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The Labor Share of Income in India's Manufacturing Sector
Through a Critical Realist Lens

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Abstract

The labor share of income serves as an important indicator of income inequality. Between 1981 and 2022, the labor share of income in India's manufacturing sector declined by 12.64 percent, making it a particularly relevant case for examining the mechanisms behind this trend. To investigate this decline, we adopt a critical realist mixed-methods approach that looks beyond observable patterns to the underlying mechanisms that produced it. The findings show that the decline cannot be explained by technological mechanisms alone, but rather by the interaction of technological, labor market, product market, and trade liberalization mechanisms, including capital deepening, contractualization, weaker workers' bargaining power, and market-share reallocation. Our findings further suggest that policy measures such as minimum wages and stricter regulation of fixed-term contract labor could increase the labor share of income, although their effects depend on broader structural conditions. At the same time, despite the decline in the labor share of income, real wages increased, suggesting that the decline did not necessarily imply deteriorating material living standards.

Kurzfassung

Die Lohnquote ist ein wichtiger Indikator für Einkommensungleichheit. Zwischen 1981 und 2022 ging die Lohnquote im indischen verarbeitenden Gewerbe um 12,64 Prozent zurück, was diesen Sektor zu einem besonders relevanten Fall für die Untersuchung der zugrunde liegenden Mechanismen macht. Zur Analyse dieses Rückgangs wird in dieser Arbeit ein kritisch-realistischer Mixed-Methods-Ansatz herangezogen, der über die Beschreibung beobachtbarer Muster hinausgeht und die kausalen Mechanismen in den Blick nimmt, die diesen Wandel hervorgebracht haben. Die Ergebnisse zeigen, dass der Rückgang nicht allein durch technologische Mechanismen erklärt werden kann, sondern vielmehr durch das Zusammenspiel technologischer, arbeitsmarktbezogener, gütermarktbezogener und handelsliberalisierungsbezogener Mechanismen. Dazu zählen Kapitalvertiefung, Vertragsbeschäftigung, eine geschwächte Verhandlungsmacht der Beschäftigten sowie Marktanteilsverlagerungen. Darüber hinaus legen die Ergebnisse nahe, dass politische Maßnahmen wie Mindestlöhne und eine strengere Regulierung befristeter Arbeitsverträge die Lohnquote erhöhen könnten, auch wenn ihre Wirkungen von umfassenden strukturellen Bedingungen abhängen. Zugleich zeigen die Ergebnisse, dass die Reallöhne trotz des Rückgangs der Lohnquote gestiegen sind, was darauf hindeutet, dass dieser Rückgang nicht unbedingt mit einer Verschlechterung der materiellen Lebensbedingungen einherging.

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CHAPTER 1

Introduction

Over the past few decades, the labor share of income has declined in many countries, drawing renewed attention to functional income distribution (Dünhaupt, 2013, p. 1). Contemporary economists conceptualize functional income distribution in terms of factor shares measured in national accounts, namely the labor share and the capital share of income (Dünhaupt, 2013, pp. 2, 5)(Karabarbounis, 2024, p. 110). While the labor share refers to the proportion of value added that accrues to labor, the capital share indicates the proportion that accrues to capital, such as profits, rents, and interest (Dünhaupt, 2013, pp. 2, 5)(Karabarbounis, 2024, p. 110). The labor share of income is defined as total employee compensation divided by value added or GDP (W/Y), while the capital share is the remainder ($1-(W/Y)$) (Dünhaupt, 2013, pp. 2, 5). Employee compensation includes not only wages and salaries, but also other forms of non-wage remuneration that represent returns to labor (Guerriero, 2019, p. 2).

This distinction is important because changes in factor shares show how the gains from economic growth are distributed between workers and owners of capital (Dünhaupt, 2013, p. 1). Nevertheless, most studies on income distribution focus on personal income inequality – often measured by the Gini coefficient (Dünhaupt, 2013, p. 1)(Erauskin, 2020, p. 176). Guerriero links this focus to the rise of neoclassical economics since the 1960s, which has redirected attention from functional to personal income distribution. This shift has been supported by a wider move away from the analysis of social classes toward an emphasis on individuals (Guerriero, 2012, p. 2). Since the early 2000s, however, growing interest in functional income distribution has brought renewed attention to the labor share of income as a topic of research (Atkinson, 2009; Dünhaupt, 2013; Karabarbounis and Neiman, 2013; Rodriguez and Jayadev, 2013). Unlike personal income indicators, the labor share shows that even when employee compensation rises, value added may expand more rapidly, leaving workers with a smaller portion of economic output (Ministry of Statistics & Programme Implementation, 2025). Thus, a falling labor share of income

provides an important perspective on distributional change and income inequality.

Against this background, the labor share of income in India has declined since the 1980s (Ministry of Statistics & Programme Implementation, 2025)(Sinha, 2023, p. 2). India's manufacturing sector is a particularly relevant case in this debate, as the labor share declined by 12.64 percent between 1981 and 2022 (Ministry of Statistics & Programme Implementation, 2025)(Sinha, 2023, p. 2). A declining labor share of income in a labor abundant economy such as India stands against simplified trade-based explanations (Karabarbounis and Neiman, 2013, p. 62).

The downward trend of the labor share of income raises the question of which mechanisms drive this change. Technological progress is often cited as an important explanation (Abraham and Sasikumar, 2017; Gupta and Helble, 2022; Kapoor, 2020; Sen and Das, 2015; Sinha, 2023), but it does not fully capture the wider structural forces that shape functional income distribution. To address this question, the thesis examines the various mechanisms and conditions that shaped the labor share of income in India's manufacturing sector and considers policy implications that may help increase it. To examine these developments, it adopts a critical realist perspective, which distinguishes between observable empirical patterns and the deeper mechanisms, tendencies, and structures that generate them under specific conditions (Sayer, 2000, pp. 12, 14).

Building on this context, this research is guided by the following main question:

What patterns characterize the labor share of income in India's manufacturing sector from 1981 to 2022, and which mechanisms generate these patterns?

In addition, this thesis poses the following secondary research question:

Which policy-related mechanisms could alter these dynamics to increase the labor share of income?

The period since the 1980s is particularly relevant because it covers major economic transformations in India, especially trade liberalization and changes in the manufacturing sector (Sinha, 2023, p. 2)(Sen and Das, 2015, p. 108). Against this background, the analysis focuses on 1981 to 2022, for which consistent data on the labor share of income and selected indicators are available for India's organized manufacturing sector (Ministry of Statistics & Programme Implementation, 2025).

The first part of the main research question addresses an empirically observable phenomenon, namely the labor share of income in India's manufacturing sector (Sayer, 2000, p. 12). As this pattern is measurable and observable, it is situated within what critical realism identifies as the actual domain (Sayer, 2000, p. 12).

The second part of the main research question focuses on the underlying mechanisms, tendencies, and structures that shaped the observable pattern (Sayer, 2000, p. 12). To

answer it, we have to uncover generative mechanisms that are not directly observable in the actual domain but belong to the real domain according to critical realist ontology (Sayer, 2000, p. 12). The main focus of this study is on the second part.

To answer these research questions, critical realism serves as an explanatory framework that guides the research design and the interpretation of the findings. It informs a retroductive mixed-methods approach in which quantitative analysis identifies patterns and qualitative analysis uncovers the mechanisms behind them. Although mixed methods research (MMR) is widely used to address complex social phenomena and evaluate policies, it often lacks explanatory depth by remaining focused on observable events (Mukumbang, 2023, p. 93f.). Much MMR is informed by Peircean pragmatism, which prioritizes practical inference over ontological and epistemological coherence. By contrast, MMR grounded in critical realism has attracted limited scholarly attention (Mukumbang, 2023, p. 94). Critical realist-informed MMR links methods integration to ontological and epistemological assumptions and uses retroduction to move from observed patterns to the underlying mechanisms that generate them (Sayer, 2000, pp. 12, 14) (Mukumbang, 2023, p. 94).

The thesis is structured as follows. Chapter 2 presents the theoretical background and empirical context. Chapter 3 introduces the critical realist framework that guides the research design, while Chapter 4 explains the research methodology and highlights the steps of the critical realist research cycle. Building on this, Chapter 5 develops the initial theoretical framework and sets out the proposed hypotheses. Chapters 6 and 7 present the quantitative and qualitative analyses, respectively. Chapter 8 brings these findings together in a joint discussion, and Chapter 9 concludes the thesis.

Theoretical Background and Empirical Context

This chapter informs the analysis by integrating theoretical perspectives on functional income distribution with empirical evidence from India's manufacturing sector. Furthermore, it critically assesses the limitations of focusing solely on technological progress.

2.1 Functional Income Distribution

The global decline in the labor share of national income since the 1980s has renewed scholarly interest in functional income distribution (Dünhaupt, 2013; Guerriero, 2019; Karabarbounis and Neiman, 2013). Although contemporary debates are largely driven by these recent empirical trends, the analytical foundations of functional income distribution can be traced back to classical political economy, which considered the distribution of income between social classes (Ricardo, 2004, p. 5).

2.1.1 Classical Theory of Functional Income Distribution

Classical economists—most notably David Ricardo—regarded the analysis of factor income shares as the central problem of political economy (Francesse, 2015, p. 6). According to Ricardo, national income is divided among landlords, who earn rents, capitalists, who earn profits, and workers, who earn wages (Ricardo, 2004, p. 5). Rents, profits, and wages are shaped by economic, social, and ecological conditions, including land fertility, and the development of agricultural skills and technology (Ricardo, 2004, p. 5). Factor shares are therefore treated as endogenous and variable, rather than as fixed proportions of national income.

Ricardo assigns the discovery of the correct theory of rent to Thomas Robert Malthus and Edward West, arguing that their contributions are essential for explaining profits

and wages (Ricardo, 2004, p. 5). Ricardo argues that as population growth compels a country to cultivate increasingly inferior land in order to increase its food supply, the rent on all higher-quality land will increase (Ricardo, 2004, p. 70). Wages, by contrast, gravitate toward a subsistence level, as higher wages encourage population growth, thereby increasing the number of workers. Consequently, wages return to their natural price—the price of subsistence goods required for the maintenance of the laborer’s household—and may even fall below it (Ricardo, 2004, p. 93f.). After the landlords and workers have received their shares, the remaining produce belongs to the farmer and makes up his profit. As society develops, the farmer’s share of total production generally decreases (Ricardo, 2004, p. 112). However, the rising value of output may still allow him—like the landlord and the laborer—to receive more in value overall (Ricardo, 2004, p. 112). Yet when capital accumulation becomes extensive, even though the total value rises, a smaller portion is assigned to profits, while larger shares go to rent and wages (Ricardo, 2004, p. 124).

Although the classical framework differs substantially from modern theories of functional income distribution, it establishes the idea that factor income shares are endogenous and are shaped by structural features of the economy, such as population dynamics, capital accumulation, and resource constraints.

