Labor Income Share

Understanding the Drivers of the Global Decline

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CHAPTER 1

Introduction

The functional distribution of income (factor income shares) has long been a topic of concern for economists. David Ricardo's statement, published back in 1817, serves as a testimony to this fact, "*To determine the laws which regulate [this] distribution is the principal problem in political economy.*" The share of labor income has been seen to be constant. Keynes (1939) described this constancy as "the most surprising, yet best-established fact," whereas Kaldor (1956) advocated the constancy of the labor income share (LIS) as "the stylized fact" of long-term economic growth. Despite its long pedigree, the academic interest in factor income shares has had a rollercoaster ride. As Atkinson (2009) wrote "Since the 1960s, factors shares have been downplayed. The textbooks no longer give them much space." Recent years saw a comeback with a large volume of studies documenting a global decline in the labor income share. Growing concern over this trend has encouraged debate about fair distribution of personal incomes. The topic of income distribution is once again at the center of economic debates, and this book joins this discussion in a timely fashion.

The study of factor income shares plays an important role in understanding the relationship between national income and personal income and their links to overall income inequality. The global share of income going to labor is declining, coupled with the fact that a disproportionate share of this decline is found among low- and middle-skilled workers. The labor income share has been increasing for high-skilled workers and

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declining for middle- and low-skilled workers worldwide. Several factors contribute to this secular trend. Growing skill premium, as an outcome of globalization, and an increasing complementarity between capital and skill through the advancement of technology could explain the polarization of labor income shares across the skill spectrum. If capital can be substituted with unskilled labor more readily than with skilled labor, a drop in the relative price of capital would result in a larger drop in the employment of unskilled workers compared to skilled workers. This could then lead to a decline in the share of income for unskilled labor more so than for skilled labor. Higher exposure to routinization of tasks (i.e., the automation of tasks where labor can be substituted by capital to the highest degree) has also played a key role in the polarization of wages and skill premium along the skill spectrum.

The aim of this book is threefold. First, it provides novel insights on the measurement of the labor income share. Second, it amasses recent developments in the theoretical and empirical research on the labor income share to gain a deeper insight into the drivers of the labor income share. And finally, using novel datasets it provides empirical evidence on the correlates of the labor income share at the firm, sector, and country level. Chapter 2 contains a discussion on the measurement issues and the conceptual problems related to the labor income share. Chapters 3, 4, and 5 describe trends of the labor income share at the country, sector, and firm level, respectively. Chapter 6 relates to theoretical discussions, while Chap. 7 provides empirical evidence on the drivers of the labor income share both at the country and at the sector level. Chapter 8 outlines potential areas of future research and concluding remarks are forwarded in Chap. 9.

This book contributes to the issues related to the measurement of the labor income share. The difficulties associated with the measurement of labor income share increase in the presence of self-employment, which constitutes almost half of the global workforce with their labor income being inaccurately measured. Chapter 2 discusses an extension of the adjustment framework for self-employment suggested by Gollin (2002) to a more disaggregated sector level. Allowing for self-employment rate to vary across sectors, it considers an adjustment factor composed of (1) the earnings ratio of self-employment to wage-employment and (2) the employment ratio of self-employed to wage employees. The agriculture sector shows the least correlation between the adjusted and unadjusted LIS figures suggesting that agriculture sector is a greater source of the self-employment error compared to other sectors.

Secondly, this book amasses cross-country evidence on the evolution of labor income shares at the country, sector, and the firm level. It provides a unique opportunity to compare the labor income share measures at three different levels. At the sector level (following the Groningen 10-sector classification), it puts together a dataset for a sample of 54 countries. At the firm level, I construct a dataset using the World Bank enterprise survey data for 139 countries. And, at the country level, data is compiled from the existing sources for a sample of 98 countries. Evidence at the micro level suggests that while the labor income share has decreased for low-skilled workers, this has been concurrent with an increase for high-skilled workers. Globalization leading to a growing skill premium and an increasing complementarity between capital and skill through the advancement of technology also explains the polarization of labor income shares across the skill spectrum.

