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人民币汇率变动对我国产业升级的影响研究

刘飞宇 著

RENMINBI HUILÜ BIANDONG
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摘要

随着经济全球化的发展，世界各国的产业结构和全球化参与方式都发生了明显的变化。以中国为代表的一大部分发展中国家在经历了发达国家的产业转移后，以传统劳动密集型产业和资源密集型产业为主的传统发展模式仍未得到根本转变，造成三次产业间的结构失衡，传统制造业过于发展，并在垂直专业化分工中容易出现被锁定在全球价值链低端的现象。同时，汇率作为重要的价格信号，影响着一国的资源配置和产业发展进程。随着人民币汇率改革的加速，汇率在我国经济发展中发挥了越来越重要的作用，人民币汇率问题也已备受世界关注。为此，本书以当前实际有效汇率在垂直专业化分工中的形成机制为切入点，在对中国目前的产业发展状况进行分析的基础上，深入探讨人民币汇率变动对国内产业结构调整和全要素生产率的影响，不仅为充分利用人民币汇率变动实现国内产业结构的优化升级和全要素生产率的提升提供支持，而且对我国制定更为合理的汇率政策和产业政策以更好地参与经济全球化进程指明方向，具有十分重要的理论价值和现实意义。

本书遵循规范分析与实证分析、定性研究与定量研究相结合等研究方式，结合国际收支理论、国际投资理论以及汇率理论等理论学说，围绕人民币汇率变动对我国产业升级的影响问题展开研究。全文共分为七个章节，各个章节的主要内容如下：

第一章，绪论，明确研究目的与意义。在对经济全球化趋势下总体产业发展状况进行描述的基础上，本书提出人民币升值的基本事实，简要说明本书的研究目的、研究意义、主要研究方法、创新点以及主要内容的安排框架。

第二章，文献综述，明确本书的研究基础和对已有文献的可能改进之

处。本章首先对本书提出的产业升级进行界定，并主要从两个角度，四个方面对相关文献进行了回顾，主要包括对传统实际有效汇率中所涉及的各项要素进行了简要介绍和回顾；总结了前期学者对人民币实际有效汇率的考察和分析；对汇率变动对产业结构的影响进行了详细的分析；对汇率变动对技术进步的影响也进行了系统论述。最后，本章在总结前期研究成果的基础上，对相关文献进行了评述。

第三章，人民币实际有效汇率的测算，明确垂直专业化下人民币实际有效汇率的测算方法，并得出测算结果。本章在对汇率相关概念进行梳理的基础上，确定使用实际有效汇率对人民币汇率进行应用和分析。接下来，通过对增加值核算方法的有效性和可行性比较研究，本章确定将在世界投入产出表的框架下对基于增加值的人民币实际有效汇率进行测算。

第四章，我国产业发展的演变分析，明确我国产业结构以及参与垂直专业化分工的情况和变化趋势。本章首先从整体和地区层面分析了我国三次产业的结构特征。在我国参与垂直专业化分工的分析中，本章对我国总体层面和分行业层面的增加值、增加值率和分工地位进行了研究。

第五章，人民币汇率变动对我国产业结构升级的影响，明确人民币汇率变动对产业结构合理化和产业结构高级化的作用。本章首先测算了省际产业结构合理化和产业结构高级化的相关指标，并根据推导出的汇率与产业方程以及相应的影响机制，通过回归分析研究人民币汇率变动对于我国产业结构合理化和产业结构高级化的影响。

第六章，人民币汇率变动对全要素生产率的影响，明确人民币汇率变动对行业自身升级的作用。本章首先对全要素生产率与产业升级的关系进行了相关阐述，接下来运用数据包络分析法下的 Malmquist 指数对我国行业层面的全要素生产率进行测算和分析，并在对汇率变动对生产率影响的机制分析的基础上，利用测算得到的基于增加值的人民币分行业实际有效汇率，研究了人民币汇率变动对中国制造业全要素生产率的影响。

第七章，结论及政策建议，明确本书的研究结论和可提供的政策建议。本章首先对基于增加值的人民币有效汇率测算、我国产业发展的演变以及人民币汇率变动对我国产业升级的两种表现形式的影响进行归纳总结。随后，本章根据研究结论探讨了人民币汇率变动应有的政策含义和我国产业升级的战略选择。最后，本章提出了本书研究的不足之处和今后的研究展望。

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根据以上研究，本书主要得到以下结论：

第一，人民币在测算时间段内总体呈现升值的趋势，与传统上根据BIS框架测算的人民币实际有效汇率指数相比，基于增加值的人民币实际有效汇率指数上升幅度更大。分行业的基于增加值的人民币实际有效汇率表明，我国33个行业基于增加值的人民币实际有效汇率在1999—2011年间都出现了升值，但第一产业、第二产业和第三产业中各行业的升值空间有明显的不同。我国传统上可贸易品的汇率升值幅度高于不可贸易品的汇率升值幅度，其中我国工业制成品的汇率升值幅度总体高于初级产品的汇率升值幅度，与货物贸易关系较为密切的服务行业的实际有效汇率升值幅度也高于其余较少参与货物贸易流程的服务行业的实际有效汇率升值幅度。