2.1.2 Functional Income Distribution in Twentieth-Century Economics

The Ricardian concern with factor shares continued to influence economic thought well into the twentieth century (Atkinson, 2009, p. 4). Up to the 1960s, interest in functional income distribution occupied a central place in economic analysis (Atkinson, 2009, p. 4). From the late 1960s onward, however, functional income distribution gradually receded from mainstream economics. This shift was driven by the view that factor shares are rather stable over time and the division of income between capital and labor can be accounted for by an aggregate Cobb-Douglas production function (Atkinson, 2009, p. 4). This shift also moved away from Ricardo’s explanations, which focused on classes when it came to functional income distribution.

The assumption shared by Ricardo and Malthus that landlords are wealthy, workers poor, and capitalists situated in between can be viewed as misleading. Lydall defines the distribution problem under this assumption as the allocation of total output between rent, wages, and profit (Lydall, 1968, p. 2). In reality, however, many landowners are poor, numerous employees earn more than some capitalists, and many property owners engage in paid work, while numerous workers hold property (Lydall, 1968, p. 2).

2.1.3 Contemporary Revival of Factor Shares

Since the early 2000s, research on factor shares has regained considerable prominence (Atkinson, 2009; Dünhaupt, 2013; Karabarbounis and Neiman, 2013; Rodriguez and Jayadev, 2013). This renewed interest has been reinforced by the global decline in the labor share of income since the 1980s (Dünhaupt, 2013; Guerriero, 2019; Karabarbounis and Neiman, 2013; Rodriguez and Jayadev, 2013). In response to these developments, economists have revisited the conceptual relevance of functional income distribution.

Beyond these empirical motivations, Atkinson provides a broad analytical justification for studying factor shares, identifying three main motivations: to link macroeconomic income measures in the national accounts with household income, to improve understanding of inequality in the personal distribution of income, and to address concerns of social justice related to the fairness of different income sources (Atkinson, 2009, p. 5). In this vein, he contends that a renewed attention to factor shares can help overcome the excessive fragmentation of economics by reconnecting macroeconomic aggregates with micro-level outcomes (Atkinson, 2009, p. 15). Complementing Atkinson's motivations, Rodriguez and Jayadev (2013, p. 1) emphasize that functional income distribution provides a clear lens through which to assess how the returns to economic growth are distributed. While the renewed interest in factor shares is driven by both empirical trends and normative concerns, meaningful analysis also depends on how factor shares are defined and measured.

2.1.4 Defining and Measuring Factor Shares

Compared to classical political economy, where functional income distribution referred to the distribution of national income between social classes associated with specific factors of production, contemporary economics conceptualizes functional income distribution as factor shares measured in national accounts (Dünhaupt, 2013, pp. 2, 5f.). Dünhaupt highlights this shift from classical political economy to a national-account understanding of functional income distribution (Dünhaupt, 2013, pp. 2, 5f.). The labor share is commonly defined as total employee compensation divided by value added or GDP (W/Y); while the capital share is the remainder ($1-(W/Y)$) (Dünhaupt, 2013, pp. 2, 5).

Employee compensation used in the numerator encompasses wages and salaries but also other forms of non-wage remuneration that represent returns to labor (Guerriero, 2019, p. 2). Yet this approach has an important limitation that must be taken into account: using employee compensation as a proxy for labor income excludes the self-employed, assigning their earnings entirely to capital, despite the fact that such income typically combines both labor and capital returns (Guerriero, 2019, p. 2). Nevertheless, since self-employment is limited in manufacturing, excluding the self-employed poses a smaller concern for measuring the labor share of income in this sector, although this approach does not fully address the associated challenges (Guerriero, 2019, p. 2f.).

In addition, as a ratio, the labor share requires two adjustments to the income aggregate used in the denominator, depending on data constraints (Guerriero, 2019, p. 2). First, gross value added at market prices has to be adjusted by subtracting taxes on production and imports (net of subsidies), thereby changing the income aggregate to a factor-cost measure (Guerriero, 2019, p. 2). Since indirect taxes do not reflect returns to labor or capital, they should not be counted (Guerriero, 2019, p. 2). Second, the income aggregate has to be adjusted for capital consumption by deducting the consumption of fixed capital from value added (Guerriero, 2019, p. 2). Together, these two adjustments convert gross value added at market prices into net value added at factor cost.

The labor share of income (W/Y) can also be expressed in per-worker terms by dividing both wages and value added by the number of workers L , defining the ratio of wages per worker to value added per worker (Dünhaupt, 2013, p. 5). Deflating both by the value-added price index then allows labor's share to be written as the ratio of real wages to real labor productivity (w/p) (Dünhaupt, 2013, p. 5). This decomposition implies that changes in the labor share are determined by the relative growth rates of real wages and productivity; the labor share rises when real wages grow faster than productivity and declines when wage growth falls behind productivity (Dünhaupt, 2013, p. 5). This allows changes in the labor share of income to be linked to observable wage-productivity gaps, making it easier to understand the underlying forces driving changes in income distribution.

2.2 Labor Share Trends in India

Several studies report that India's labor share has declined over the past few decades (Abraham and Sasikumar, 2017; Karabarbounis and Neiman, 2013; Sinha, 2023; Veeramani and Basu, 2025). Karabarbounis and Neiman empirically demonstrate the decline in the labor share of income in various countries (Karabarbounis and Neiman, 2013). Their work provides valuable background information for understanding these developments in India. India—despite being a labor-abundant economy—experienced a significant decline between 1975 and 2012 in the labor share of income (Karabarbounis and Neiman, 2013, pp. 1, 62). Sinha further documents that, while similar trends have been observed across many countries, the decline has been especially pronounced in India, with the labor share falling by seven percentage points overall between 1980 and 2010 (Sinha, 2023, p. 2).

The decline was highly uneven across sectors, with manufacturing experiencing the largest decline: the labor share fell by about twelve percentage points in manufacturing between 1980-84 and 2003-07, by about seven percentage points in services, and by only about one percentage point in agriculture (Sinha, 2023, p. 7). The magnitude of the decline in the labor share of income within manufacturing makes this sector a particularly relevant

setting for analyzing the mechanisms driving the redistribution from labor to capital. Technological progress has emerged as a central explanatory factor in the economic literature, both globally and in India (Acemoglu, 2018; Abraham and Sasikumar, 2017; Gupta and Helble, 2022; Kapoor, 2020; Karabarbounis and Neiman, 2013; Mishra and Rishi, 2023; Sen and Das, 2015; Sinha, 2023).

2.3 Technological Progress and the Labor Share of Income

Technological progress plays a central role in the decline of the labor share of income. Before turning to the specific case of India, we first outline two key mechanisms through which technological change affects the labor share of income: The first approach emphasizes the fall in the relative price of investment goods, leading to an intensified capital intensity and thus a decline in the labor share of income (Karabarbounis and Neiman, 2013, p. 1)(Acemoglu, 2018, p. 5). The other approach highlights automation and its role in replacing labor as a central mechanism behind distributional changes (Karabarbounis and Neiman, 2013, p. 1)(Acemoglu, 2018, p. 5). Karabounis develops the first argument, whereas Acemoglu and Restrepo present the second (Karabarbounis and Neiman, 2013, p. 1)(Acemoglu, 2018, p. 5).

2.3.1 Relative Price Framework

The relative price framework approaches the relationship between technological progress and the labor share of income through changes in the relative price of investment goods (Karabarbounis and Neiman, 2013, p. 1). Karabounis and Neiman document two global trends since the early 1980s: a sustained fall in the labor share of income and a persistent decline in the relative price of investment goods (RIP) across countries and industries—and demonstrate a systematic relationship between these developments (Karabarbounis and Neiman, 2013, p. 1).

The RIP is defined as the ratio of the price of investment goods to the price of consumption goods; it therefore "declines whenever technology in the investment goods sector improves relative to the consumption good sector" (Karabarbounis and Neiman, 2013, p. 14). Technology improvements have reduced the RIP, making capital cheaper relative to labor (Karabarbounis and Neiman, 2013, p. 1). The resulting decrease in the cost of capital goods encourages companies to substitute capital for labor more extensively, thereby increasing the capital-labor ratio in production (Karabarbounis and Neiman, 2013, p. 1). In situations where capital and labor exhibit an elasticity of substitution above one, this fall in the relative price of investment raises the capital share of income and correspondingly lowers the labor share of income (Karabarbounis and Neiman, 2013, p. 20).

The decline in the RIP is reinforced by processes of economic liberalization. More specifically, trade and industrial liberalization accelerate technological progress by facilitating the inflow of technologically advanced capital inputs and enabling cross-border communication of technical knowledge (Mishra and Rishi, 2023, p. 46). Through the resulting improvements in productivity in the capital goods sector, the relative price of machinery and equipment declines, thereby contributing to a further decline in the RIP and consequently lowering the relative cost of capital goods (Mishra and Rishi, 2023, p. 46).

The relative price framework by Karabounis and Neiman explains substitution along a given production function, whereas the next framework explains changes in task composition itself (Karabounis and Neiman, 2013, p. 17f.). Accordingly, technological progress in this framework operates solely through input substitution along a given production function rather than through changes in the range of tasks performed by capital and labor (Acemoglu, 2018, p. 5).

2.3.2 Task-Based Automation Framework

The task-based automation framework conceptualizes the relationship between technological progress and the labor share of income differently: production consists of a continuum of individual tasks that can be reallocated between capital and labor (Acemoglu, 2018, p. 5). Certain tasks can be performed exclusively by labor, whereas others may be carried out by either labor or by capital (Acemoglu, 2018, p. 5). In this setting, automation is defined as an expansion of the range of tasks that can be undertaken by capital rather than labor (Acemoglu, 2018, p. 5). When capital becomes sufficiently inexpensive or productive at the margin, firms substitute machines for workers in these tasks (Acemoglu, 2018, p. 5f.). Automation therefore involves the introduction of new technologies that carry out activities previously performed by humans (Acemoglu, 2018, p. 5). In the terminology of Acemoglu and Restrepo, this process generates a "displacement effect", as capital replaces labor in tasks that were formerly carried out by workers (Acemoglu, 2018, p. 1). This "displacement effect" lowers labor demand and wages, which exerts downward pressure on the labor share of income (Acemoglu, 2018, p. 1).

Productivity gains may partly offset the "displacement effect" by increasing output and labor demand in non-automated tasks (Acemoglu, 2018). Hence, the most important counterbalance to automation is the emergence of new labor-intensive activities, which reallocate labor to new functions and help to increase the labor share of income (Acemoglu, 2018). Nevertheless, even when "productivity effects" are significant, automation leads to a disproportionate increase in productivity relative to wages, implying that wage growth is slower than productivity growth and thereby reduces the labor share of income (Acemoglu, 2018, p. 9)(Acemoglu and Restrepo, 2019, p. 5). Accordingly, the falling labor share of income can be attributed to accelerated automation—especially within

manufacturing—and a slower growth in new labor-intensive tasks (Acemoglu and Restrepo, 2019, p. 27). The creation of new labor-intensive tasks is essential for sustaining wage growth in line with productivity. Their emergence not only depends on technological capabilities, but also on the availability of policy and market conditions (Acemoglu and Restrepo, 2019, p. 27).

