balancing Trade Through High-Tech Imports	182
4.6.1	Econometric Specifications	182
4.6.2	Import Expansion Is Substantial (13-23%)	183
4.6.3	Imports Rise More from the EU, Less from ASEAN	185
4.6.4	Robustness	185
4.7	Synthesis and Policy Implications	187
4.7.1	Stabilisation Under Stress	187
4.7.2	Regional Trade Geography	188
4.7.3	MFN and Trade Rule Design	188
4.7.4	Managing Trade Imbalance	189
4.7.5	Beyond ITA-2	189
4.8	Concluding Remarks	190
	References	191

Appendix 1: About the Authors	193
--------------------------------------	------------

Appendix 2: Indicator List and Notes on Data Aggregation Methods for Regional Competitiveness Analysis	194
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Appendix 3: Algorithm for Competitiveness Analysis	201
---	------------

Appendix 4: ACI 2025 Competitiveness Rankings and Scores by Economy: Evolution Over Time	204
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Appendix 5: ACI 2025 Competitiveness Rankings and Scores by Region: Evolution Over Time	229
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Executive Summary

In 2025, China's economy grew by 5%, adding nearly one trillion USD to output. The composition of growth, however, has shifted. Net exports were the primary driver, supported by strong export performance to ASEAN, while consumption and investment remained weak. At the same time, exports continue to move away from labour-intensive goods toward advanced manufacturing. This is underpinned by a deeper structural change in the labour force, as the rapid expansion of college-educated workers reshapes China's comparative advantage. As skilled labour outpaces domestic absorption, growth has become more externally anchored and more exposed to trade and geopolitical frictions. Chapter 1 examines these dynamics, including detailed sub-national dissection.

Chapter 2 shows that provincial growth has broadly converged to the 5–6% range, but economic activity remains concentrated in the coastal core. Inland economies are contributing more at the margin, yet domestic demand and external balances remain uneven across provinces.

Chapter 3 confirms the persistence of these spatial patterns. Leading economies remain concentrated along the eastern seaboard, particularly in the Yangtze River Delta and Greater Bay Area, while lower-ranked regions continue to cluster in western and northeastern China. Financial Depth, Business Efficiency, and Manpower Conditions remain the main differentiating factors. Simulation results suggest that the largest gains lie in middle- and lower-tier regions where weak indicators can still converge toward the national average.

Chapter 3 then examines the sub-national organisation of advanced manufacturing through case studies of electric vehicles and semiconductors. The Yangtze River Delta exhibits a distributed, multi-city electric vehicle ecosystem, with complementary roles across upstream, midstream, and downstream activities. By contrast, the Greater Bay Area's semiconductor industry is more concentrated in Shenzhen, with Hong Kong playing a financial role, resulting in a narrower and more fragmented structure. The comparison underscores the value of regional integration and functional complementarity in sustaining industrial competitiveness.

Chapter 4 addresses the policy implications of this shift. As growth becomes more externally dependent, stable and predictable trade frameworks become more important. Evidence shows that the expansion of the WTO Information Technology Agreement helped cushion China's high-tech exports during 2020–2024, while also stimulating imports and moderating imbalances. Rules-based arrangements therefore serve not only as market access tools, but as stabilising mechanisms against external uncertainty, a management tool for external imbalances, and a pressure-release valve for China's strained internal labour market.

Overall, the volume highlights persistent sub-national disparities alongside a structural shift toward advanced manufacturing and externally anchored growth. Sustaining this transition will depend on continued domestic upgrading and the strengthening of rules-based frameworks to support China's evolving role in the global economy.

Acknowledgements

This year, *Advanced Manufacturing in China: Annual Competitiveness Analysis on Greater China Economies* was contributed by Lian Huiyuan, Adam Lee, and Yi Xin.

In this book, we have updated previous sub-national and regional competitiveness studies with the latest available data. Our comprehensive approach to measuring competitiveness takes into account different factors that collectively shape the ability of a nation or region to achieve substantial and inclusive economic development over a sustained period of time. Furthermore, we examine how advanced manufacturing is reshaping China's growth model, with case studies of semiconductor supply chains in the Greater Bay Area and EV supply chains in the Yangtze River Delta, and the role of rules-based trade agreements in stabilising external demand for China's ICT products amid rising trade frictions.

This book would not have been possible without the support of our research and administrative colleagues. In particular, we would like to extend our sincere thanks to a competent and dedicated administrative team at ACI, including Cai Jiao Tracy, Po Lai Yin Lyne, Nur Atiqah Binte Rahmat and Dewi Jelina Ayu Binte Johari.

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List of Abbreviations

ACI	Asia Competitiveness Institute
ACFTA	ASEAN-China Free Trade Area
ATP	Assembly, Testing, and Packaging
ASEAN	Association of Southeast Asian Nations
BMS	Battery Management Systems
CA	California
COVID	Coronavirus Disease (2019)
CPI	Consumer Price Index
EV	Electric Vehicle
FBMC	Financial, Businesses and Manpower Conditions
FDI	Foreign Direct Investment
GBA	Greater Bay Area
GDP	Gross Domestic Product
GIS	Government and Institutional Settings
GRP	Gross Regional Product
HKMT	Hong Kong, Macau and Taiwan
HS	Harmonised System
IC	Integrated Circuit
ICT	Information and Communications Technology
ICV	Intelligent Connected Vehicle
IMD	Institute for Management Development
IOV	Internet of Vehicles
ITA	Information Technology Agreement
JJJ	Beijing–Tianjin–Hebei (Jing-Jin-Ji) Region
M&A	Mergers and Acquisitions
MFN	Most Favoured Nation
MS	Macroeconomic Stability
NEV	New Energy Vehicle
ODI	Outward Direct Investment
PPI	Producer Price Index
QLID	Quality of Life and Infrastructure Development
R&D	Research and Development
RMB	Renminbi
ROO	Rules of Origin
RSVI	“Ranked” Standardised Value of Indicator
SD	Standard Deviation
SVI	Standardised Value of Indicator
USD	United States Dollar
V2X	Vehicle-to-Everything
YRD	Yangtze River Delta