第二，改革开放后我国产业结构总体上表现出第一产业增加值比重明显下降，第二产业增加值比重基本稳定，而第三产业增加值比重迅速上升的情况。在工业的内部结构中，从2000年开始我国重工业比重较轻工业比重开始出现持续的增加。在区域层面上，我国东部、中部、西部和东北地区的产业结构也具有明显的区域特征。我国在出口国内增加值上升的同时，除个别行业外，我国整体层面和行业层面的出口国内增加值率都出现了不同程度的下降趋势，进而也导致了我国在垂直专业化分工中的地位出现了大幅度的波动。

第三，地区间的产业结构合理化指数差异明显，从变化趋势来看，多数省份的合理化指数呈现下降的趋势。从高级化方面来看，省际产业结构高级化水平仍然相差较大，部分省市的产业结构高级化水平上升较快。无论在总体层面、分地区层面还是分时段层面上，人民币升值都不利于我国产业结构向合理化的方向发展，但对我国的产业结构高级化都产生了显著的正向影响。

第四，人民币升值对我国制造业全要素生产率的提高整体上具有显著的影响，但对我国资本—劳动比率不同的行业的全要素生产率提升产生了差异化的影响。其中，对资本—劳动比率较高的行业而言，由于其资本调整成本较高，人民币升值对其全要素生产率的影响不显著。相比之下，人民币升值对资本—劳动比率较低行业的全要素生产率提高具有一定的推动作用。

因此，本书认为，在汇率政策的制定方面，需要从基于增加值的人民币实际有效汇率本身的构成要素出发，形成与我国产业升级相适应的汇率制度。同时，在配套政策的制定实施方面，需要对汇率在适度升值过程中

产生的负面影响进行最大限度的消除，并制定与我国产业升级相适应的产业政策。

本书尝试从以下三个方面进行创新：

第一，从测算方法来看，在垂直专业化分工下，忽略各国基于生产的增加值进行的贸易对其实际贸易额的影响，将使各贸易伙伴国的权重出现偏差，最终影响到本国实际有效汇率测算的准确性。同时，在垂直专业化中，各国在产品生产的每一个环节都将展开竞争，一国生产的最终产品中包含了诸多国家的物质或服务投入。因此，实际有效汇率也应当反映垂直专业化分工中真正的价值竞争，而不是整个最终产品的竞争。本书通过构建世界投入产出框架下的人民币实际有效汇率核算体系，对人民币的实际有效汇率进行了重新核算，并以此为基础进行产业升级方面的研究，具有一定的创造性。

第二，从研究内容来看，传统上对于产业升级的研究大多是针对产业结构变化的角度，且多以各产业在生产总值中的比重加以衡量。然而，产业结构升级应当包括各产业之间的比例更加协调和增加值较高的环节占据国民经济主导地位两个方面，即产业结构合理化和产业结构高级化，两个指标的刻画将对理解产业结构升级更加完善。同时，应当看到，产业升级在垂直专业化分工日趋加深的背景下，更多地表现为部门生产率的提升。因此，本书对于产业升级的研究，将从产业结构升级和全要素生产率的提升两方面进行刻画，从而更为全面地考察人民币汇率变动对我国产业升级的影响。

第三，从研究方法来看，目前大多数研究主要通过时间序列的 VAR 模型、协整检验、Granger 因果检验和脉冲响应从总体上对汇率变动对产业升级的表现形式之一，产业结构升级的短期动态影响关系和长期均衡关系进行研究，而从更加细化的地区层面对产业结构升级的研究相对较少。同时，少数基于细化层面的研究也主要通过相对简单的面板数据进行实证研究。但在本书的研究过程中发现，地区间的产业结构升级在产业结构合理化方面存在较为明显的空间集聚特征。鉴于此，本书将运用更为科学的空间计量经济学研究方法研究人民币汇率变动对省际产业结构合理化的影响。

关键词：人民币实际有效汇率；增加值；产业升级；世界投入产出表

Abstract

With the development of economic globalization, the industrial structure and the way of globalization in the world have changed obviously. After the industry transfer of developed countries, a large proportion of the developing countries represented by China have no development model change on the traditional labor-intensive industries and resource-intensive industries, which caused traditional manufacturing development excessively and easy to be locked in the lower part of the global value chain in the vertical specialization as well as structural imbalance among the three industries. At the same time, the exchange rate, as an important price signal, is affecting a country's resource allocation and industrial development process. With the acceleration on the reform of the RMB exchange rate, the exchange rate plays a more and more important role in the economic development of our country, and the RMB exchange rate issue also has attracted world attention. Therefore, start from the current real effective exchange rate formation mechanism in the vertical specialization, and based on the analysis of China's current industrial development, this paper discusses the impact of RMB exchange rate changes on domestic industrial structure adjustment and total factor productivity, which not only provide support for the full use of the RMB exchange rate to achieve the optimization of domestic industrial structure and the improvement of TFP, but also have very important theoretical value and practical significance to develop more reasonable exchange rate policy and industrial policy to participate in the process of economic globalization for China.