The historical development of the factory system in manufacturing provides a concrete illustration of how such task reallocation unfolded over time. From the late 18th century onward, successive waves of mechanization replaced labor-intensive production techniques (Acemoglu, 2018, p. 4). The adoption of steam power and later electricity, followed by numerically controlled machines and later computer numerical control (CNC) machinery in the mid-20th century, further expanded the possibility for substituting labor with capital (Acemoglu, 2018, p. 4). A decisive shift occurred in the late 1980s with the introduction of industrial robots, which automated numerous remaining labor-intensive manufacturing tasks—such as machining, welding, painting, assembly, material handling, and quality control. These developments have expanded the set of tasks performed by capital, immensely accelerating capital-intensive production (Acemoglu, 2018, p. 4).

Taken together, the relative price and task-based automation frameworks provide useful approaches for interpreting the evolution of the labor share of income in a specific economy. The case of India's manufacturing sector illustrates that both mechanisms have played an important role.

2.4 Technological Progress and the Labor Share of Income in India's Manufacturing Sector

Empirical evidence from India's organized manufacturing sector is consistent with the assumption that technological progress—operating through falling relative prices of investment goods (RIP) and accelerated automation—contributed to a decline in the labor share of income (Abraham and Sasikumar, 2017; Gupta and Helble, 2022; Kapoor, 2020; Sen and Das, 2015; Sinha, 2023).

Model-based evidence shows that the decline in the RIP affects the manufacturing sector, where substitution between capital and labor is the highest compared to services and agriculture (Sinha, 2023, pp. 1, 4). Sinha illustrates this by incorporating sectoral heterogeneity within a multi-sector general equilibrium model (Sinha, 2023, pp. 1, 4). Due to a decline in the RIP, firms substitute capital for labor, which leads to a fall in the labor share of income across all three sectors (Sinha, 2023, p. 19). However, the elasticity of substitution between capital and labor varies across sectors (Sinha, 2023, p. 19). Specifically, manufacturing exhibits the highest elasticity of substitution (1.4), which allows the model to account for the sector's roughly ten percentage point decline

in the labor share of income (Sinha, 2023, p. 19). Thus, given its highest elasticity of substitution, a decline in the RIP has its strongest effect on the labor share of income in India's manufacturing sector.

State-level descriptive evidence links falling RIPs to rising capital deepening. Abraham and Sasikumar's descriptive analysis further shows that a majority of Indian states experienced an increase in the capital-labor ratio between 2000 and 2012 (Abraham and Sasikumar, 2017, p. 33). From the perspective of the relative price framework, this increase coincided with a marked decline in the relative cost of capital, driven by falling lending rates, declining tariff barriers, and capital subsidies (Abraham and Sasikumar, 2017, p. 33). As capital became cheaper relative to labor, firms shifted toward more capital-intensive production techniques (Abraham and Sasikumar, 2017, p. 33).

From a task-based perspective, the analysis illustrates that a rise in the capital-labor ratio may reflect not only quantitative capital accumulation but also shifts toward more technology-intensive forms of capital (Abraham and Sasikumar, 2017, p. 33). Increased investment in technology-intensive capital enabled firms to adopt more advanced machinery, which increasingly replaced workers engaged in routine and repetitive tasks (Abraham and Sasikumar, 2017, p. 33). In this sense, technological progress altered the allocation of production tasks between capital and labor, consistent with the task-based automation framework (Acemoglu, 2018).

Regression-based evidence strengthens this descriptive pattern by showing a relationship between capital deepening and lower labor shares (Abraham and Sasikumar, 2017, pp. 35, 39). The results of Abraham and Sasikumar's weighted least squares regression model underscore that growth in the capital-labor ratio had a negative effect on the labor share of income in India's organized manufacturing sector (Abraham and Sasikumar, 2017, pp. 35, 39). Their findings provide empirical evidence that capital substituted for labor and that increasing capital intensity was a central driver of the decline in the labor share of income (Abraham and Sasikumar, 2017, p. 39).

Abraham and Sasikumar's results also document that an increase in the share of IT-based capital within total capital significantly reduced the labor share of income, reinforcing the view that capital-deepening technological change exerts downward pressure on the labor share of income (Abraham and Sasikumar, 2017, p. 39). Therefore, the decline in the labor share of income can be linked not only to the amount of capital accumulated, but also to its technological quality.

Trade liberalization evidence helps explain why the RIP fell so sharply. Sen and Das explicitly attribute the fall in the relative price of capital goods to trade liberalization reforms (Sen and Das, 2015, p. 108). They document that labor intensity in India's manufacturing declined steadily alongside a marked drop in the labor share (Sen and Das, 2015, p. 108) (Sen and Das, 2015, p. 112). The shift toward greater capital intensity

resulted from "an increase in the ratio of real wages to the rental price of capital", largely driven by "a fall in the relative price of capital goods" following trade liberalization (Sen and Das, 2015, p. 108). Following the 1991 reforms, import licensing for most machinery and equipment was abolished and tariff rates were significantly reduced (Sen and Das, 2015, p. 113). With the gradual reduction of trade barriers for capital goods, domestic prices for capital goods fell relative to the general price level, leading to a decline in the relative price of machines and encouraging companies to substitute labor with machines more intensively (Sen and Das, 2015, p. 113).

Kapoor argues that the greater availability of foreign machinery and technological know-how contributed to the adoption of more advanced production methods (Kapoor, 2020). She highlights that higher capital intensity is associated with a lower wage share, indicating a decline in the labor share (Kapoor, 2020).

Tariff-based evidence provides a more specific mechanism within trade liberalization. According to Gupta and Helble, tariff reductions—a central component of India's trade liberalization—amplified the declining labor share in India's manufacturing (Gupta and Helble, 2022, pp. 109, 127). In particular, they show that cuts in output and input tariffs reduce the labor share of income in capital-intensive industries, while comparable declines raise it in labor-intensive industries (Gupta and Helble, 2022, p. 127). Since India's manufacturing base was predominantly capital-intensive, tariff reductions led to a decline in the labor share of income (Gupta and Helble, 2022, p. 109).

In summary, India's manufacturing sector illustrates a case in which technological progress appears to have been a central driver in the decline of the labor share of income. The effects of India's liberalization reveal a shift toward greater capital-intensive production, thereby contributing to a further decline in the labor share of income (Gupta and Helble, 2022, p. 109). However, these accounts leave open the question of which generative mechanisms produced this outcome and under what structural conditions, which is what this thesis seeks to examine.

2.5 Limits of Existing Approaches

Much of the literature provides valuable insights into how technological progress has affected the labor share of income in India's manufacturing sector (Abraham and Sasikumar, 2017; Gupta and Helble, 2022; Kapoor, 2020; Mishra and Rishi, 2023; Sen and Das, 2015; Sinha, 2023). However, this literature often gives less attention to the institutional and political-economic conditions that shape these effects. This thesis addresses this gap by presenting how technological progress interacts with labor market processes, product market processes, and trade liberalization in affecting the labor share of income in India's manufacturing sector. It also considers why new labor-intensive tasks have not emerged

more strongly as a counterbalance to automation (Acemoglu, 2018).

Importantly, this thesis does not seek to advance a normative critique of technological progress itself, but rather aims to examine the mechanisms through which technological progress has influenced the labor share of income in a way that has contributed to its decline.

Critical Realist Framework

Given the limitations of existing approaches in identifying the interacting mechanisms that influence the labor share of income, this thesis adopts a critical realist perspective, which is particularly suited to analyzing complex and context-dependent processes. The framework serves to identify generative mechanisms, separate observable outcomes from underlying causal powers, and handle context-dependent interaction.

Critical realism originated in the United Kingdom (UK) in the 1970s and has been developed by several influential thinkers (Archer, 2011; Benton and Craib, 2001; Buch-Hansen and Nielsen, 2020; McAnulla, 1998; Mukumbang, 2023; Pühretmayer, 2012; Sayer, 2000). The following sections summarize the key concepts of critical realism that are most relevant for this thesis.

3.1 Ontological Foundations of Critical Realism

Social ontology refers to the assumptions that a particular social-scientific approach makes about the fundamental characteristics of social reality (Pühretmayer, 2014, p. 218). Within the framework of critical realism, several authors reconceptualise key philosophical and scientific concepts including reality, emergence, structure, discourse, agency, and causality (Archer, 2011; Benton and Craib, 2001; Buch-Hansen and Nielsen, 2020; McAnulla, 1998; Mukumbang, 2023; Pühretmayer, 2012; Sayer, 2000). The redefinition of reality culminates in critical realism's stratified ontology, which distinguishes between different domains of reality.

3.1.1 Real, Actual, and Empirical

Drawing primarily from Sayer's exposition of Bhaskar's critical realism, this thesis adopts a stratified ontology that differentiates between "the real", "the actual" and "the empirical",

thereby contrasting with flat ontologies that limit themselves to, or collapse, the actual and the empirical (Sayer, 2000, p. 12). The empirical lies within the actual, and the actual lies within the real (Mukumbang, 2025, p. 66). The real domain consists of everything that exists, regardless of whether it is perceived as a real object (Sayer, 2000, p. 11). Critical realist researchers seek to uncover the mechanisms, structures and powers that make phenomena work as they do, such as organizational features that enable bureaucracies to process information or the physical and social attributes that give individuals the capacity to work (Sayer, 2000, p. 11).

While "the real" encompasses the underlying structures and powers of objects, "the actual" is what happens when these forces are put into action (Sayer, 2000, p. 12). For instance, when the power of a bureaucracy is set in motion, it starts with tasks like categorizing information, or when someone who was previously inactive begins to work, their potential is activated (Sayer, 2000, p. 12).

Whereas "the actual" and "the real" concern the objects of scientific inquiry, "the empirical" concerns human perception and experience (Buch-Hansen and Nielsen, 2020, p. 30). That experience can successfully refer to the world, directing us toward aspects of either "the real" (underlying causes) or "the actual" (observable events) (Sayer, 2000, p. 12). However, experience does not necessarily capture or reveal these deeper realities in full (Sayer, 2000, p. 12).

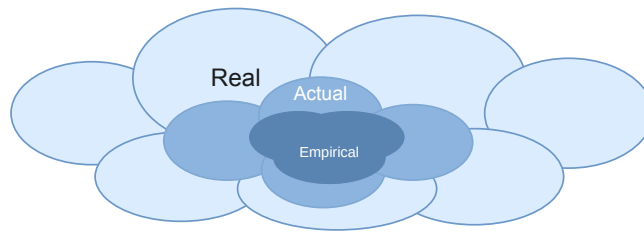


Figure 3.1: The Real, The Actual, The Empirical

Note. Own illustration based on (Buch-Hansen and Nielsen, 2020; Mukumbang, 2025; Sayer, 2000).