Finally, this book provides novel insights into theoretical research on the labor income share. Chapter 6 forwards a theoretical framework based on the Morishima elasticity of substitution to validate the capital accumulation mechanism as a driver of the labor income share. The role of capital accumulation as a driver of declining labor income share requires capital and labor to be substitutes, which appears paradoxical in a world predominantly characterized by complementarity between capital and labor. In a nested-Constant Elasticity of Substitution (CES) framework with capital-skill, the Morishima elasticity of substitution identifies the elasticity parameters at different skill levels, and based on its properties, I derive the condition that allows capital accumulation to coexist with a declining LIS when capital and labor are complements. It refines our understanding of the global decline in LIS by highlighting the significance of the skill composition of the labor market. The relevance of capital-skill complementarity for the labor share of income can also be drawn using a two-stage production structure (Goldin and Katz 1998). In the first stage, skilled workers adopt new technologies and efficiently use capital, thus showing high capital-skill complementarity. In the second stage, unskilled workers continue the mechanical process of machine maintenance indicating a relatively low level of capital-skill complementarity. Such practices are common across both developing and developed countries and provide an important link between capital-skill substitutability and factor income shares.

I hope this book proves to be useful for academics, policymakers from government agencies, policy aides in research institutions and think tanks, and broader audiences from public and private organizations. The aim of

this book is to provide technical and practical insights and help design policies to reduce inequality. I briefly discuss below the contribution that each chapter makes in this book.

Chapter 2 provides an overview of the conceptual issues in the measurement of the labor income share. It first discusses various definitions proposed to measure the labor income share and then highlights the sources of the measurement problems. The national accounting statistics do not provide accurate data for labor income as it involves both incomes earned by wage employees and income earned by self-employed. In addition, various issues stem from the accounting method of national income, treatment of intangible inputs, measurement of non-private sectors and informal sectors, and attribution of mixed income. It then extends the adjustment framework for self-employment suggested by Gollin (2002) to a more disaggregated sector level, by allowing self-employment rate to vary across sectors. The novel adjustment factor at the sector level is composed of the earnings ratio of self-employment to wage-employment and the employment ratio of self-employed to wage employees. The empirical evidence confirms that agriculture sector is a greater source of the self-employment error compared to the rest of the sectors.

Chapter 3 combines macro data from various sources including the Penn World Table (PWT) and the United Nations Industrial Development Organization (UNIDO) and showcases correlates of the labor income share for a sample of 93 countries. There is a positive correlation between the GDP per capita and the average labor income share, whereas there is a weak negative correlation between the informal sector share of GDP and average labor income share. Correlation between self-employment and average labor income share shows a similar negative relationship, but with a strong goodness of fit and clear regional patterns among the upper and lower middle-income countries. Trade measures are positively correlated with the labor income share, and the goodness of fit is higher for the upper middle-income countries relative to countries from other income groups. There is also a positive correlation between the non-agricultural export volume and the average labor income share.

Chapter 4 discusses the labor income share at the sectoral level for 53 countries. Of the 53 countries, 20 are developing countries (based on the World Bank classification), and, for a sample of 45 countries, data are available for at least five years. There is considerable variation in the labor income share estimates within each region and within each broad category of sectors both at the level and with changes over time. Overall, there is a

fall in the average rate of change in the labor income share in the secondary sector and the primary sector and a rise in the same in the tertiary sector.

Chapter 5 provides some evidences on the drivers of the labor income share at the firm level using a novel firm-level dataset on the labor income share. It defines the firm-level labor income share following three alternative approaches and compares these estimates across income groups, regions, firm sizes, and ownership types. The estimates average around 0.45, with considerable variations across regions and firm characteristics. Manufacturing firms tend to have a lower labor income share as the firm size increases. Large firms in services, both foreign and state-owned, pay a higher share of income to laborers.

Chapter 6 advances a theoretical discussion on the role of elasticity of substitution and complementarity between factor inputs and skill as drivers of the labor income share. It begins with a production function to establish a relationship between production technology, factor productivity, and factor income shares. The assumption of a non-unitary elasticity of substitution (σ) between capital and labor plays a crucial role in the movement of the labor income share. The role of elasticity of substitution is discussed considering a homogeneous labor market (a production function with capital and labor) and a heterogeneous labor market (a production function with capital, skilled labor, and unskilled labor). The theoretical model is then extended to analyze the comparative statics outcomes on the labor income share.