List of Economies

Name of Economies in English		Name of Economies in Chinese
1	Anhui	安徽
2	Beijing	北京
3	Chongqing	重庆
4	Fujian	福建
5	Gansu	甘肃
6	Guangdong	广东
7	Guangxi	广西
8	Guizhou	贵州
9	Hainan	海南
10	Hebei	河北
11	Heilongjiang	黑龙江
12	Henan	河南
13	Hong Kong	香港
14	Hubei	湖北
15	Hunan	湖南
16	Inner Mongolia	内蒙古
17	Jiangsu	江苏
18	Jiangxi	江西
19	Jilin	吉林
20	Liaoning	辽宁
21	Macau	澳门
22	Ningxia	宁夏
23	Qinghai	青海
24	Shaanxi	陕西
25	Shandong	山东
26	Shanghai	上海
27	Shanxi	山西
28	Sichuan	四川
29	Taiwan	台湾
30	Tianjin	天津
31	Tibet	西藏
32	Xinjiang	新疆
33	Yunnan	云南
34	Zhejiang	浙江

List of Regions

	Name of Regions in English	Name of Regions in Chinese
1	Eastern Coastal Area in China	东部沿海地区
2	Central China	中部地区
3	Western China	西部地区
4	Northeastern China	东北地区
5	Hong Kong, Macau and Taiwan	港澳台地区
6	Beijing–Tianjin–Hebei Region	京津冀地区
7	Yangtze River Delta	长江三角洲
8	Guangdong–Hong Kong–Macau Greater Bay Area	粤港澳大湾区

List of Figures and Tables

Chapter 1

- Figure 1.1 Consumer Confidence Index
Figure 1.2 Inward Foreign Direct Investment Growth (%)
- Table 1.1 China's Growth Composition and Path to 2035 Doubling Target
Table 1.2 New University Graduates and Labour Force Trends (2010=100)
Table 1.3 Total College-educated Population vs Total Population
Table 1.4 ASEAN as the Primary Driver of China's Net Export Growth
Table 1.5 The Shift to Advanced Manufacturing: China's Top Exports in Billion RMB
Table 1.6 Sub-national Trade by Major Partner
Table 1.7 China-ASEAN Trade and Guangdong's ASEAN-6 Linkages
Table 1.8 Population, Skilled Labour, and Skill Intensity by Coastal Province (2020)
Table 1.9 Guangdong is Leading in Newborns Demographics

Chapter 2

- Figure 2.1 Real GRP Growth Rates of Mainland China Provinces in 2024 (top) and 2023 (bottom)
Figure 2.2 Ranking of 34 Greater China Economies by Real GRP Growth Rate, 2024 (top) and 2023 (bottom)
Figure 2.3 GRP as a Share of National Nominal GDP in 2024 for Mainland Economies
Figure 2.4 Ranking of 34 Greater China Economies by GRP as a Percentage of Mainland National Nominal GDP, 2024
Figure 2.5 Share of National Nominal GDP Growth in 2024 for Mainland Economies
Figure 2.6 Ranking of Mainland Economies by Share of National Nominal GDP Growth, 2024
Figure 2.7 Share of National Private Consumption Expenditure in 2024 for Mainland Economies
Figure 2.8 Ranking of 34 Greater China Economies by Private Consumption Expenditure in 2024
Figure 2.9 Share of National Gross Capital Formation in 2024 for Mainland Economies
Figure 2.10 Ranking of 34 Greater China Economies by Gross Capital Formation in 2024

- Figure 2.11 Share of National General Government Expenditure in 2024 for Mainland Economies
- Figure 2.12 Ranking of 34 Greater China Economies by General Government Expenditure in 2024
- Figure 2.13 Share of National Total Merchandise Trade in 2024 for Mainland Economies
- Figure 2.14 Ranking of 34 Greater China Economies by Merchandise Trade Balance in 2024
- Figure 2.15 Asia Competitiveness Institute's Competitiveness Framework
- Figure 2.16 ACI 2025 Overall Competitiveness Ranking Map: 2023 (top) and 2022 (bottom)
- Figure 2.17 ACI 2025 Sub-environment Scores across Economies: 2023 (top) and 2022 (bottom)
- Figure 2.18 ACI 2025 Macroeconomic Stability Ranking Map: 2023 (top) and 2022 (bottom)
- Figure 2.19 ACI 2025 Government and Institutional Settings Ranking Map: 2023 (top) and 2022 (bottom)
- Figure 2.20 ACI 2025 Financial, Businesses and Manpower Conditions Ranking Map: 2023 (top) and 2022 (bottom)
- Figure 2.21 ACI 2025 Quality of Life and Infrastructure Development Ranking Map: 2023 (top) and 2022 (bottom)
- Figure 2.22 ACI 2025 Maximum Competitiveness Web for 2023 (top) and 2022 (bottom)
- Figure 2.23 ACI 2025 Upper-Quartile Competitiveness Web for 2023 (top) and 2022 (bottom)
- Figure 2.24 ACI 2025 Median Competitiveness Web for 2023 (top) and 2022 (bottom)
- Figure 2.25 ACI 2025 Lower-Quartile Competitiveness Web for 2023 (top) and 2022 (bottom)
-
- Table 2.1 ACI 2025 Overall Competitiveness Ranking and Scores by Economy
- Table 2.2 ACI 2025 Macroeconomic Stability Ranking and Scores by Economy
- Table 2.3 ACI 2025 Government and Institutional Settings Ranking and Scores by Economy
- Table 2.4 ACI 2025 Financial, Businesses and Manpower Conditions Ranking and Scores by Economy
- Table 2.5 ACI 2025 Quality of Life and Infrastructure Development Ranking and Scores by Economy

Table 2.6	ACI 2025 <i>What-if</i> Competitiveness Simulation Analysis on Overall Competitiveness Rankings (top) and Scores (bottom)
Table 2.7	ACI 2025 <i>What-if</i> Competitiveness Simulation Analysis on Macroeconomic Stability Rankings (top) and Scores (bottom)
Table 2.8	ACI 2025 <i>What-if</i> Competitiveness Simulation Analysis on Government and Institutional Settings Rankings (top) and Scores (bottom)
Table 2.9	ACI 2025 <i>What-if</i> Competitiveness Simulation Analysis on Financial, Businesses and Manpower Conditions Rankings (top) and Scores (bottom)
Table 2.10	ACI 2025 <i>What-if</i> Competitiveness Simulation Analysis on Quality of Life and Infrastructure Development Rankings (top) and Scores (bottom)