In this thesis, the empirical domain refers to the observed decline in the labor share of income in India's manufacturing sector. The actual domain concerns the decline itself and the economic processes through which it unfolds. The real domain relates to

the underlying causal mechanisms—such as technological progress—that generate this development.

3.1.2 Emergence

The stratified understanding of reality is closely linked to the principle of emergence, which explains how higher-level properties and powers arise from, yet are irreducible to, lower-level elements. According to Pühretmayer, emergence denotes that a whole—conceived as a complex composition of various elements—possesses forces and properties that differ from, and exceed, those of its individual parts (Pühretmayer, 2014, p. 225).

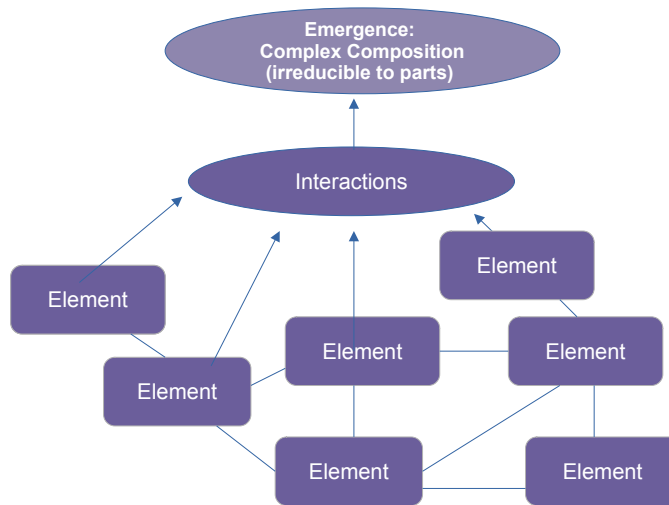


Figure 3.2: Emergence

Note. Own illustration based on (Pühretmayer, 2014, p. 225).

Critical realists extend this idea to social phenomena, arguing that while social realities emerge from physical, chemical, and biological processes, they cannot be reduced to them, since social roles and meanings arise only within relational and structural contexts (Sayer, 2000, p. 13). For example, while speech depends on bodily and neural processes, conversation involves social norms and meanings that exceed brain activity, and therefore cannot be explained without reference to the social level (Sayer, 2000, p. 13). Thus, social roles are constituted through “internal relations”, existing only within networks of interdependence and deriving their power from wider institutional structures, in contrast to positivist ontology, which treats individuals as isolated units.

Contrary to positivist assumptions, critical realists argue that not all influences are internal, as lives are also shaped by external contingencies. This interplay of internal relations and external contingencies also shows why social phenomena are not permanent, but depend on a degree of durability: when institutions persist, it is because individuals continually sustain and adapt them, making stability an ongoing achievement rather than a given (Sayer, 2000, p. 13).

Applied to the context of this thesis, the concept of emergence implies that changes in the labor share of income within India's manufacturing sector arise from the interaction of technological, economic, institutional and social mechanisms rather than from technological progress alone. The understanding of emergence also underpins the critical realist view that social outcomes result from the interplay of structure, discourse and agency as emergent, irreducible, yet interrelated dimensions of social reality—a position elaborated in the following section.

3.1.3 Structure-Discourse-Agency

McAnulla's framework is central to this thesis, as it extends Archer's model, overcomes the dualistic view that puts its focus either on structure or agency, and incorporates discourse as a mediating dimension through which actors interpret, reproduce, and transform structural conditions. This becomes highly important when analyzing policy recommendations, if we analyze policy recommendations that, as they are not only the effect of structural conditions, but are also shaped by discursive interpretations, by the ways actors interact, and by the capacity of different actors to transform or reproduce a specific structural context.

McAnulla draws on and extends Archer's work on structure and agency, which itself builds on Bhaskar's realist foundations (McAnulla, 1998, p. 8). The structure and agency approach opposes both structuralism and intentionalism. Structuralism prioritizes structures, viewing agency as a byproduct rather than a cause, and explaining political change primarily through the development and interaction of structures (McAnulla, 1998, p. 2). Sayer further shows that structuralism's emphasis on rule-governed relations and external constraints often obscured agents' capacities to such an extent that structures appeared to act in place of individuals, resulting at times in a dehumanized portrayal of social processes (Sayer, 1992, p. 97). By contrast, as McAnulla argues, intentionalism—particularly in rational choice theory—emphasizes the primacy of agency, treating structures as merely the result of individual actions and denying their independent causal power. Focusing exclusively on structuralism or intentionalism prevents attributing strong, causal influence to both structure and agency (McAnulla, 1998, p. 2).

In response to this theoretical impasse, Archer develops an analytically dualist account within critical realism, maintaining that the stratified nature of social reality requires an analytical distinction between structure and agency (McAnulla, 1998, p. 8). Although structural properties depend on human activity, analytical dualism allows structure and agency to be examined separately, as they constitute different kinds of emergent entities with distinct properties and causal powers (Archer, 2011, p. 4). Additionally, as structure and agency operate on different temporal planes (t), they are temporally distinguishable: structure necessarily precedes agency, while any subsequent elaboration of structure

inevitably follows from agents' actions (Archer, 2011, p. 4). This analytical distinction between structure and agency, however, does not explain the interpretations that shape social interaction, which is why Archer also turns to culture as an analytical distinct dimension of social reality (McAnulla, 1998, p. 9).

Beyond material structures and agential capacities, critical realists also emphasize the ontological status of culture, as structure and culture have different emergent properties (McAnulla, 1998, p. 9). The relationship between structure and culture is analytically similar to the relationship between structure and agency, but they have different ontological relationships (McAnulla, 1998, p. 9).

McAnulla raises the question of whether a unified theoretical model can be developed that examines the interaction of structural and cultural factors (McAnulla, 1998, p. 10). To create a structure–discourse–agency unity, McAnulla suggests a basic model, showing how these three components relate to one another over time (McAnulla, 1998, p. 10). The crucial point is to examine how structure and ideas mutually permeate one another (McAnulla, 1998, p. 10).

The unified model is particularly important for the second research question, which examines the policy recommendations derived from the decline in the labor share of income, as it requires attention to structural conditions, economic discourse, and the interactions of individual and collective actors.

Building on Archer's three-part morphogenetic cycle, McAnulla develops a macro-morphogenetic model: "structural conditioning (t1)", "discursive shaping (t2)", "social interaction (t3)", "discursive reshaping (t4)" and "structural elaboration (t5)" (McAnulla, 1998, p. 10). This model lets the thesis distinguish pre-existing conditions, interpretive/discursive mediation, actors' strategies, and later structural change. Beginning the analytical cycle with structural conditioning underscores that action is situated within a material objectivity (McAnulla, 1998, p. 10). Since actors have to interpret the material conditions, discursive shaping should be considered secondary to structural conditioning, while actors' understandings of the structural framework are influenced by a discursive heritage (McAnulla, 1998, p. 10). At the same time, the conditions of discourse not only shape understandings of their structural circumstances but also hold significant independent importance (McAnulla, 1998, p. 10f.). Accordingly, discourse can be conceptualized as a mediating process between structure and agency (McAnulla, 1998, p. 11). During a transformation process, social interaction first reshapes the discursive environment as actors articulate proposed changes, before modifying the structural context both intentionally and unintentionally (McAnulla, 1998, p. 11).

Figure 3.3 presents McAnulla's revised model with a small addition. According to Pühretmayer, social interaction represents a duration (t3-t4), not a point in time (Pühretmayer, 2025, p. 20).

A Combined Three Part Cycle of Change

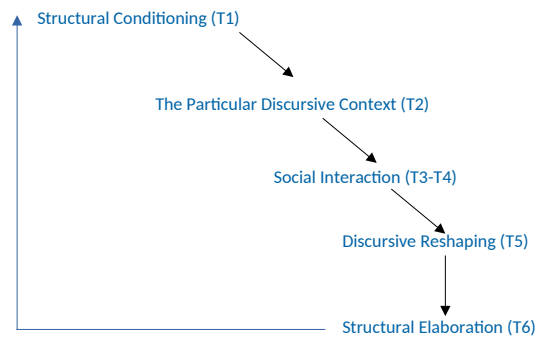


Figure 3.3: Structure-Discourse-Agency Framework

Note. From *Critical realism (Teil 1)*, by Hans Pühretmayer (2025), Lecture Slides, Slide 40 (Pühretmayer, 2025).

While the structure-discourse-agency framework specifies how social reality is constituted and reproduced/transformed over time, it does not yet explain how particular outcomes are produced. Addressing this question requires a critical realist conception of causation, which focuses on the causal powers and generative mechanisms through which structures, discourses and agents bring about observable events.

3.1.4 Causation

The thesis needs a conception of causation that can explain outcomes through powers and mechanisms rather than correlations. Sayer emphasizes that critical realism’s conception of causation explicitly rejects the Humean view that causal relations consist merely in the regular succession of observable events (Sayer, 2000, p. 13). Instead, objects are understood as components of structured wholes composed of interrelated elements, each endowed with causal powers. Through their interaction, these elements give rise to emergent properties that cannot be fully explained by the properties of the individual parts alone. In addition, causal powers—understood as the capacities or potentials of things or people—do not necessarily produce effects automatically; rather, their activation depends on the specific conditions under which they are exercised (Sayer, 2000, p. 14).

To analyze the causes of changes in the labor share of income, this thesis depends on the critical realist concepts of causal powers, tendencies, and generative mechanisms. Pühretmayer illustrates that in critical realism, the causal powers of social relations and actors refer to the abilities or capacities they possess because of their specific structure, whether or not these abilities are actually exercised. These powers are socially, culturally, and historically produced, and therefore changeable. Tendencies are those powers that

are exercised but rarely appear in pure form, since they are usually modified, reinforced, or counteracted by other tendencies (Pühretmayer, 2014, p. 224). Building on this, generative mechanisms are causal powers and tendencies that bring about the change. They are socially produced and changeable, and they only operate when activated by people or groups, not automatically. Examples include class and gender biases in state institutions, ideological interpellation, habitus, and identification. In society, multiple mechanisms interact simultaneously, creating complex outcomes (Pühretmayer, 2014, p. 225). In this thesis, tendencies and generative mechanisms are used to analyze how technological progress, labor market processes, product market processes and trade liberalization interact in shaping the labor share of income in India's manufacturing sector.

