INDUSTRY

结构变动与中国工业生产率增长

STRUCTURAL CHANGE AND
THE INDUSTRIAL PRODUCTIVITY GROWTH IN CHINA

韩国珍 著

社会科学文献出版社
SOCIAL SCIENCES ACADEMIC PRESS (CHINA)

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图书在版编目(CIP)数据

结构变动与中国工业生产率增长 / 韩国珍著. -- 北京 : 社会科学文献出版社, 2019.6
ISBN 978-7-5201-4726-2

Ⅰ.①结… Ⅱ.①韩… Ⅲ.①工业生产-劳动生产率-研究-中国 Ⅳ.①F424

中国版本图书馆 CIP 数据核字(2019)第 080458 号

结构变动与中国工业生产率增长

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出　　版 / 社会科学文献出版社 · 经济与管理分社 (010) 59367226
地址：北京市北三环中路甲 29 号院华龙大厦　邮编：100029
网址：www.ssap.com.cn
发　　行 / 市场营销中心 (010) 59367081　59367083
印　　装 / 三河市龙林印务有限公司

规　　格 / 开 本：787mm × 1092mm　1/16
印 张：18.75　字 数：225 千字
版　　次 / 2019 年 6 月第 1 版　2019 年 6 月第 1 次印刷
书　　号 / ISBN 978-7-5201-4726-2
定　　价 / 89.00 元

本书如有印装质量问题，请与读者服务中心 (010-59367028) 联系

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摘　要

生产率是投入转化为产出的绩效指标和衡量经济增长状况的重要工具，与结构变动密切相关。大量经验研究表明，结构变动是生产率增长中重要的组成部分。结构变动是供给因素和需求因素相互作用的结果。但在结构变动影响生产率增长的经验研究中，绝大多数研究都是从要素投入的供给视角展开，从需求视角对此进行研究的较少，而且需求视角的研究仅涉及结构变动对劳动生产率增长的影响。

中国经济在经历了30多年的高速增长之后，进入了中高速增长阶段。工业作为国民经济的重要组成部分，工业增加值的增长速度从2010年的12.6%持续下降到2014年的6.9%。在工业经济增速放缓的形势下，通过转变经济增长方式和调整经济结构打造新的增长动力，成为中国工业经济发展的重要议题。结构调整带来的资源再配置效应是生产率增长的重要来源，优化工业内部结构以提高工业生产率是促进工业增长和挖掘增长潜力的重要途径。

本书以中国工业的结构变动为研究对象，在结构变动与生产率相关理论研究和经验研究的基础上，分别基于供给和需求两个视角，按照“结构变动的特征事实—方法的选择或构建—测度结

果及其分析—影响因素分析—政策建议”的研究路线，系统研究了中国工业在1992～2011年结构变动对劳动生产率、资本生产率和全要素生产率增长的影响，以及工业结构变动的影响因素，力求为现阶段工业结构调整的作用、基础、方向和产业调整政策等提供参考。具体而言，本书的主要研究工作和结论如下。

首先，基于供给视角，使用1994～2011年中国36个工业行业的样本数据，分别采用偏离份额法、赛尔奎因多国模型及其扩展模型，测度分析了结构变动对中国工业单要素生产率和全要素生产率增长的影响，结果表明以下3点。第一，1994～2011年，工业劳动生产率持续增长，行业间的劳动投入结构变动对劳动生产率增长的贡献率为12.23%，主要表现为更多的劳动要素转移到劳动生产率增长较快的行业。从时间趋势来看，劳动要素的结构变动对劳动生产率增长的作用不断提高，劳动要素的配置趋向更加合理。第二，1994～2011年，工业资本生产率增长相对较小，行业间的资本投入结构变动对资本生产率增长的贡献率为29.58%，主要表现为更多的资本转移到基期具有较高资本生产率的行业。从时间趋势来看，资本要素的结构变动对资本生产率增长的作用不稳定，具有波动性。第三，1994～2011年，工业全要素生产率（TFP）持续增长，资本和劳动要素在行业间的结构变动对TFP增长具有显著的正影响。具体而言，基于资源再配置角度的研究表明，结构变动对工业TFP增长的贡献率为23.09%；基于资源错配角度的研究表明，结构变动对工业TFP增长的贡献率为31.42%。分行业来看，资本错配对TFP增长影响较大的行业主要分布在资本相对较缺乏的行业；劳动错配对TFP增长影响较大的行业，既分布在劳动投入不足的行业，也分布在劳动使用过量的行业。从时间趋势来看，资本、劳动要素的配置效应对