Chapter 3

Figure 3.1	Five Geographic Regions and Three Major Megalopolises in Greater China
Figure 3.2	Regional Economic Indicators, 2021–2023: Values (Billion RMB, Constant 2000 Prices) and Shares (%)
Figure 3.3	Economic Indicators by Metropolitan Region, 2021–2023: Values (Billion RMB, Constant 2000 Prices) and Shares (%)
Figure 3.4	ACI 2025 Overall Competitiveness Ranking Map by Region: 2023 (top) and 2022 (bottom)
Figure 3.5	ACI 2025 Macroeconomic Stability Ranking Map by Region: 2023 (top) and 2022 (bottom)
Figure 3.6	ACI 2025 Regional Sub-environment Scores of Macroeconomic Stability: 2023 (top) and 2022 (bottom)
Figure 3.7	ACI 2025 Government and Institutional Settings Ranking Map by Region: 2023 (top) and 2022 (bottom)
Figure 3.8	ACI 2025 Regional Sub-environment Scores of Government and Institutional Settings: 2023 (top) and 2022 (bottom)
Figure 3.9	ACI 2025 Financial, Businesses and Manpower Conditions Ranking Map by Region: 2023 (top) and 2022 (bottom)
Figure 3.10	ACI 2025 Regional Sub-environment Scores of Financial, Businesses and Manpower Conditions: 2023 (top) and 2022 (bottom)
Figure 3.11	ACI 2025 Quality of Life and Infrastructure Development Ranking Map by Region: 2023 (top) and 2022 (bottom)
Figure 3.12	ACI 2025 Regional Sub-environment Scores of Quality of Life and Infrastructure Development: 2023 (top) and 2022 (bottom)

- Figure 3.13 GRP per Capita (1,000 RMB) and GRP per Unit of Land (Million RMB per sq. km), with Annualised Growth Rates (%), 2018 and 2024
- Figure 3.14 China's Auto (top panel) and Semiconductor (bottom panel) Exports (RMB Billion), with Shares of YRD Economies and Guangdong (%), 2019 and 2025
- Figure 3.15 Number of Listed Firms by EV Supply Chain Stage and YRD City
- Figure 3.16 Number of Listed Firms by Semiconductor Value Chain Stage and GBA City
- Figure 3.17 FDI and R&D Performance of GBA Cities, with Comparative Benchmarks, 2018 and 2024
-
- Table 3.1 ACI 2025 Overall Competitiveness Ranking and Scores by Region
- Table 3.2 ACI 2025 Macroeconomic Stability Ranking and Scores by Region
- Table 3.3 ACI 2025 Government and Institutional Settings Ranking and Scores by Region
- Table 3.4 ACI 2025 Financial, Businesses and Manpower Conditions Ranking and Scores by Region
- Table 3.5 ACI 2025 Quality of Life and Infrastructure Development Ranking and Scores by Region
- Table 3.6 Number of Listed Firms by EV Supply Chain Stage and YRD City, with Share of City and Stage (%)
- Table 3.7 Number of Listed Firms by Semiconductor Value Chain Stage and GBA City, with Share of City and Stage (%)
- Table 3.8 EV Supply Chain Specialisations in City-Level Policies of the Top 12 EV Cities in the YRD

Chapter 4

- Figure 4.1 China's ITA-2 Export Destinations, 2013-2024
- Figure 4.2 China's ITA-2 Import Origins, 2013-2024
- Figure 4.3 China's ITA-2/3 Exports to Asia-Pacific Destinations in 2024
- Figure 4.4 China's ITA-2/3 Imports from Asia-Pacific Origins in 2024
- Figure 4.5 China's Top 40 Provincial IC Export Flows to Asia-Pacific
- Figure 4.6 China's Top 40 Provincial IC Import Flows from Asia-Pacific
- Figure 4.7 China's Top 20 Provincial Flat Panel Display Module Export Flows to Asia-Pacific
- Figure 4.8 China's Top 20 Provincial Flat Panel Display Module Import Flows from Asia-Pacific

Figure 4.9	China's Top 20 Provincial Lithium-ion Battery Export Flows to Asia-Pacific
Figure 4.10	China's Top 20 Provincial Lithium-ion Battery Import Flows from Asia-Pacific
Figure 4.11	China's Top 20 Provincial Industrial Robot Export Flows to Asia-Pacific
Figure 4.12	China's Top 20 Provincial Industrial Robot Import Flows from Asia-Pacific
Figure 4.13	China's Top 20 Provincial Drone Export Flows to Asia-Pacific
Figure 4.14	China's Top 20 Provincial Drone Import Flows from Asia-Pacific
Figure 4.15	China's Top 20 Provincial 3D Printer Export Flows to Asia-Pacific
Figure 4.16	China's Top 20 Provincial 3D Printer Import Flows from Asia-Pacific
Figure 4.17	Parallel Trends Assumption Largely Holds for Export Regressions
Figure 4.18	No Strong Reasons to Reject Parallel Trends Assumption Import Regressions
Table 4.1	Product Coverage Across ITA Phases and Proposed Expansion
Table 4.2	Sectoral Coverage and Key Products Across ITA Phases and Proposed ITA-3 Expansion
Table 4.3	China's Trade Performance of ITA Products, 2019–2024
Table 4.4	Difference-in-Differences Estimates of ITA-2 Liberalisation on Chinese Exports
Table 4.5	Destination-Specific Effects of ITA-2 Liberalisation on Chinese Exports
Table 4.6	Robustness Check: Restricting ITA-2 Treatment to Signatory Destinations
Table 4.7	Difference-in-Differences Estimates of ITA-2 Liberalisation on Chinese Imports
Table 4.8	Origin-Specific Effects of ITA-2 Liberalisation on Chinese Imports

Chapter 1

Introduction

Yi Xin

1.1 China in 2025: The Growth Model in Transition

In 2025, the Chinese economy grew by 5 percentage points, exactly meeting the official growth target despite the Liberation Day tariffs. Yet the significance of this performance lies less in the headline number. A new growth pattern has clearly emerged and supported this performance in 2025: consumption and net exports contributed 2.6 and 1.6 percentage points respectively, both higher than 2024 levels, while investment declined to 0.8 from 1.3 percentage points.