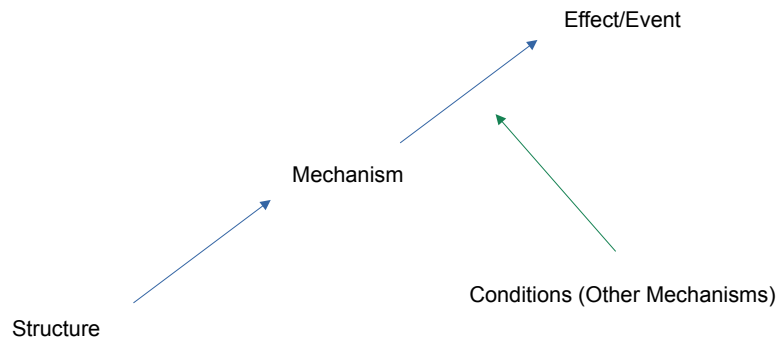


Figure 3.4: Causation from a Critical Realist Perspective

Note. From *Realism and Social Science*, by Andrew Sayer (2000), Page 15 (Sayer, 2000).

In opposition to empiricists, realists believe that causation is not just about seeing the same events happen repeatedly. Accordingly, explanation does not consist merely in identifying constant patterns. Instead, it involves uncovering underlying causal mechanisms through which outcomes are generated and specifying the conditions under which they are activated (Sayer, 2000, p. 14). This conception of causation points to real ontological structures, powers, and relations, but also includes dispositions, intentions, desires, reasons, and motives as potential causes of action (Pühretmayer, 2014, p. 223).

Critical realist ontology also highlights unrealized powers: objects can possess capacities that are not currently exercised. Reality includes not only what has actually happened, but also what could happen, given the powers or tendencies of existing objects (Sayer, 2000, p. 12). Existing objects, together with their properties, structures and powers, set limits on what is possible and impossible, but they do not determine exactly what will happen. This assumption is central to the analytical orientation of this research, which aims to explain not only why particular outcomes occurred, but also how alternative

courses of action were possible.

For the purposes of this thesis, the critical realist conception of causation implies that the decline in the labor share of income in India's manufacturing sector cannot be solely explained by observable correlations. Instead, the analysis examines how the mechanisms identified in the previous chapter ("Limits of Existing Approaches") interact to produce this outcome.

Each mechanism can have different effects depending on the conditions under which it operates. By distinguishing between observable outcomes and the underlying causal mechanisms that generate them, a critical realist approach enables a more comprehensive understanding of the generative mechanisms that have affected the decline in the labor share of income in India (Sayer, 2000, p. 12). This ontological focus on generative mechanisms is closely linked to the epistemological question of how these mechanisms can be identified and understood.

3.2 Epistemological Views of Critical Realism

Critical realism maintains a clear distinction between what is real (ontology) and our knowledge of reality (epistemology) (Fletcher, 2017, p. 182). This distinction underpins critical realist approaches to epistemology, in which knowledge is understood through mechanisms, potentials, and tendencies rather than merely through empirical regularities. For Sayer, epistemology concerns the theory-laden nature of knowledge, as empirical knowledge is always conceptually mediated and shaped by the relationship between theory and observation (Sayer, 1992, p. 46). Moreover, critical realists are committed to epistemological relativism: since knowledge is understood as fallible and open to revision, critical realism rejects the notion of a "final" truth (Buch-Hansen and Nielsen, 2020, p. 20)(Mukumbang, 2023, p. 96)(Sayer, 1992, p. 46). Accordingly, the results of this thesis should be understood as preliminary and fallible, reflecting a critical realist perspective.

Research Methodology

4.1 Case Selection

This thesis adopts India’s manufacturing sector as an in-depth case study because it represents the core of the country’s industrial base, has been strongly exposed to the decline in the labor share of income since the 1980s, and is well documented through both statistical datasets (Feenstra et al., 2025; Human Progress, 2025; World Bank Group, 2025) and secondary literature (Abraham and Sasikumar, 2017; Gupta and Helble, 2022; Johri and Rahman, 2022; Kapoor, 2020; Kochhar et al., 2006; Karabarbounis and Neiman, 2013; Ministry of Statistics & Programme Implementation, 2025; Mishra and Rishi, 2023; Sen and Das, 2015; Sinha, 2023; World Bank Group, 2025). While other sectors—most notably services—have also experienced a decline in the labor share of income, manufacturing is particularly suitable for the present inquiry due to the greater magnitude of this decline (Sinha, 2023, p. 2).

4.2 Critical Realist Research Cycle

This thesis is inspired by Mukumbang’s critical realist research cycle, as it translates the ontological and epistemological foundations of critical realism into a practical strategy for identifying and refining explanations of the decline in the labor share of income in India’s manufacturing sector. It follows two steps of Mukumbang’s recommended critical realist research cycle: (I) *theory gleaning*, involving the development of a preliminary theory and its hypotheses through the synthesis of existing literature to identify underlying mechanisms; and (II) *theory refining*, employing mixed methods to identify demi-regularities and generative mechanisms to refine the initial theory (Mukumbang, 2023, p. 99ff.). Given that the study focuses on a phenomenon within one national context (India), this research engages only in the gleaning and refining phase. The consolidation phase is

not undertaken as is intended for cross-case retrodiction, whereas this work focuses on a single-case analysis of India's manufacturing sector (Mukumbang, 2023, p. 99ff.).

Underlying the critical realist research cycle is a retroductive mode of inference (Mukumbang, 2023, p. 100). Retroduction refers to a mode of retrospective theorizing in which analysis proceeds backward from empirical observations to uncover the underlying mechanisms that generate them (Mukumbang, 2025, p. 76). The goal of retroduction is to identify the necessary contextual conditions under which causal mechanisms are activated and give rise to the observed empirical patterns (Fletcher, 2017, p. 189). For this thesis, retroduction means moving beyond a descriptive case study that mainly identifies empirical patterns. Instead, we explain how underlying mechanisms and conditions generate the observed decline in the labor share of income. Thus, the focus is on explaining why the labor share of income declines, instead of merely presenting what is observed.

Guided by this retroductive logic, the thesis begins with the (I) *theory gleaning* phase, moving from observed empirical patterns toward the identification of potential generative mechanisms and generating hypotheses. In the following chapter, this phase produces an initial theoretical framework for the decline in the labor share of income in India's manufacturing sector, highlighting technological progress, trade liberalization, and institutional processes.

Subsequent to the formulation of the hypotheses, the thesis proceeds to the (II) *theory refining phase*, in which the preliminary theory is further developed through the integration of evidence generated by multiple methods (Mukumbang, 2023, p. 99). To identify further demi-regularities and generative mechanisms within the case, the thesis integrates quantitative and qualitative methods (Mukumbang, 2023, p. 101). As Mukumbang notes, mixed methods research (MMR) often lacks explanatory depth by remaining focused on observable events (Mukumbang, 2023, p. 94). Much MMR is informed by Peircean pragmatism, which prioritizes practical inference over ontological and epistemological coherence (Mukumbang, 2023, p. 94). This contrast is important as it shows that the thesis combines methods not on solely pragmatic grounds, but within a critical realist framework. By contrast, this research approach explicitly grounds MMR in ontological and epistemological assumptions. Through retroductive theorizing, this framework enables the identification of the generative mechanisms specified in the initial theoretical framework developed in the following chapter (Mukumbang, 2023, p. 94).

Such theorizing requires the integration of findings from extensive and intensive data, a strategy that is likewise adopted in the present thesis (Mukumbang, 2023, p. 104f.). Eastwood et al. note that extensive approaches typically rely on quantitative methods and are primarily oriented toward identifying demi-regularities, offering limited explanatory depth (Eastwood et al., 2014, p. 5). Intensive approaches are predominantly qualitative and aim to generate an in-depth understanding of the conditions under which causal

powers are activated, thereby supporting causal explanation (Eastwood et al., 2014, p. 5). Data suitable to the case are collected and analyzed through both extensive and intensive methods, with the analysis guided by the initial theoretical framework and its associated hypotheses (Mukumbang, 2023, p. 101). Extensive materials consist of quantitative time-series data on the labor share of income, the relative price of investment goods (RIP), the capital-labor ratio, and tariff rates, which are used to identify demi-regularities. Intensive materials consist of qualitative literature on India's manufacturing sector, which is used to refine the initial theoretical framework by identifying contextual conditions and generative mechanisms underlying these empirical patterns.

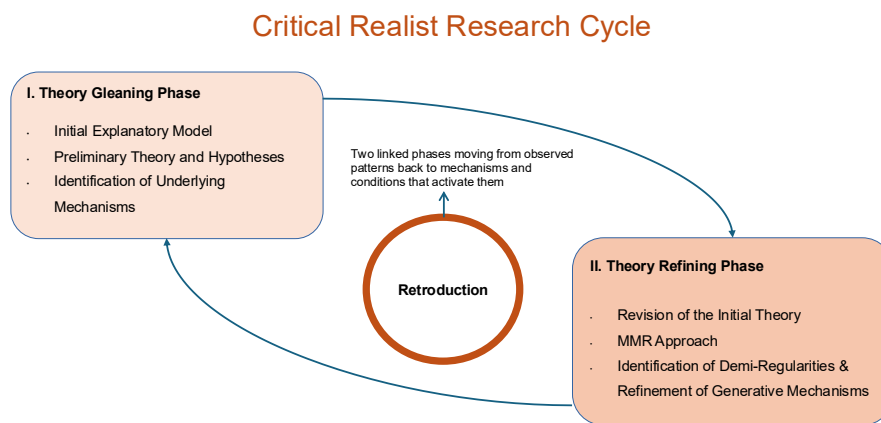


Figure 4.1: Critical Realist Research Cycle

Note. Own illustration based on (Mukumbang, 2023, p. 99ff.).

Initial Theoretical Framework and Hypotheses Development

Building on the empirical context established in Chapter 2, the *theory gleaning phase* begins from an empirical pattern that needs explanation: the sustained decline in the labor share of income in India's manufacturing sector (Abraham and Sasikumar, 2017; Sinha, 2023)(Mukumbang, 2023, p. 102). In response to this pattern, the thesis develops a provisional explanation of the generative mechanisms that may have produced the observed decline in the labor share of income (Mukumbang, 2023, p. 102). More specifically, the analysis makes a theory-informed interpretive move from the observed phenomenon toward plausible causal explanations grounded in existing theoretical knowledge (Mukumbang, 2023, p. 101f.). Drawing on the empirical context and a critical realist perspective reviewed in the previous chapter, the following section develops tentative hypotheses organized around three main themes: technological progress, trade liberalization, and institutional mechanisms. These three themes structure the chapter because they reflect the main lines of explanation identified in the empirical literature (Chapter 2) and provide a useful basis for analyzing their interaction within a critical realist framework (Chapter 3). These explanations are treated as provisional and will subsequently be refined through detailed analysis (Chapter 6 and Chapter 7) (Mukumbang, 2023, p. 102).

Importantly, the initial theoretical framework focuses first on two mechanism groups that are widely discussed when it comes to the decline in the labor share of income in the literature in general, as well as in the Indian manufacturing context. This starting point reflects the dominant explanatory patterns identified in the existing literature rather than a claim that other mechanisms are of secondary importance. Guided by a critical realist perspective, we argue that these initial explanations need to be extended by institutional mechanisms, which are likewise crucial for explaining the decline in the labor share of income.