This paper studies the impact of the RMB exchange rate on the industrial upgrading in China by following the research methods of normative analysis and em-

pirical analysis, qualitative research and quantitative research, and combining the theory of international income and expenditure, international investment and exchange rate. The full text is divided into seven chapters, and the main content of each chapter is as follows:

The chapter one is introduction. Based on the description of the industrial development on the whole under the trend of economic globalization, this paper puts forward the basic fact of RMB appreciation, and briefly explains the framework of main content as well as the purpose of this study, the research significance, main research methods and innovation points.

The chapter two is literature review. This chapter firstly puts forward the definition of industrial upgrading, and then reviews related literatures from four aspects, which mainly include the brief introduction and review of the elements in traditional real effective exchange rate; summaries of the investigation and analysis of the RMB real effective exchange rate by previous scholars; detailed analysis on the impact of exchange rate changes on the industrial structure and systematic description on the impact of exchange rate changes on technological progress. Finally, this chapter does some reviews based on the summary of previous research results.

The chapter three is the measurement of RMB real effective exchange rate. Bassed on the summary of the related concepts of exchange rate, this chapter determines to use the real effective exchange rate for the application and analysis on RMB exchange rate. Next, through the comparative study of the effectiveness and feasibility in value-added accounting methods, this chapter determines that the value-added real effective exchange rate of RMB will be measured in the framework of the world input-output table.

The chapter four is the analysis of the evolution of China's industrial development. Firstly, this chapter analyzes structure characteristics of China's three industries from the overall and regional level. In the analysis of vertical specialization, this chapter studies the value added, the value-added rate and the status of the division of labor from the general and the sub-industry level.

The chapter five is the study on the impact of RMB exchange rate changes on

China's industrial structure upgrading. This chapter firstly calculates the provincial rationalization and advancement of industrial structure indicators. According to the derived equation of exchange rate and industrial and the corresponding influence mechanism, this chapter studies the impact of RMB exchange rate changes on rationalization and advancement of China's industrial structure through regression analysis.

The chapter six is the study on the impact of RMB exchange rate changes on China's total factor productivity. This chapter firstly makes a relative description of the relationship between total factor productivity and industrial upgrading, and then we use the DEA Malmquist index to calculate and analyze the total factor productivity on China's industry level. We study the impact of RMB exchange rate changes on the total factor productivity among Chinese manufacturing industries by the measured RMB value-added real effective exchange rate based on the mechanism analysis of the impact of RMB real effective exchange rate on the productivity.

The chapter seven is conclusion and policy suggestions. This chapter firstly summarizes the measurement of RMB value-added real effective exchange rate, the evolution of industry development in our country and the impact of RMB exchange rate changes on the two manifestations of China's industrial upgrading. Then, according to the research conclusion, this chapter discusses the policy implications of the RMB exchange rate changes and the strategic choice of China's industrial upgrading. Finally, this chapter puts forward the shortcomings of the study and the research prospects in future.

According to the research above, the main conclusions are as follows:

Firstly, there are significant differences for the appreciation space of RMB value-added real effective exchange rate among the primary industry, secondary industry and the tertiary industry. The exchange rate appreciation of China's tradable goods traditionally is higher than that of non-tradable goods. Specifically, the exchange rate appreciation of China's manufactured goods is generally higher than that of the primary products, and the exchange rate appreciation of the service industries which has close relationship with goods is also higher than that of

the other service less involved in the trade process of goods.

Secondly, the proportion of the value added in primary industry decreased significantly, which is basically stable in secondary industry and increased rapidly in tertiary industry after reform and opening-up in our country. As domestic value added increasing in exports, the value-added rate of domestic exports appeares decline in varying degrees in overall level and industry-level except several industries in China, which leads a substantial fluctuation for China's status of vertical specialization.

Thirdly, there are significant differences in the rationalization index of industrial structure among regions. The rationalization index of most provinces shows a downward trend. From the advancement perspective, provincial advancement of industrial structure still has comparatively large difference. In overall level, regional level and the level of period of time, the appreciation of RMB is not conducive to the development in the direction of rationalization of industrial structure, but has a favorable effect on the advancement of industrial structure in our country.