This chapter argues that the 2025 snapshot reflects an emerging configuration of China's economy with several distinctive features. **First**, growth is becoming more export-led, even if consumption retains some importance. **Second**, at the same time, China is undergoing a rapid expansion of its skilled labour force, with the college-educated population projected to more than triple between 2010 and 2030. This skills surge is accelerating the shift towards advanced manufacturing exports and, in turn, reshaping China's comparative advantage. **Third**, this transition also creates an absorption challenge: if skilled labour expands faster than domestic demand can productively absorb it, policy pressure will mount to scale advanced manufacturing exports in order to preserve domestic stability. As reliance on such exports grows, trade frictions are also likely to intensify, raising the strategic importance of rules-based trade agreements in stabilising external demand. **Last**, these adjustments will not be spatially uniform. Instead, they are likely to be mediated through uneven sub-national patterns, with the Greater Bay Area in particular emerging as a dynamic hub of trade and growth, especially in relation to ASEAN.

The following sections unpack these arguments in detail using the latest national and sub-national statistics that became available in 2025 and early 2026.

1.2 The Skills Surge and the Export Imperative

Export-led Model. The first step in assessing this argument is to examine how China's growth composition has evolved. Table 1.1 highlights a clear shift in China's growth com-

position over time. Prior to COVID, consumption was the dominant driver, contributing around 4–5 percentage points to GDP growth, while investment remained stable at about 2 points and net exports played a secondary and often volatile role. This pattern was first disrupted by the 2018 trade war and then more severely by the pandemic and the 2022 dynamic zero lockdowns.

Since then, net exports have re-emerged as a more consistent contributor, adding around 1.5 to 1.6 percentage points in recent years, while consumption has only partially recovered to the 2.2 to 2.6 range. Investment, by contrast, has continued to weaken and fell below one percentage point in 2025.

Table 1.1: China's Growth Composition and Path to 2035 Doubling Target

Year	Post-COVID			COVID			Pre-COVID		
	2025	2024	2023	2022	2021	2020	2019	2018	2017
Consumption	2.6	2.2	4.3	1.0	5.3	-0.5	3.5	5.0	4.1
Investment	0.8	1.3	1.5	1.5	1.1	2.2	1.9	2.1	2.2
Net Exports	1.6	1.5	-0.6	0.5	1.7	0.7	0.7	-0.6	0.6
GDP Growth Rate	5.0	5.0	5.2	3.0	8.1	2.3	6.1	6.6	6.9
Cumulative Growth (2020 = 100)	129	123	117	111	108	100			
Growth Path to Doubling in 2035	125	120	115	110	105	100			

Note: ACI calculations based on data from the National Bureau of Statistics of China. Cumulative growth is computed using compound annual growth rates.

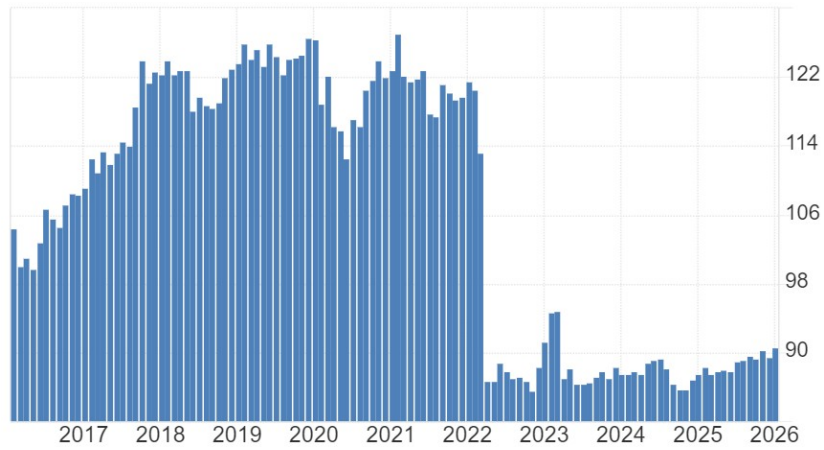
This does not mean that China has fallen off its long-term growth track. On the contrary, cumulative growth reached 29 per cent in 2025 relative to 2020, slightly above the 25 per cent needed to remain on course to double the economy by 2035. While many pundits view the 2026 growth target of 4.5% to 5% as a downgrade of China's growth prospects, our calculations show that the band remains exactly above the annual composite growth rate of 4.48% required over the next decade to reach the 2035 doubling target, which gives China developed country status. The headline trajectory therefore remains intact (Ng, 2026; Song, 2026; South China Morning Post, 2026).

What has changed is the underlying balance of demand (Magnus, 2026). As shown in Figure 1.1, consumer confidence has not returned to its pre-pandemic range and has instead stabilised at a much lower level since 2022. The earlier period of strong and steady confidence, which supported consumption-led growth, has given way to a more cautious household outlook.

At the same time, inward FDI dynamics show signs of gradual recovery following a sharp contraction. Figure 1.2 indicates that after turning negative in 2023 and reaching a trough in 2024, inward FDI has begun to stabilise and improve through 2025–2026, although it remains below earlier levels. This suggests that while external investor sentiment has weakened, the pace of deterioration has slowed and early signs of recovery are emerging.