TFP 增长的作用呈上升趋势。

其次，基于需求视角，使用中国 1992 年、1997 年、2002 年和 2005 年的可比价投入产出表，采用结构分解方法，测度分析了需求结构变动对工业单要素生产率和 TFP 增长率变化的影响，发现以下 3 点。第一，1992 ~ 2005 年，工业劳动生产率持续增长，劳动投入的节约是劳动生产率增长的主要因素，而最终需求系数和各类最终需求总量的变动对劳动生产率增长具有较小的负影响。从时间趋势上分析，最终需求系数变动的生产率效应呈上升趋势，各类最终需求总量变动的生产率效应具有波动性。第二，1992 ~ 2005 年，工业资本生产率增长较为缓慢，资本投入的节约是资本生产率增长的主要因素；各类最终需求总量的变动对资本生产率增长具有较小的正影响；最终需求系数的变动对资本生产率增长具有较大的负影响。从时间趋势上分析，最终需求系数变动的生产率效应具有波动性，各类最终需求总量变动的生产率效应增强。第三，以 1992 年为基期，1997 ~ 2005 年 TFP 的增长率提高了 46.1%，主要原因是各部门内部的 TFP 增长率提高，而总需求结构变动对 TFP 增长率的提高具有较小的负影响。从时间趋势上分析，各类最终需求总量变动的生产率效应增加，最终需求系数变动的生产率效应不稳定。

最后，本书研究了需求、技术和贸易等因素对中国工业结构变动的影响。其中，使用中国 1993 ~ 2011 年 31 个省份工业结构变动的相关数据，应用分位数回归模型，重点研究了影响工业总量结构变动的因素，结果表明以下 3 点。第一，在工业结构变动中，存在显著的需求效应和技术效应；对于不同水平的工业产值份额和就业份额，需求效应和技术效应总体上存在显著差异；当同时考虑结构变动的需求和技术效应时，需求效应大于技术效

应。第二，在影响工业产值份额的因素中，人均 GDP 对不同水平的工业产值份额均具有显著的正影响；工业劳动生产率的总体影响不显著；进出口总额占 GDP 比重的影响为负。第三，在影响工业就业份额的因素中，人均 GDP 具有显著的正影响；工业劳动生产率对不同水平的工业就业份额均具有显著的负影响；进出口总额占 GDP 比重对不同水平的工业就业份额具有正影响。

Abstract

Productivity is a performance indicator of converting inputs into outputs and an important tool for assessing the state of economic growth. It is closely related to structural change. A large number of empirical studies show that structural change is an important component of productivity growth. And it is the result of the interaction of supply-side and demand-side factors. However, in the empirical studies about structural change, the vast majority of studies have been conducted from the supply side of factor inputs and a small number of studies have been done from the demand side which are only related to structural change effecting labor productivity growth.

The Chinese economy had experienced rapid growth for 30 years and now the gear of growth is shifting from high speed to medium-to-high speed. Industry is an important part of the national economy and the industrial added value growth rate continued to decline from 12.6% in 2010 to 6.9% in 2014. In this situation of industrial economic growth slowdown, it has become an important topic of industrial economic development to create a new growth engine by transforming the pattern of economic growth and economic restructuring. Resource Real-

location effect from restructuring is an important source of productivity growth. So optimizing industrial interior structure is an important way to promote industrial growth and tap the growth potential in order to improve industrial productivity.

In the book, research object is the structural change of Chinese industry. Based on the related theoretical and empirical studies between structural change and productivity, from the supply side and demand side , according to the research design: *the characteristic fact of structural change*, *selecting or constructing methods*, *measuring and analyzing the related results*, *studying factors and policy suggestions*, the book studies the effects of structural change of Chinese industry on the growth of labor productivity, capital productivity and total factor productivity, as well as the factors affecting changes in industrial structure in 1992 – 2011, seeking to provide a useful reference for the role, the basis, the direction and policies of industrial restructure at the present stage. Specifically, the main work and conclusions of this book are as follows.