5.1 Technological Mechanisms

The thesis advances a preliminary claim that technological progress contributed to the decline in the labor share of income in India's manufacturing sector, as documented in the empirical literature (Abraham and Sasikumar, 2017; Gupta and Helble, 2022; Kapoor, 2020; Mishra and Rishi, 2023; Sen and Das, 2015; Sinha, 2023). Within this literature, Sinha highlights the role of declining relative price of investment goods (RIP) and a rising capital-labor ratio (Sinha, 2023, p. 19). In addition, Abraham and Sasikumar show that increasing capital intensity and the growing importance of technology-intensive capital were associated with a lower labor share of income (Abraham and Sasikumar, 2017, pp. 33, 39).

These mechanisms are treated as related but analytically distinct channels through which technological progress may reduce the labor share of income: a falling RIP makes capital cheaper, leading to rising capital intensity and greater capital substitution, which in turn contributes to the decline in the labor share of income. Technology-intensive capital deepens this shift and places additional downward pressure on the labor share of income.

On this basis, the following hypotheses are formulated:

Hypothesis 1 (H_1). A decline in the relative price of investment goods, influenced by technological progress, tended to reduce the labor share of income in India's manufacturing sector.

Hypothesis 2 (H_2). An increase in the capital-labor ratio, driven by technological progress and capital-labor substitution, tended to reduce the labor share of income in India's manufacturing sector.

Hypothesis 3 (H_3). A rising share of IT-based capital within total capital, reflecting technology-based automation, tended to reduce the labor share of income in India's manufacturing sector.

5.2 Trade Liberalization

Technological progress was reinforced by trade liberalization (Gupta and Helble, 2022; Kapoor, 2020; Sen and Das, 2015). Trade liberalization is treated here as a structural condition that intensified mechanisms of technological change. More specifically, reductions in trade barriers—such as tariffs—lowered the relative price of capital goods by intensifying access to cheaper imported machines and technologies, thereby amplifying the decline in the labor share of income (Sen and Das, 2015, p. 113). Improved access to foreign technology and imported investment goods facilitated the adoption of more advanced production methods, accelerating automation and capital intensity, further reinforcing the decline in the labor share of income (Kapoor, 2020, p. 11).

Based on this, two related hypotheses are proposed: the first concerns the effect of reductions in trade barriers on the RIP, while the second concerns the resulting acceleration of automation through improved access to foreign technology and imported investment goods.

Hypothesis 4 (H_4). Reductions in trade barriers such as tariff rates tended to reduce the relative price of capital goods by increasing access to cheaper imported technologies, thereby inducing further capital-labor substitution and contributing to a decline in the labor share of income in India's manufacturing sector.

Hypothesis 5 (H_5). Improved access to foreign technology and imported investment goods due to trade liberalization tended to reduce the labor share of income in India's manufacturing sector by facilitating the adoption of more advanced, capital-intensive production methods.

5.3 Labor Market Mechanisms

Based on a critical realist perspective, we further argue that labor market mechanisms also affect the labor share of income. This focus is supported by the empirical literature on India's manufacturing sector, which highlights strict labor market regulations and contractualization as important influences on the decline in the labor share of income (Abraham and Sasikumar, 2017, pp. 5, 37).

Building on this provisional, mechanism-based explanation, the following general hypothesis is proposed:

Hypothesis 6 (H_6). Labor market mechanisms contributed to the decline in the labor share of income in India's manufacturing sector through strict labor market regulations and contractualization of labor.

Figure 5.1 illustrates the initial theoretical framework developed in the theory gleaning phase. Trade liberalization is treated as an upstream condition that reinforces technological mechanisms, while labor market mechanisms constitute an additional channel influencing the labor share of income in India's manufacturing sector.

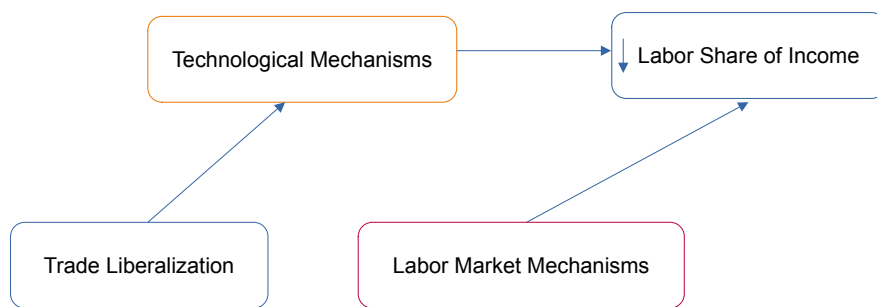


Figure 5.1: Initial Theoretical Framework

Quantitative Component

The quantitative component contributes to the theory refining phase by identifying empirical patterns and demi-regularities in the development of the labor share of income and in the operation of the proposed mechanisms. It narrows the range of candidate mechanisms and provides a basis for the subsequent qualitative analysis.

6.1 Quantitative Data Collection

The quantitative component of the thesis relies on routinely collected data that are relevant to the proposed hypotheses. More specifically, it addresses the Hypotheses H1, H2, H4, and H5 through time-series indicators for the labor share of income, the relative price of investment goods, the capital-labor ratio and tariff rates. H3 cannot be assessed faithfully with the available data and is therefore refined — together with H6 — in the qualitative analysis.

Data for the labor share of income are drawn from the Annual Survey of Industries (ASI), India’s most comprehensive data set on the formal industrial sector (Ministry of Statistics & Programme Implementation, 2025). The organized manufacturing sector is selected as the ASI provides consistent long-term data (Ministry of Statistics & Programme Implementation, 2025). Due to a lack of reliable data on the informal sector, the quantitative analysis is restricted to the formal manufacturing sector (Ministry of Statistics & Programme Implementation, 2025). Thus, the quantitative findings should be interpreted as evidence solely for India’s organized manufacturing sector.

Based on the published data reports of the ASI, two key variables for the period 1981–2022 are identified: total emoluments (W), capturing wages, salaries, and bonuses, and net value added (Y), representing the value created after accounting for intermediate inputs (Ministry of Statistics & Programme Implementation, 2013, p. 5)(Dünhaupt, 2013, pp. 2, 5). On this basis, the variable labor share of income (LS) is operationalized as:

$$LS = \frac{W}{Y} \quad (6.1)$$

We also identify quantitative indicators capturing key dimensions of technological progress. First, to capture the investment-goods price channel, we introduce the relative price of investment goods (*RIP*), calculated from data of the Penn World Table (Feenstra et al., 2025). The *RIP* is defined as the ratio of the price level of investment goods (pl_i) to the price level of consumption goods (pl_c) (DiCecio, 2009):

$$RIP = \frac{pl_i}{pl_c} \quad (6.2)$$

Second, we adopt the capital-labor ratio—a key indicator to characterize manufacturing’s shift toward greater capital intensity (Ministry of Statistics & Programme Implementation, 2025). Calculated using ASI data (Ministry of Statistics & Programme Implementation, 2025), the capital-labor ratio is defined as the ratio of fixed capital (K) to the number of workers (L) (Acemoglu, 2008).

$$\text{capital-labor ratio} = \frac{K}{L} \quad (6.3)$$

Finally, we employ the applied tariff rate as an indicator of trade liberalization, since tariff rates are widely recognized in the literature as a proxy for trade liberalization and have been substantially reduced in India (Dornbusch, 1992, p. 72f.)(Gupta and Helble, 2022, p. 111)(Topalova, 2007, p. 298). Data are obtained from the World Bank Group and Human Progress (Human Progress, 2025; World Bank Group, 2025). Both sources present the applied tariff rate on manufactured goods in percentage terms. Where the World Bank dataset contains missing values, Human Progress is used as a complementary source.

6.2 Quantitative Analysis

Consistent with critical realism’s stratified ontology, our quantitative analysis operates at the level of "the empirical" and "the actual" by documenting observable trends. It aims to identify empirical patterns, temporal shifts, and demi-regularities that may be interpreted as possible effects of underlying mechanisms. Demi-regularities are understood as recurring, but also context-dependent, patterns in the data, such as sustained declines, turning points, and co-movements between the labor share of income, *RIP*, the capital-labor ratio, and tariff rates. The co-movements are not treated as proof of causality, but as patterns that may point to underlying mechanisms.

Our quantitative analysis therefore focuses on four indicators — the labor share of income, *RIP*, the capital-labor ratio, and the tariff rate — since these correspond to the hypotheses

and can be operationalized most consistently with available time-series data. More specifically, these indicators allow the quantitative component to address H1, H2, H4, and H5 directly. The quantitative analysis is therefore structured by indicators, not by hypothesis (Mukumbang, 2023, p. 103).

For each variable, we begin by presenting a graphical time-series analysis for the period 1981–2022. This step is used to identify broad empirical patterns such as long-term increases or declines, temporary shocks, turning points, as well as periods of relative stability or volatility. It is followed by a growth dynamic analysis, which examines year-over-year percentage changes to capture short-term adjustments and fluctuations that may be less visible in the level data. Finally, a correlation analysis is conducted to explore the extent to which the indicators labor share of income, relative price of investment goods, capital-labor ratio and tariff rate co-move over time. Taking a critical realist perspective, these correlations are not treated as evidence of causality, but as empirical patterns that may point to underlying mechanisms and help to guide the qualitative analysis.

6.3 Quantitative Findings

6.3.1 Labor Share of Income

We first examine the total emoluments (W) and net value added (Y), as their ratio influences the labor share of income in India’s manufacturing sector. Figure 6.1 shows that total emoluments (W) in organized manufacturing increase steadily between 1981 and 2022. They rise from 677,753 in 1981 to 64,049,070 in 2022, reflecting a significant expansion of total labor compensation. Growth is relatively moderate during the 1980s but accelerates after 1991. While temporary slowdowns are evident in the late 1990s and during the COVID-19 pandemic in 2019–2020, the long-run trend is clearly upward.