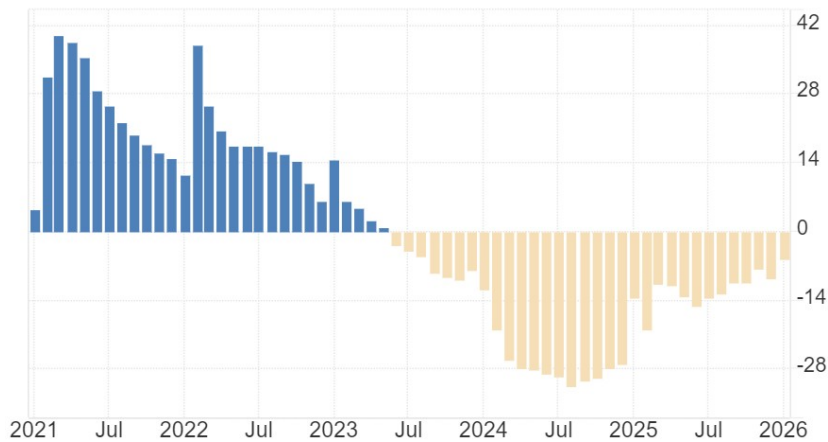
Collectively, these trends point to a more constrained but stabilising domestic environment (Bloomberg News, 2026a; Green and Parker, 2026). With subdued consumption confidence, struggling domestic investment, and inward FDI only gradually recovering, the burden of sustaining growth shifts more decisively toward external demand and productivity gains (Arcesati, 2026; Kennedy, 2026; McCarthy, 2026).

Figure 1.1: Consumer Confidence Index



Source: National Bureau of Statistics of China.

Figure 1.2: Inward Foreign Direct Investment Growth (%)



Source: Ministry of Commerce, China.

Skills Surge and Tech Exports. This shift in the growth model becomes even more significant when viewed alongside a parallel development: the rapid expansion of the skilled labour force, which is reshaping the underlying drivers of growth.

Table 1.2: New University Graduates and Labour Force Trends (2010=100)

	2010	2012	2014	2016	2018	2020	2022	2024
New University Graduates	100	108	115	121	130	139	171	187
Labour Force Size	100	101	101	101	100	99	100	100

Source: ACI calculations based on data from the National Bureau of Statistics of China

Table 1.3: Total College-educated Population vs Total Population

Year	College-educated Population	Population Size
2010	119.6 million	1,340 million
2020	218.3 million	1,412 million
2030*	365.6 million	1,390 million

Source: ACI calculations based on data from the National Bureau of Statistics of China

Table 1.2 and 1.3 point to a structural divergence: new university graduates rose by 87% from 2010 to 2024, while the total labour force remained broadly flat. At the same time, the college-educated population increased from 119.6 million in 2010 to 218.3 million in 2020, and is projected to exceed 365 million by 2030—more than tripling over two decades—despite overall population stagnation.

The implication is that China's labour endowment is no longer contributing to economic growth through factor accumulation in labour quantity; in fact, this channel has plateaued and the labour quantity has stopped growing. Instead, it is now driven by a rapid upgrading in quality.

This matters because it strengthens China's comparative advantage in skill-intensive production. As the supply of skilled labour expands, its relative scarcity declines, lowering its relative cost vis-à-vis unskilled labour. This shifts firms' incentives: advanced manufacturing and technology-intensive activities become more attractive relative to traditional labour-intensive production. Export upgrading, in other words, is not simply the outcome of industrial policy or firm strategy; it is increasingly rooted in a deeper structural rebalancing of relative factor costs and skilled endowments.

Absorption Challenge. Yet this same development also creates a difficult adjustment problem. Once an economy has accumulated a large stock of skilled labour, it cannot easily revert to less skill-intensive forms of production without generating inefficiencies. The production structure becomes anchored in higher-value sectors.

This creates a clear absorption challenge. The scale and speed of the skills surge will generate enormous labour market frictions, if domestic demand, especially in high-productivity services, does not expand quickly enough to absorb this growing pool of workers, then pressure will inevitably build to expand advanced manufacturing exports at a pace that matches skills supply.

Otherwise, the result could be underemployment, “involution”, underutilisation of human capital, and a drag on consumption itself. At the same time, the resulting excess supply of skilled labour would further depress its relative cost, amplifying China’s competitiveness in advanced manufacturing exports. From an external perspective, this dynamic may well be characterised by pundits as “excess capacity” (Kennedy and Rozelle, 2025).

1.3 Trade Reallocation

This makes the trade question central. If net exports are becoming more important and if advanced manufacturing is increasingly needed to absorb China’s skills surge, then the next issue is where the external demand is coming from.

Table 1.4 shows a clear reconfiguration of China’s trade dynamics in 2025. First, the Liberation Day tariffs produced a sharp contraction in China–US trade, with exports to the United States falling by 727 billion RMB (–19%) and imports falling by 164 billion RMB (–14%). This implied a decline in net exports to the US of 563 billion RMB, which should in principle have dragged on growth.

Yet overall net exports continued to expand despite this shock. The reason is that demand was redirected elsewhere, above all towards ASEAN and the EU. Exports to ASEAN rose by 586 billion RMB (+14%), while imports from ASEAN shifted from a positive increase of 85 billion in 2024 to a contraction of 30 billion RMB in 2025. Exports to the EU also accelerated while imports remained flat. This suggests not merely resilience, but a substantive reallocation of external demand.

Third, the data points to negative spillovers to ASEAN from the Liberation Day tariffs. Import growth from ASEAN fell from +85 billion RMB to –30 billion RMB, while imports from other major origins remained positive. This suggests collateral damage to regional supply chains, as ASEAN’s exports to China are heavily concentrated in intermediate goods. Similar patterns have also been observed during the US-China trade war in 2018.

Fourth, the data suggests that China’s net export growth reflects genuine market re-orientation rather than simple transshipment through ASEAN. Exports to ASEAN continued to rise strongly, while imports from ASEAN declined from +85 billion RMB to –30 billion RMB. If trade were primarily being rerouted through ASEAN for onward shipment to the US, intermediate imports from ASEAN would be expected to increase, not contract. The observed pattern instead points to final demand being redirected toward ASEAN and other markets, indicating a substantive shift in China’s external demand structure and a reconfiguration of supply chains.

Table 1.4: ASEAN as the Primary Driver of China's Net Export Growth

Trade Partners	Growth of Exports to Major Destinations				Growth of Imports from Major Origins			
	2023–2024		2024–2025		2023–2024		2024–2025	
	Growth Value (Billion RMB)	Growth Rate	Growth Value (Billion RMB)	Growth Rate	Growth Value (Billion RMB)	Growth Rate	Growth Value (Billion RMB)	Growth Rate
ASEAN	492	13%	586	14%	85	3%	-30	-1%
EU	153	4%	332	9%	-67	-3%	2	0%
USA	214	6%	-727	-19%	11	1%	-164	-14%
HK SAR	139	7%	328	16%	36	38%	95	72%
Taiwan	53	11%	63	12%	147	10%	101	7%
Korea	-5	0%	-10	-1%	155	14%	45	3%
Japan	-26	-2%	45	4%	-19	-2%	67	6%

Source: ACI calculations based on data from the National Bureau of Statistics of China

Trade reallocation alone is not sufficient. The composition of exports determines whether this shift can sustain growth. Given the expansion of the skilled labour force, the key issue is whether export growth is concentrated in skill-intensive sectors capable of absorbing this supply. The next table examines the structure of exports to assess whether this transition is already evident in the data.

