

**A STUDY ON THE DYNAMICS OF STRUCTURAL
TRANSFORMATION, INTERNATIONAL
TRADE AND BUSINESS CYCLE
SYNCHRONISATION**

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**DEPARTMENT OF MANAGEMENT STUDIES
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**A STUDY ON THE DYNAMICS OF STRUCTURAL
TRANSFORMATION, INTERNATIONAL
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SYNCHRONISATION**

by

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Department of Management Studies

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Certificate

This is to certify that the thesis titled “A study on the dynamics of structural transformation, international trade and business cycle synchronisation”, being submitted by Ms. Aakanksha Shrawan to the Indian Institute of Technology Delhi for the award of the degree of Doctor of Philosophy is a record of bonafide research work carried out by her. She has worked under my guidance and supervision and has fulfilled all the requirements for the submission of the thesis, which has attained the standard required for a Ph.D. degree of this institute. The results presented in this thesis have not been submitted in part or full to any other university or institution for any degree or diploma.

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Aakanksha Shrawan

Abstract

Structural transformation is one of the key aspects of successful economic growth of any country and has recently regained considerable attention, especially in the context of developing countries. Additionally, this continuous change in the economic structure of developing countries is expected to alter their business cycle synchronisations with other developing as well as advanced countries. This, in turn, might have implications for macroeconomic policies, such as the desirability to coordinate fiscal or monetary policies between countries. A look at the historical patterns of economic growth of most now-developed countries reveals that successful industrialisation is a critical rung in the development process. However, several developing countries today, are experiencing a *non-standard* pattern of structural transformation where the share of the service sector is much higher than that of the manufacturing sector. This merits the question of whether this pattern is sustainable and whether the growing share of the service sector would lead them to achieve long-term sustainable growth. In this respect, the Thesis attempts to explore one of the inevitable and organic processes of economic development, i.e., structural transformation or, *in other words*, the shift or transfer of labour and other resources from the *low-productive* agriculture sector to the *high-productivity* manufacturing and then to services over the course of the growth process. Moreover, this continuous change in the economic structure of developing countries is expected to change synchronisations of their business cycles with other developing as well as advanced countries. As developing economies specialise in the provision of services, it is only reasonable to expect that changes in their sectoral composition may alter their synchronisation of business cycles with countries that experienced different dynamics of structural change. The findings indicate that an *increase* in the service sector's share has a negative impact on economic growth in the short-run.

However, results show that an *increase* in the service sector's share positively contributes to long-term economic growth. Similarly, the relationship between this *non-standard* pattern of structural transformation in developing countries and their degree of business cycle synchronisation with other countries is also found to be non-linear once we allow for evolutionary dynamics in the structural transformation process. Also, the Thesis delves into intra-industry trade in technology-intensive commodities between countries and its role in driving business cycle synchronisation between them. Using a panel threshold regression model, our estimates reveal that intra-industry trade in technology leads to a convergence in the business cycle of India with only those trading partners whose GDP per capita is less than a certain threshold. Our results provide strong evidence of a *threshold effect* in the association between intra-industry trade in technology and business cycle of India with its trade partners.

सार

संरचनात्मक परिवर्तन किसी भी देश के सफल आर्थिक विकास के प्रमुख पहलुओं में से एक है और इसने हाल ही में विशेष रूप से विकासशील देशों के संदर्भ में काफी ध्यान आकर्षित किया है। इसके अतिरिक्त, विकासशील देशों की आर्थिक संरचना में इस निरंतर परिवर्तन से अन्य विकासशील और उन्नत देशों के साथ उनके व्यापार चक्र के तालमेल में बदलाव की उम्मीद है। यह, बदले में, व्यापक आर्थिक नीतियों के लिए निहितार्थ हो सकता है, जैसे कि देशों के बीच राजकोषीय या मौद्रिक नीतियों के समन्वय की वांछनीयता। अधिकांश विकसित देशों के आर्थिक विकास के ऐतिहासिक पैटर्न पर एक नज़र डालने से पता चलता है कि सफल औद्योगीकरण विकास प्रक्रिया में एक महत्वपूर्ण पायदान है। हालाँकि, विकासशील देश आज संरचनात्मक परिवर्तन के एक *गैर-मानक* पैटर्न का अनुभव कर रहे हैं जहाँ सेवा क्षेत्र का हिस्सा विनिर्माण क्षेत्र की तुलना में बहुत अधिक है। यह इस सवाल का पात्र है कि क्या यह पैटर्न टिकाऊ है और क्या सेवा क्षेत्र की बढ़ती हिस्सेदारी उन्हें दीर्घकालिक सतत विकास हासिल करने के लिए प्रेरित करेगी। इस संबंध में, थीसिस आर्थिक विकास की अपरिहार्य और जैविक प्रक्रियाओं में से एक का पता लगाने का प्रयास करती है, अर्थात्, संरचनात्मक परिवर्तन या, दूसरे शब्दों में श्रम और अन्य संसाधनों का स्थानांतरण या हस्तांतरण। *निम्न-उत्पादक* कृषि क्षेत्र से *उच्च उत्पादकता* निर्माण और फिर विकास प्रक्रिया के दौरान सेवाओं के लिए।