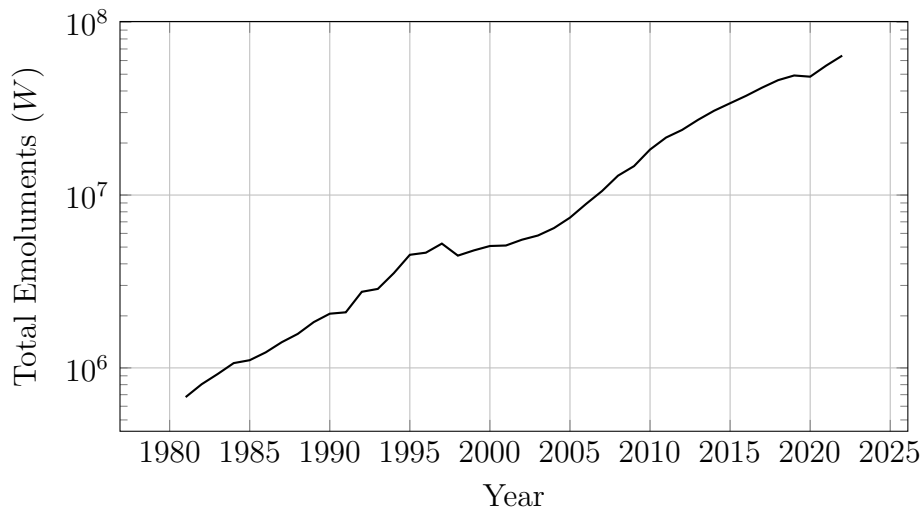


Figure 6.1: Total Emoluments (W) in India’s Organized Manufacturing Sector, 1981–2022

Compared to the development of total emoluments (W), net value added (Y) grows at a faster pace over the period 1981–2022. As Figure 6.2 illustrates, net value added increases immensely from 1,451,257 in 1981 to 188,041,113 in 2022, with growth accelerating markedly from 1991 onward. Although the series shows short-term volatility—particularly in the late 1990s and in 2019—the overall trend remains strongly upward.

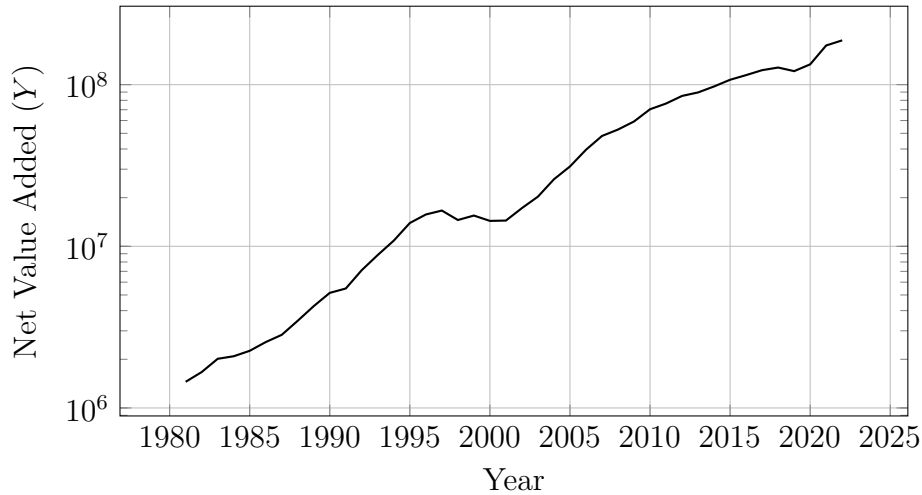


Figure 6.2: Net Value Added (Y) in India's Organized Manufacturing Sector, 1981–2022

As the labor share of income is defined as the ratio of total emoluments to net value added ($LS = W/Y$) (Dünhaupt, 2013, pp. 2, 5), the faster growth of net value added (Y) relative to total emoluments (W) provides an important context for its evolution: even when employee compensation rises, if net value added expands more rapidly, workers receive a smaller portion of the economic output.

Figure 6.3 illustrates that the labor share of income falls from 46.70 percent in 1981 to 34.06 percent in 2022 in the organized manufacturing sector (Ministry of Statistics & Programme Implementation, 2025). During the 1980s, the labor share is comparatively high, fluctuating between 46 and 51 percent, with a peak in 1984 (51.04 percent). In the 1990s a notable fall is evident, with the labor share declining from 38.25 percent in 1991 to 30.87 percent in 1999. The persistence of this decline may indicate a change in the distribution of functional income rather than temporary fluctuation. Following a slight rebound in 2000, the labor share falls significantly from 35.38 percent in 2001 to 21.89 percent in 2007. This phase appears consistent with a downward shift to a lower labor share of income. During the global financial crisis, it recovers from 24.53 percent in 2008 to 30.43 percent in 2013. Since 2013, the labor share of income has risen sharply, peaking at 40.55 percent in 2019. This recovery proves fragile, as the labor share declines again, reaching 34.06 percent in 2022. Overall, despite periods of recovery, the labor share of income remained well below its 1980s level. From a descriptive perspective, these empirical patterns suggest that longer-term changes in the distribution of income between labor and capital may have occurred in India's manufacturing sector.

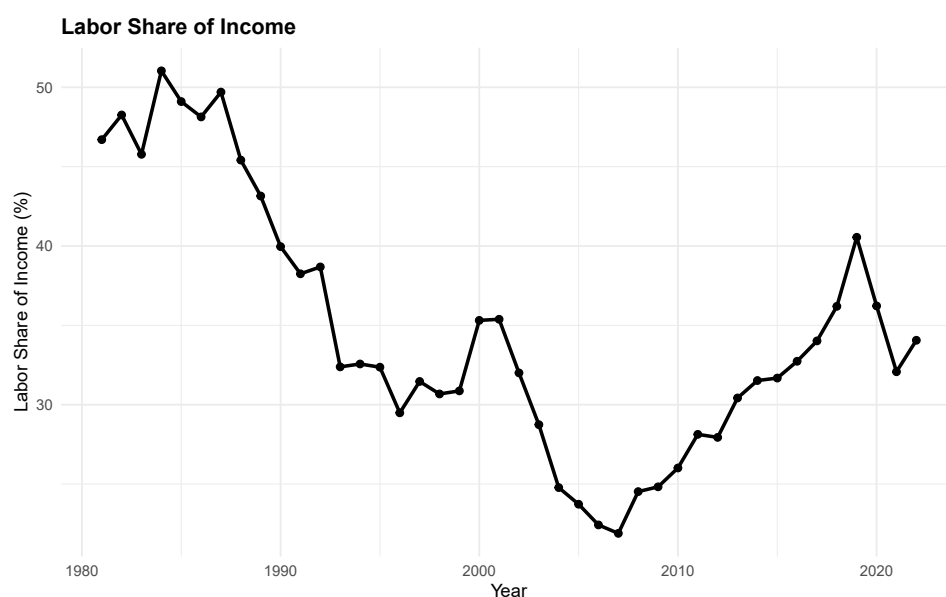


Figure 6.3: Labor Share of Income (%) in India's Organized Manufacturing Sector, 1981–2022

Figure 6.4 displays the year-over-year percentage change in the labor share of income, illustrating how the labor share of income evolves from one year to the next. The series fluctuates strongly around zero, indicating that changes in labor's share of income are highly variable rather than smooth or gradual. There is no persistent upward or downward trend in growth rates over the period 1981–2022. Pronounced negative episodes appear in the early 1990s, between 2002 and 2007, and again in 2020 and 2021. The fluctuations suggest that the labor share of income evolved differently across historical periods. Yet the quantitative findings do not identify the generative mechanisms behind these changes.

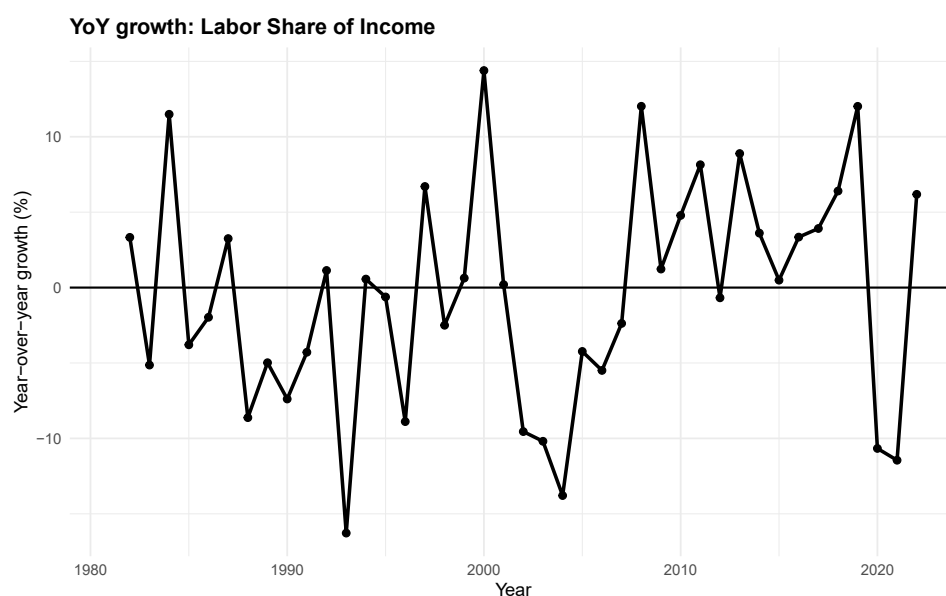


Figure 6.4: Year-over-Year Growth (%): Labor Share of Income (%) in India's Organized Manufacturing Sector, 1981–2022

6.3.2 Relative Price of Investment Goods (RIP)

Figure 6.5 illustrates the long-run evolution of the relative price of investment goods (RIP) in India over the period 1981–2022. During the 1980s, RIP rises steadily, increasing from 1.293 in 1981 to 1.686 in 1990, despite year-to-year fluctuations. The series reaches its peak in 1991 (1.697), but after some volatility in the mid-1990s, a sustained decline sets in, with RIP falling from 1.672 in 1995 to 1.167 in 2007. After the global financial crisis, the RIP experiences a temporary rebound in 2008, but remains at a lower level compared to the 1990s. It fluctuates around roughly 1.2 and 1.3 through the 2010s and early 2020s. This long-term decline is consistent with H1, which links a falling relative price of investment goods to changes in the distribution of income. The decline after the mid-1990s is partly consistent with H4, as it follows the trade liberalization period. However, the quantitative findings alone do not show whether this pattern is associated with the RIP channel alone or with a combination of the RIP and liberalization channels.



Figure 6.5: Relative Price of Investment Goods in India, 1981–2022

Figure 6.6 shows the year-over-year percentage change in the relative price of investment goods (RIP) over the sample period. The series fluctuates around zero, indicating that the RIP does not follow a long-term upward or downward trend in growth terms. From 2008 to 2009 there is a noticeable positive percentage change, suggesting that the global financial crisis had a strong short-term effect on the RIP. Summarized with the level series, these empirical patterns suggest that the long-term decline in RIP did not occur as a smooth annual process, but rather through uneven movements over time. Thus, the quantitative evidence is consistent with H1 at the long-term level, but also indicates that the RIP does not operate as a continuous year-to-year decline.