Table 1.5 shows a clear shift in the composition of China's exports from consumer goods to advanced manufacturing between 2019 and 2025. First, smartphones remain the largest export category, but their value has largely plateaued and slightly declined, indicating maturity rather than expansion. This suggests that while electronics remains central, growth is no longer driven by traditional flagship categories.

Second, there is a rapid ascent of advanced manufacturing sectors up the export ranking ladder. Integrated circuits (HS8542) have surged to the second position, while cars (HS8703), lithium-ion batteries (HS8507), display modules (HS8524), and electrical transformers (HS8504) have moved prominently into the top ranks. These categories reflect a shift toward higher value-added manufacturing products such as semiconductors, flat panels, and automotives, consistent with rising skill intensity and industrial upgrading.

This stands in contrast to earlier phases of export growth: a decade ago, reports noted that China captured only around US\$10 of value added from an iPhone assembled domestically, highlighting the limited domestic value capture in mature electronics. The plateauing of smartphone exports alongside the rise of these higher value-added sectors suggests a move away from assembly-based production toward greater value capture within the production chain.

This shift is also reflected in the declining relevance of traditional consumer goods. Categories such as furniture, toys, plastics, apparel, and footwear have either fallen in rank or become less dominant in overall export value. This indicates a structural move

away from labour-intensive exports toward more complex, technology-intensive production.

Table 1.5: The Shift to Advanced Manufacturing: China's Top Exports in Billion RMB

2025			2019		
HS4	Products	Export	HS4	Products	Export
8517	Smartphones, telecom equipment, routers	1,544	8517	Smartphones, telecom equipment, routers	1,548
8542	Integrated circuits	1,448	8471	Computer hardware	1,024
8471	Computer hardware	1,078	8542	Integrated circuits	704
9804	De Minimis shipment	811	2710	Petroleum oils & fuels	265
8703	Cars (33% EV; 28% hybrid; 37% petrol)	789	8541	Solar panels and IC components (50% solar)	238
8507	Lithium-ion batteries	587	8708	Motor vehicle parts	232
8708	Motor vehicle parts	422	9405	Lamps and lighting	227
8504	Electrical transformers	376	8473	Computers parts	223
8524	Flat panel display modules	347	9503	Toys	215
8541	Solar panels and IC components (50% solar)	340	8528	Televisions and monitors	215
8901	Ships and tankers	338	9403	Furniture	191
8473	Computer parts	305	8504	Electrical transformers	191
8544	Electrical wires and cables	274	4202	Bags, suitcases, luggage	188
2710	Petroleum oils & fuels	274	9401	Seats and chairs	182
9405	Lamps and lighting	264	9013	Lasers and optical devices	164
9403	Furniture	251	8544	Electrical wires and cables	154
9503	Toys	249	8516	Electric appliances	151
8528	Televisions and monitors	233	3926	Plastic consumer products	147
3926	Plastic consumer products	229	6204	Women's clothing	146
8516	Electric appliances	215	6402	Footwear	142

Source: ACI calculations based on data from the General Administration of Customs of the PRC

Last, Table 1.5 shows the emergence of de minimis shipments (HS9804) as a top export category, signalling a new mode of trade. This could either reflect the rise of cross-border e-commerce or greater fragmentation of trade flows.

Across the board, the data points to a structural shift in China's export model from

scale-driven, labour-intensive production toward higher value-added, skill-intensive manufacturing with greater domestic value capture. Mature categories such as smartphones have plateaued, while sectors aligned with technological capability—semiconductors, automotive systems, and advanced components—are rising rapidly in prominence. This reflects not only upgrading, but also a repositioning of China's industrial base toward areas where talent capability, not low-cost labour, determines competitiveness.

1.4 Implications for Trade Policy

The emerging configuration carries clear implications for China's trade strategy. As growth becomes more dependent on advanced manufacturing exports, external demand is no longer a passive outcome but a binding constraint on domestic stability. The scale of the skills surge and the structural anchoring of production in higher value-added sectors means that China must secure sustained market access for increasingly sophisticated goods, often in sectors that are already politically sensitive in major economies.

First, trade frictions are likely to intensify rather than recede (Bloomberg News, 2026b; Hu, 2026; Portén, 2026; Sharma, 2026). The rise of semiconductors, automotive products, and advanced components places China in greater direct competition with incumbent industrial economies. Beyond the sectors already evident in the data, the ongoing skills surge is likely to extend China's comparative advantage into other high-technology domains. As capabilities deepen, these sectors could follow a trajectory similar to electric vehicles, moving rapidly from domestic scale to global competitiveness. As a result, they may emerge as additional focal points of trade frictions.

Unlike labour-intensive goods, these sectors are closely tied to national security, industrial policy, and technological leadership. As a result, market access will increasingly be shaped by regulatory barriers, standards, and geopolitical considerations rather than tariffs alone.

Second, this raises the strategic importance of rules-based trade frameworks for China. Agreements such as ACFTA, RCEP, or even WTO plurilaterals such as the ITA and JSI on e-commerce provide not only tariff reductions but, more importantly, institutional predictability, rules of origin cumulation, and a platform for rules-based cooperation. In a context where unilateral measures and fragmentation are rising, such frameworks help stabilise external demand by embedding China's exports within regional production networks that are harder to unwind.

Third, ASEAN's role becomes structurally more significant. The data already shows that ASEAN is absorbing a significant share of China's exports, with China running a widening trade surplus vis-a-vis ASEAN. At the same time, the durability of this relationship will depend not only on economic complementarities, but also on maintaining a stable and mutually beneficial framework for cooperation. Continued efforts to expand market access, enhance connectivity, and develop practical, rules-based arrangements can help anchor this relationship over the long term. In this context, steady and predictable engagement will be as important as scale in supporting deeper regional integra-

tion.