Firstly, from the supply side, the research uses sample data of 36 industrial sectors from 1994 to 2011 in China, employs the shift share analysis, Syrquin's multi-country method and its extended model respectively, measures and analyses the effect of the structural change on the growth of the partial and total factor productivity. The results show that: ①1994 – 2011, industrial labor productivity continues to grow, the contribution rate of labor input structural change in inter-industry to labor productivity growth is 12.23%, mainly because of more labor forces shifting to the sectors in which labor productivity grows faster than the others. From the time tendency, the effect of the labor struc-

tural change on labor productivity growth improve continuously, and labor allocation tend to be more reasonable. ②1994 – 2011, the growth of industrial capital productivity is relatively small, the contribution rate of capital input structural change in inter-industry to capital productivity growth is 29.58%, mainly because more capital is transferred to the sectors with higher capital productivity in the base period. From the time trend, the contribution of the capital structural change on capital productivity growth is unstable and fluctuating. ③1994 – 2011, the total factor productivity (TFP) continued growth, the structural change of capital and labor in inter-industry has a significant positive impact on the industry TFP growth. Specifically, based on the perspective of resource reallocation the findings show: the contribution rate of the structural change to the industry TFP growth rate is 23.09%; based on resource misallocation the research shows the contribution rate of the structural change to the industry TFP growth rate is 31.42%. In the sector level, the effect of capital misallocation on TFP is larger in the industries whose capital is lack of capital and the labor misallocation on TFP is greater in the industries of relative labor redundance or shortage. From the time trend, the reallocation effect of the capital and labor on TFP growth rises.

Secondly, from the demand side, the research uses the Chinese input-output tables at comparable prices in 1992, 1997, 2002 and 2005, and applies structural decomposition analysis method, as well as measures and analyzes the effect of the demand structural change on the growth of the partial and total factor productivity. The findings show that: ①1992 – 2005, industrial labor productivity rises continuously,

labor-saving is a major factor in labor productivity growth, while changes in final demand coefficient and total final demand on labor productivity growth have less negative effect. The productivity effect of changes in final demand coefficients rises and the productivity effect of changes of total final demand fluctuates by the time trend analysis. ②1992 – 2005, industrial capital productivity growth is relatively slow, capital-saving is a major factor in capital productivity growth, changes in demand for various types of final total with a small positive impact on capital productivity growth and change of final demand coefficient for capital productivity growth has a greater negative impact. From the analysis of time trends, the change of final demand coefficient for capital productivity growth has a fluctuating impact, and the effect of change of all types of total demand on capital productivity growth rises. ③With 1992 as the base year, the industrial TFP growth rates increase by 46.1%, from 1997 to 2005, mainly due to the TFP growth rates of internal sectors increase in industry, but the structural change of total demand for improving TFP growth rate has less negative effect. From the time trend analysis, the productivity effect of changes of all types of total final demand increases, the impact of final demand coefficient change on TFP growth is unstable.

Lastly, the research studies the factors from the demand, technology and trade that influence the industrial structural change in China. Among them, it uses the data about industrial structural change of 31 provinces and autonomous regions in China from 1993 to 2011 and applies the quantile regression model to focus on the factors that influence changes of the industrial aggregate economic structure. The results show

that: ① There exit significant structural demand effects and technical effects in the industrial structural change. Moreover, the structural demand effects and technical effects have the significant differences for the different levels of the proportion of industrial output and employment. When taking into account the demand and technology effect of the structural change, the demand effect arising from income change is greater than the technical effect arising from labor productivity growth. ② Among the factors affecting the share of industrial output, GDP per capita has significant positive impact for the different share of industrial output, industrial labor productivity has not a significant effect on the whole, total export-import volume share of GDP has the negative impact. ③ Among the factors affecting the share of industrial employment, GDP per capita has significant positive impact, industrial labor productivity has a significant negative impact on the different share of industrial employment, total export-import volume share of GDP has a positive impact on the different share of industrial employment.

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