Fourthly, the appreciation of RMB has significant influence on our country's manufacturing total factor productivity on the whole, but also has different influence on the improvement of China's total factor productivity for manufacturings with different capital-labor ratio. Due to the higher adjustment cost of their capital, the appreciation of RMB doesn't have significant impact on the total factor productivity for an industry with higher capital-labor ratio. By contrast, the appreciation of RMB has a certain role in promoting the total factor productivity for industry with lower capital-labor ratio.

Therefore, this paper argues that, in the aspect of formulating exchange rate policy, it is necessary to form the exchange rate system suited to China's industrial upgrading from the elements of value-added real effective exchange rate. In the formulation and implementation of supporting policies, at the same time, it is also necessary to make the maximum elimination in the process of negative impact for exchange rate in the moderate appreciation, and adapt industrial policy suited to China's industrial upgrading.

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This paper tries to innovate from the following three aspects:

Firstly, from the point of measurement, it will make deviation to the weights of trading partners, and ultimately affect the measurement accuracy of the national effective exchange rate when ignoring the effect of real value added to the actual trade volume under vertical specialization. Simultaneously, countries will compete in each link of production, and a country's final product contains a number of materials or service investment from other countries under vertical specialization. Therefore, the real effective exchange rate also should reflect the real value competition, rather than the competition in final product. In this paper, by constructing accounting system of RMB real effective exchange rate under the framework of input and output, the RMB real effective exchange rate is restated. On this basis, research on industrial upgrading has certain creativity.

Secondly, from the point of research content, traditional studies of industrial upgrading are mostly aimed at the angle of change in industrial structure, and measured by the proportion of each industry in GDP. However, industrial structure upgrading should include rationalization of industrial structure and advancement of industrial structure. These two indicators will help to be more perfect to understand the industrial structure upgrading. At the same time, we should see that, industrial upgrading is increasingly performed as productivity improvement under the background of deepening vertical specialization. Therefore, this article will characterize industrial upgrading from two aspects of the industrial structure upgrading and the improvement of total factor productivity. Thus, we can investigate the impact of RMB exchange rate change on the industrial upgrading more comprehensive.

Thirdly, from the point of research methods, most current researches mainly study the short-term effect and long-term equilibrium relationship of exchange rate changes to industrial structure upgrading through the time series of VAR model, cointegration test, Granger causality test and impulse response in general. But there are few researches on industrial structure upgrading from a more detailed regional level. At the same time, a few research based on the detailed level is done through relatively simple panel data. But in the process of research

on this paper, we found that regional industrial structure upgrading in the rationalization of industrial structure has relatively obvious spatial agglomeration. In the view, this article will use more scientific method of spatial econometric to study the influence of RMB exchange rate change on the provincial rationalization of industrial structure.

Keywords: RMB Real Effective Exchange Rate; Value Added; Industrial Upgrading; World Input-Output Tables

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1 绪论

1.1 研究背景

18世纪60年代至19世纪40年代，自英国爆发工业革命开始，人类进入了以机器代替手工劳动的新阶段，世界上开始出现了真正意义的国际分工。此时，国家间的贸易以产业间贸易为主要形式，古典贸易理论提出的比较优势学说为这种贸易方式提供了理论支持。从产业间的分工格局来看，当时的工业化国家已经开始着力资本密集型和技术密集型产业的发展，而且与以中国为代表的大部分劳动密集型国家开始了大量的贸易往来。从19世纪末开始，石油产业在美国迅速崛起。远离美国本土的两次世界大战都为美国石油产业提供了有利的发展契机，大量的石油生产和消费（包括出口）为美国积累起了丰富的原始资本。美国利用积累的原始资本大力发展制造业，实现了产业结构的第一次跃升，逐渐取代英国成为建立和维护二战后世界政治经济秩序的大国。1947年，美国制造业总生产量已占世界的53%，其中汽车、石油和钢铁及基础金属分别占世界总产量的80%、62%和57%。进入20世纪80年代以来，美国主导的信息、通信、生物、新材料和新能源等新兴产业逐渐替代了传统制造业在国内兴起，而这些传统产业已随着跨国公司主导的跨国资本转移到以亚洲国家为代表的发展中国家进行生产，从而实现了美国国内对核心技术的控制和产业发展在结构上的再一次跃升。

随着1947年关贸总协定（GATT）的签订，国家间的商品交换以及包括技术、劳动力和资本在内的生产要素流动日益频繁，企业面临的国际竞争也日趋激烈。尤其是世界贸易组织（WTO）等国际组织及地区间多边组织的成立，对经济一体化的推动作用更加明显。在经济全球化的大背景下，企业为满足利润最大化的经济需求，不得不调整资源配置方式，从降低成本，包括生产成本

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