Finally, the policy challenge is to align trade strategy with the evolving composition of exports. Traditional approaches focused on volume expansion are no longer sufficient. Instead, there is a need to secure market access in sectors where entry barriers are higher, standards are evolving, and competition is strategic. This requires a more proactive approach to trade negotiations, standard-setting, and economic diplomacy, where the objective is to ensure that China's emerging industrial strengths can be sustained in an increasingly contested global environment.

Table 1.6: Sub-national Trade by Major Partner

<i>China's Exports to Major Trade Partners in 2024 (Billion RMB)</i>						
	China	Guangdong	Jiangsu	Zhejiang	Shanghai	Key Province %
ASEAN	4,174	835	582	507	255	52%
EU	3,675	833	572	669	300	65%
USA	3,734	949	590	632	277	66%
HK SAR	2,072	1,089	181	60	171	72%
Taiwan	535	112	108	42	74	63%
Korea	1,042	121	246	99	80	52%
Japan	1,082	196	203	107	124	58%
Latin	1,971	412	275	433	122	63%
Africa	1,273	213	147	316	56	58%

<i>China's Imports from Major Trade Partners in 2024 (Billion RMB)</i>						
	China	Guangdong	Jiangsu	Zhejiang	Shanghai	Key Province %
ASEAN	2,816	615	324	239	328	53%
EU	1,916	204	209	109	504	54%
USA	1,164	128	115	110	201	48%
HK SAR	132	50	1	3	18	55%
Taiwan	1,550	644	279	51	185	75%
Korea	1,293	289	327	62	135	63%
Japan	1,112	245	181	78	249	68%
Latin	1,717	137	115	137	169	33%
Africa	831	59	46	89	62	31%

Source: ACI calculations based on data from various statistical yearbooks.

1.5 Sub-national Adjustment: Trade, Skills, Newborns

These national adjustments are ultimately carried by sub-national economies, which is why the provincial pattern matters. Table 1.6 establishes the structural sub-national baseline for China's external trade: diversified at the national level, but concentrated and dif-

ferentiated across a small number of leading provinces.

This duality matters. It suggests that the adjustment in China's growth model—toward advanced manufacturing and external demand—will not be uniform, but will be mediated through distinct sub-national roles and capacities. To understand how this transition is taking shape, this section provides a sub-national snapshot, examining how trade patterns interact with the distribution of skills and demographic pressures across provinces.

Trade. At the sub-national level, Table 1.6 shows that trade is highly concentrated in the Greater Bay Area (GBA; Guangdong) and the Yangtze River Delta (YRD; Jiangsu, Zhejiang, Shanghai).

Guangdong consistently dominates exports across major markets such as ASEAN, US, and the EU. Importantly, Guangdong's largest export is to Hong Kong which suggests Hong Kong's role as a transshipment gateway for Guangdong. The YRD provinces such as Jiangsu and Zhejiang also play a notable role trading with Korea, Japan, and other emerging markets such as Latin America and Africa. Shanghai stands out more prominently on the import side, particularly with the EU, Japan, and the US, consistent with its position as a major entry point for high-value goods.

This pattern indicates that while China's national trade is diversified, its execution is geographically concentrated and functionally differentiated across leading provinces.

In addition, ASEAN stands out for its relatively low concentration in GBA and YRD, compared to other partners. The key province share for ASEAN is around 52–53 percent, noticeably below that of the US, EU, Hong Kong SAR, and Taiwan, where shares typically exceed 60 percent. This suggests that trade with ASEAN is more geographically dispersed across China, rather than tightly anchored in a few coastal hubs. In contrast to advanced markets, where trade is dominated by leading provinces, ASEAN-linked trade appears to engage a broader set of sub-national regions.

Table 1.7: China-ASEAN Trade and Guangdong's ASEAN-6 Linkages

	China's Trade with ASEAN (2024, Billion RMB)			Guangdong's Trade with ASEAN-6 (2024, Billion RMB)	
	Exports	Imports		Exports	Imports
China	4,174	2,816	Indonesia	112	60
Guangdong	835	615	Malaysia	154	156
Jiangsu	582	324	Philippines	84	57
Zhejiang	507	239	Singapore	103	50
Shanghai	255	328	Thailand	118	107
Fujian	283	164	Vietnam	221	180
Shandong	352	338			
Guangxi	306	92			
Hainan	36	22			

Source: ACI calculations based on data from various statistical yearbooks.

Table 1.7 gives a further breakdown of China's trade with ASEAN, by including ad-

ditional coastal provinces such as Shandong, Fujian, Guangxi, and Hainan. This allows for a more complete view of how ASEAN trade extends beyond the core GBA-YRD manufacturing hubs and into secondary coastal regions.

Among these, Shandong emerges as a significant secondary trading node with ASEAN, ranking fourth in exports and second in imports among Chinese provinces. Fujian also plays a notable role, with exports of RMB 283 billion against RMB 164 billion in imports.

Guangxi stands out in China's sub-national trade strategy for its role in the New International Land–Sea Trade Corridor, serving as a key gateway to ASEAN. This is reflected in its position as the fifth-largest exporting province to ASEAN. Hainan's ASEAN trade remains limited, consistent with the fact that the Free Trade Port (FTP) will only become operational in December 2025. It remains to be seen whether the FTP will materially expand Hainan's role in ASEAN trade.

The Guangdong–ASEAN-6 breakdown shows a clear variation in trade volumes across partner countries. Trade with Vietnam is the largest, with exports of RMB 221 billion and imports of RMB 180 billion. Malaysia also records substantial trade, with exports of RMB 154 billion and imports of RMB 156 billion. A second tier of partners includes Thailand, Indonesia, and Singapore, with broadly comparable trade volumes, while the Philippines records smaller volumes, at RMB 84 billion in exports and RMB 57 billion in imports.

Skills. Table 1.8 shows the distribution of China's skilled labour across coastal provinces based on the 2020 Population Census. Guangdong leads with 20 million skilled workers, followed by Jiangsu (16 million) and Zhejiang (11 million), while Shanghai stands out in intensity, with 34% of its population classified as skilled.