Chapter 7 discusses empirical findings on the drivers of labor income share under three broad categories: (a) technological change and capital intensity, (b) structural transformation, and (c) institutional changes. As the burgeoning literature shows, there could be numerous channels at work within these broad categories. For example, the declining rate of unionization falls under the broad category of institutional change, and it leads to a decline in labor's bargaining power and consequently to a decline in the labor income share. However, the process of globalization or the participation of a country into the global value chain could cause a decline in the unionization rate. Moreover, the participation of global value chain is allowed by the reduction in shipping or communication cost through the technological change. At the same time, the reduction of corporate income tax rate can also be categorized under institutional change and globalization if it is implemented because of international pressure or is driven by capital mobility across nations.

Chapter 8 highlights several potential areas of research on the drivers of labor income share (LIS). These include personal income inequality, skilled emigration, remittances, and brain-gain, remittances, and negative labor supply, premature deindustrialization, firm restructuring, and globalization at the sectoral level.

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CHAPTER 2

Definition, Measurement, and Conceptual Issues

The traditional labor income share measures the degree to which income can be attributed to labor in terms of capital, labor, and production. However, only using these factors to express the labor income share gives a limited account for other relevant factors such as the high informal sector, mixed income sector, or taxes on capital and labor incomes. This measure also has conceptual issues in matters such as whether a gross or net measure best accounts for the labor income share, or determining the causes for the labor income share to shift with various arguments debating factors such as competition decline, rising information technology, intellectual property products, capital accumulation, and globalization. This chapter focuses on both discussions, first in showing the range of definitions proposed to better measure the labor income share and then by highlighting the conceptual issues in the literature related to further understanding the measure.

2.1 Definition of Labor Income Share

A number of definitions of labor income share (LIS) have been introduced, starting with the traditional understanding of labor income share described by Lübker (2007) to be "how much of national income accrues to labor." This has been utilized by the Bureau of Labor Statistics (BLS) in their equation to denote the labor income share which is the form

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popularized through much of the literature. This is shown below for year t and sector k:

$$LIS \equiv \frac{Labor\ income_{tk}}{National\ income_{tk}}$$

In examining the components of the factors in this equation, the BLS reports several series which all have a similar methodology. For the non-farm business sector, they determine labor compensation (labor income) sector as compensation of employees excluding government wages and salaries, compensation of employees of nonprofit institutions, private compensation, farm compensation of employees, but including imputed labor compensation of self-employment (Gomme and Rupert 2004). The "value added" measure conforms to these same sectors. However, this lacks coverage of information such as intangible inputs, the attribution of mixed income, non-private, and informal sectors. Consequently, the BLS definition is inappropriate for many applications, such as to find the labor income share in developing countries where attention to self-employed income is vital. This has also given way to widespread debates concerning the high level of ambiguity of proprietor's income and indirect taxes less subsidies. For the issue with ambiguity of proprietor's income, this is addressed by the Bureau of Labor Statistics by computing an implicit wage for the sector through dividing compensation by hours worked. In assuming that the self-employed will pay themselves the same wage that they could otherwise earn in this sector, their implied labor income is this implicit wage multiplied by hours of work by the self-employed.

Gollin (2002) recognizes the importance of accurately accounting for the self-employment income and proposes three adjustment approaches for the labor income share equation, which use mixed income and the employment structure of a country in their estimation of the labor income share. He argues that income shares are approximately constant across countries when using these adjustments (ibid., p. 459). He then explains how employee compensation shares are a poor measure of labor income share, since their disparities may reflect changes in the sectoral composition of output or in the structure of employment, exclude important forms of non-wage compensation, and include rents accruing to particular skills such as returns to entrepreneurial ability (ibid., p. 463). This leads to a large understatement of labor income share in countries where self-employment is a significant proportion of the workforce. He proposes that