इसके अलावा, विकासशील देशों की आर्थिक संरचना में इस निरंतर परिवर्तन से अन्य विकासशील और उन्नत देशों के साथ उनके व्यापार चक्रों के सिंक्रनाइज़ेशन को बदलने की उम्मीद है। चूंकि विकासशील अर्थव्यवस्थाएं सेवाओं के प्रावधान में विशेषज्ञ हैं, इसलिए यह अपेक्षा करना उचित है कि उनकी क्षेत्रीय संरचना में परिवर्तन उन देशों के साथ व्यापार चक्रों के उनके सिंक्रनाइज़ेशन को बदल सकते हैं जिन्होंने संरचनात्मक परिवर्तन की विभिन्न

गतिशीलता का अनुभव किया है। निष्कर्ष बताते हैं कि /सेवा क्षेत्र की हिस्सेदारी में वृद्धि का अल्पावधि में आर्थिक विकास पर नकारात्मक प्रभाव पड़ता है हालांकि, परिणाम बताते हैं कि सेवा क्षेत्र की हिस्सेदारी में वृद्धि लंबे समय में आर्थिक विकास में सकारात्मक योगदान देती

है इस गैर-मानकविकासशील देशों (अंतर्राष्ट्रीय व्यापार के क्षेत्र सहित) में संरचनात्मक परिवर्तन के संरचनात्मक परिवर्तन प्रक्रिया। इसके अलावा, थीसिस देशों के बीच प्रौद्योगिकी-गहन वस्तुओं में अंतर-उद्योग व्यापार में और उनके बीच व्यापार चक्र सिंक्रनाइज़ेशन की एक नाली के रूप में इसकी भूमिका में तल्लीन है। पैनल थ्रेशोल्ड रिग्रेशन मॉडल का उपयोग करते हुए, हमारे अनुमानों से पता चलता है कि प्रौद्योगिकी में अंतर-उद्योग व्यापार केवल उन व्यापारिक भागीदारों के साथ भारत के व्यापार चक्र में अभिसरण की ओर जाता है जिनकी प्रति व्यक्ति सकल घरेलू उत्पाद सीमा से कम है। हमारे परिणाम अपने व्यापार भागीदारों के साथ भारत के प्रौद्योगिकी और व्यापार चक्र में अंतर-उद्योग व्यापार के बीच सहयोग में एक प्रारंभिक प्रभाव का मजबूत सबूत प्रदान करते हैं।

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Abbreviations

ADF	Augmented Dickey Fuller
ARDL	Auto-Regressive Distributed Lag Model
BIC	Bayesian Information Criterion
CIF	Carriage, Insurance and Freight
CIPS	Cross-sectional Im, Pesaran and Shin
DOTS	Direction of Trade Statistics
ETD	Economic Transformation Database
FOB	Free On Board
GGDU	Groningen Growth and Development Centre
IMF	International Monetary Fund
IPS	Im, Pesaran and Shin
ISIC	International Standard Industrial Classification
IVQR	Instrumental Variable Quantile Regression
LIC	Low-Income Countries
LLC	Levin, Lin and Chu
LM	Lagrange Multiplier
LMIC	Lower-Middle Income Countries
MG	Mean Group
NARDL	Non-Linear Auto-Regressive Distributed Lag Model
OECD	Organisation for Economic Co-operation and Development
PMG	Pooled Mean Group

RSS	Residual Sum of Squares
STRI	Services Trade Restrictions Indices
TAR	Threshold Autoregressive
UN COMTRADE	United Nations Commodity Trade Statistics Database
UNU-WIDER	United Nations University-World Institute for Development Economics Research