Table 1.8: Population, Skilled Labour, and Skill Intensity by Coastal Province (2020)

	Population (Million)	Skilled Population (Million)	Skill Intensity
China	1,412	218	15%
Guangdong	126	20	16%
Jiangsu	85	16	19%
Zhejiang	65	11	17%
Shanghai	25	8	34%
Fujian	42	6	14%
Shandong	102	15	14%
Guangxi	50	5	11%
Hainan	10	1	14%

Source: ACI calculations based on data from the 2020 Population Census

Beyond this core, provinces such as Guangxi and Hainan remain thin in both scale and intensity. Even within the coastal belt, a clear structure emerges: scale in Guangdong and Jiangsu, intensity in Shanghai, and limited spillover to peripheral regions.

This pattern points to a differentiation of roles among leading provinces. Guangdong and Jiangsu anchor the system through scale, supporting broad-based manufacturing capacity, while Shanghai concentrates on higher skill intensity, aligned with high-end services and frontier segments of advanced manufacturing.

Newborns. Table 1.9 highlights a sharp divergence in demographic trajectories across China's coastal provinces, with implications for future labour supply and workforce composition.

Table 1.9: Guangdong is Leading in Newborns Demographics

	Newborns (1,000)			Provincial Share	
	2005	2024	Growth	2005	2024
Guangdong	1,094	1,130	<u>+3%</u>	<u>7%</u>	<u>12%</u>
Jiangsu	799	426	-47%	5%	4%
Zhejiang	594	410	-31%	4%	4%
Shanghai	141	118	-16%	1%	1%
Fujian	450	291	-35%	3%	3%
Shandong	1,258	649	-48%	8%	7%
Guangxi	732	420	-43%	5%	4%
Hainan	133	98	-26%	1%	1%
China	15,740	9,543	-39%		

Source: ACI calculations based on data from the National Bureau of Statistics of China

At the national level, births declined by 39% between 2005 and 2024, from 15.7 million to 9.5 million. Most coastal provinces saw significant contractions. Jiangsu and Shandong saw a sharp decline of nearly 50%, Zhejiang a slightly milder 31%, and Shanghai -16%. Guangdong stood out as the exception: births increased slightly from 1.09 million to 1.13 million (+3%), raising its national share from 7% to 12%.

This divergence feeds directly into workforce aging. Provinces with falling births are likely to see faster aging of their labour force. In contrast, Guangdong combines both current scale (20 million skilled workers, the largest in China) and continued demographic inflow.

The implication is a difference in ecosystem capacity. Guangdong's larger and younger pipeline supports a more dynamic labour structure at scale. By comparison, Shanghai, while highly skilled (34% skill intensity), has only 118,000 births in 2024 and a flat 1% national share, implying a smaller and aging inflow of future workers.

By contrast, provinces such as Shanghai will operate with a more aging skilled workforce. High skill intensity can be maintained, but without demographic renewal, the system becomes more specialised and less expansive. The implication is straightforward. Guangdong's advantage lies not only in current scale, but in its capacity to renew that scale. In a contracting and aging national system, this makes it the most viable base for sustaining a large, adaptive economic ecosystem.

1.6 Synthesis: An Emerging Growth Configuration

Viewed together, these patterns suggest that China's 2025 growth model is not best understood as a temporary adjustment to external shocks. It is better seen as the early expression of a deeper structural reconfiguration. Growth is becoming more externally anchored. The economy's factor endowment is shifting decisively toward skilled labour. Export composition is moving into advanced manufacturing. Trade policy is becoming more central because market access now bears more directly on domestic absorption and stability. And these adjustments are being carried unevenly across provinces, with some regions far better placed than others to adapt. The significance of this emerging configuration lies precisely in this interaction of macro growth, labour force transformation, trade reallocation, and sub-national differentiation. It is this interaction, rather than any single indicator in isolation, that will shape China's next phase of development.

1.7 Motivation and Roadmap of the Book

This final section discusses the motivation of this project and delineates the roadmap of the book.

The regional disparity in China is often considered a natural consequence of the varying population distribution, resource allocation and social conditions across the country. Any policy intervention tackling the uneven economic development across China requires mapping out each region's strengths and weaknesses. However, China's high GDP growth since the late 1970s has often obscured the issue of large regional disparities. In the spirit of highlighting China's sub-national disparities and facilitating sustainable and inclusive growth, ACI has developed a comprehensive methodology and framework for assessing competitiveness at the sub-national level. This methodology is employed not only in this book but also in ACI's prior publications on Greater China, Indonesia, India, and ASEAN. Our work and publications contribute to the literature on regional economic development by concentrating on competitiveness analysis and rankings at the sub-national level, moving beyond the traditional focus on national-level analysis.

Since the release of ACI's inaugural volume on the Greater China economies, the comprehensive competitiveness index has been used to rank the 34 Greater China economies according to various dimensions. ACI aims to provide an annual update, and this updated book includes data from 2000 to 2024, incorporating the latest available information at the time of data collection in 2025.

This book comprises four chapters. Chapter 1 outlines macroeconomic trends and policy developments, highlighting the shift toward export-led growth, the rising role of ASEAN, the central role of advanced manufacturing, and the increasing importance of rules-based frameworks in stabilising China's advanced manufacturing trade. Chapter 2 presents the methodology and provincial competitiveness rankings, alongside simulation analysis to identify areas of convergence. Chapter 3 examines regional competitiveness patterns and the persistence of spatial disparities, and further illustrates these

dynamics through case studies of electric vehicle and semiconductor supply chains in the Yangtze River Delta and Greater Bay Area. Chapter 4 analyses the policy implications of this externally anchored growth model, focusing on the role of rules-based trade frameworks. It provides evidence that the expansion of the WTO Information Technology Agreement helped cushion China's high-tech exports in 2020–2024, while stimulating imports and moderating trade imbalances. In this context, rules-based arrangements function not only as market access tools, but as stabilising mechanisms under external pressure.

Collectively, the volume seeks to provide a structured assessment of how China's sub-national economies are positioned within an evolving growth model, and how domestic competitiveness and external frameworks interact in shaping the country's development trajectory.

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