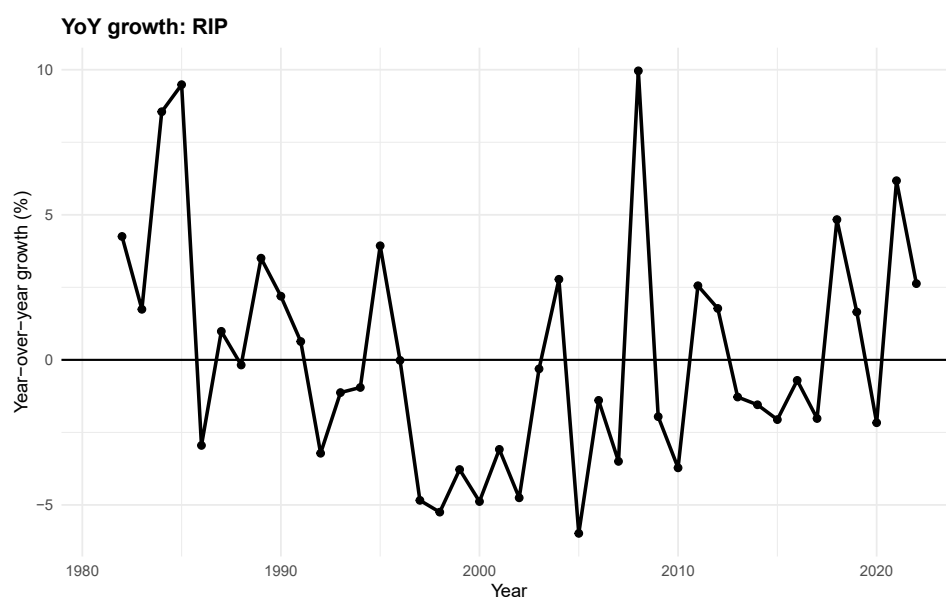


Figure 6.6: Year-over-Year Growth (%): Relative Price of Investment Goods (RIP) in India, 1981–2022

6.3.3 Capital-Labor Ratio

Figure 6.7 presents a long-run increase in capital intensity, as the capital-labor ratio in India's manufacturing rises from 0.568 in 1981 to 28.199 in 2022. The ratio increases steadily throughout the 1980s and 1990s, with particularly strong acceleration after the early 1990s. This pronounced upward trend is consistent with a process of capital deepening. During the 2000s, the ratio increases markedly, indicating a phase of rapid capital accumulation relative to labor. The most dramatic increase occurs between 2007 and 2013, when the ratio rises from 10.308 to 22.727. The ratio continues to increase in the mid-2010s, indicating sustained growth in capital intensity. Even though there is a temporary dip in 2021, the ratio remains at a high level in 2022. This empirical pattern is consistent with H2 to the extent that an increasing capital-labor ratio may indicate stronger capital intensity and possible capital-labor substitution. However, these quantitative findings do not establish whether this reflects technological progress or automation. Therefore, additional qualitative evidence is needed to clarify which mechanisms underlie the observed increase in the capital-labor ratio.

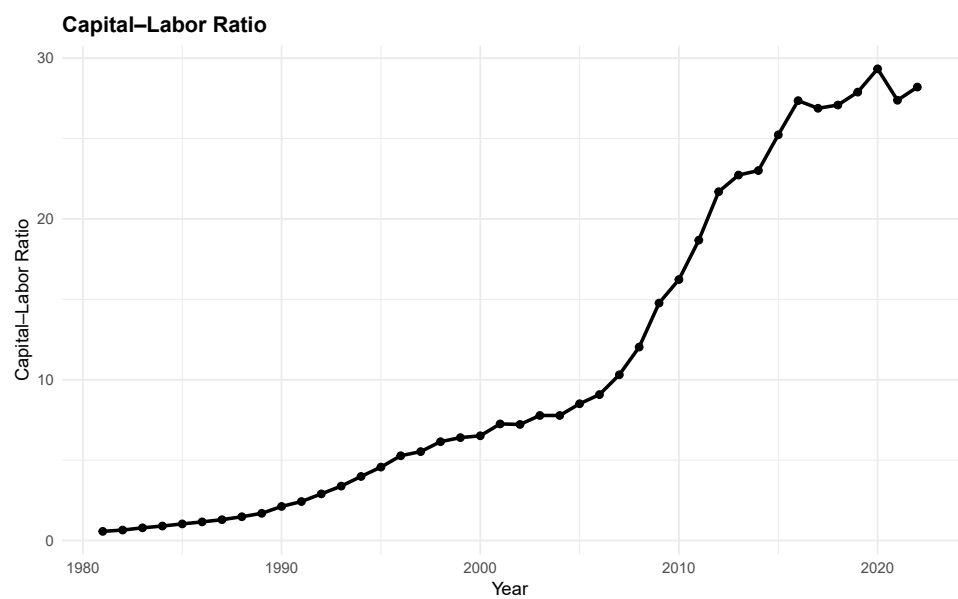


Figure 6.7: Capital-Labor Ratio in India’s Organized Manufacturing Sector, 1981–2022

Figure 6.8 depicts the year-over-year percentage growth of the capital-labor ratio over the period 1981–2022. The series is positive in most years, indicating that the capital-labor ratio has generally increased from one year to the next. Peaks in the series suggest periods of accelerated capital-labor substitution, potentially driven by investment surges and technological progress. Overall, the series indicates that India’s manufacturing sector has undergone continuous capital deepening over time, although the pace of the process has varied across different periods. To clarify which technological processes may have contributed to this pattern, the next chapter turns to qualitative evidence.

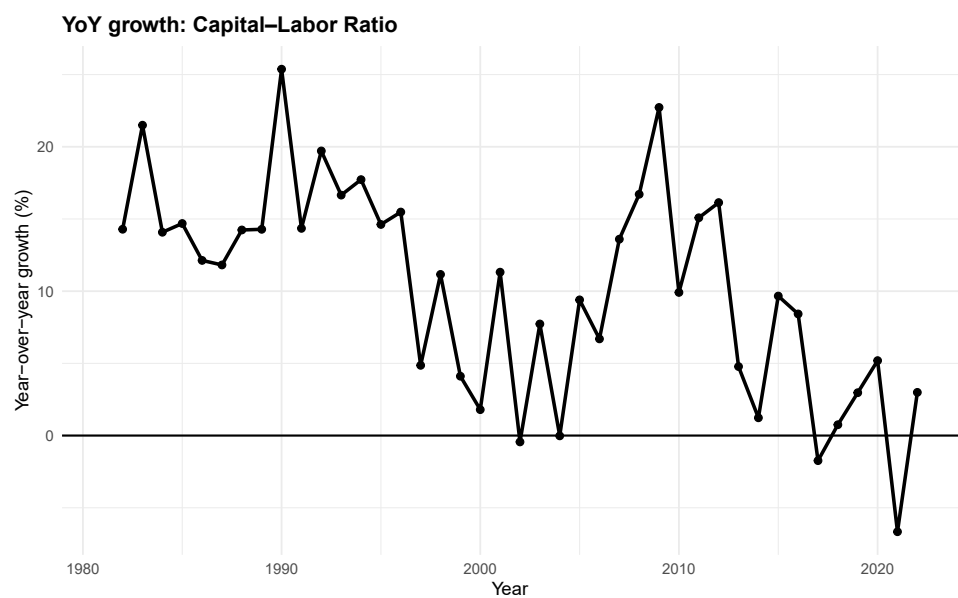


Figure 6.8: Year-over-Year Growth (%): Capital-Labor Ratio in India’s Organized Manufacturing Sector, 1981–2022

6.3.4 Tariff Rate

As consistent data on the applied tariff rate for manufactured goods in India are only available from 1990 onwards, the analysis is limited to the period 1990–2022. This shorter time period reduces comparability with the labor share of income, RIP, and capital-labor ratio, which cover 1981–2022. Accordingly, the correlation analysis involving the tariff rate should be interpreted with caution compared with correlations derived from the longer series.

Figure 6.9 shows a long-term decline in the applied tariff rate in India’s manufacturing sector from 1990 to 2022, falling from 71.10 percent in 1990 to 6.22 percent in 2022 (Human Progress, 2025; World Bank Group, 2025). A sharp decline is evident from 71.10 percent in 1990 to 20.52 percent in 1997, representing a massive reduction in trade protection. Between 1998 and 2000, tariffs rebound slightly, peaking at 31.41 percent in 1999. From 2001 onward, tariffs decline steadily, dropping to 5.47 percent in 2008. The lowest level is reached in 2010, at 4.70 percent. Since the mid-2010s, tariffs have stabilized at low levels of approximately 6 to 7 percent. Overall, the series indicates sustained trade liberalization in India’s manufacturing sector since the early 1990s. The decline in tariff rates is consistent with H4 and H5, as lower trade barriers may have increased access to cheaper imported capital goods and foreign technologies. Yet the tariff rate does not show whether firms actually imported more investment goods, adopted more advanced technologies, or engaged in further capital-labor substitution.

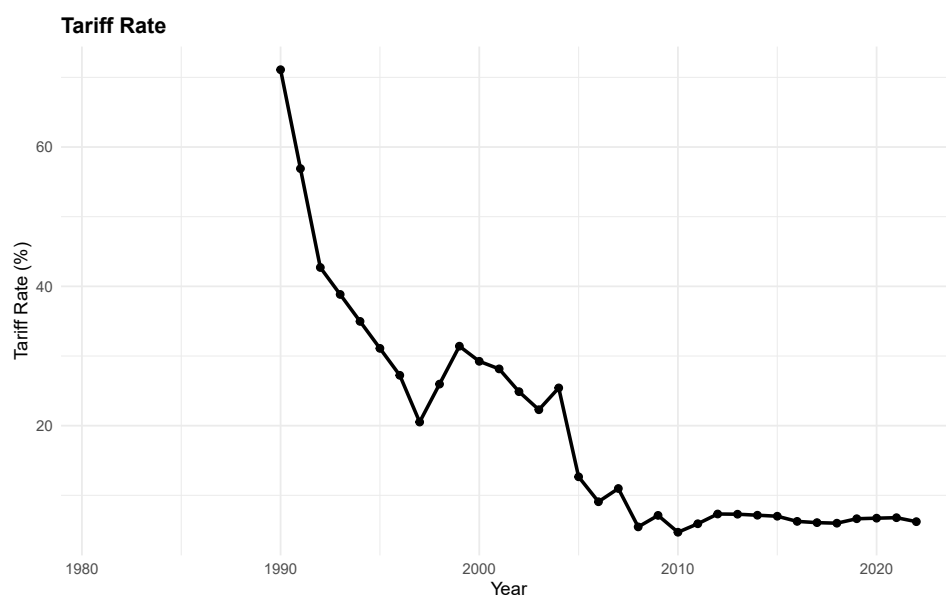


Figure 6.9: Tariff Rate (%) on Manufactured Goods, 1990–2022

Figure 6.10 shows the year-over-year percentage change in tariff rates on manufactured goods over the period 1990–2022. The strongly negative growth rate during the early 1990s reflects trade liberalization after the policy reforms in 1991. After the initial liberalization phase, the series experiences positive growth rates in 1998 and 1999. This is followed by negative growth rates in the early 2000s. From the mid-2000s onward, renewed fluctuations occur, including positive and negative spikes. These fluctuations suggest that tariff policy was shaped by changing trade policy decisions, including tariff reforms and the removal of import restrictions. The next chapter examines these dynamics through qualitative findings.

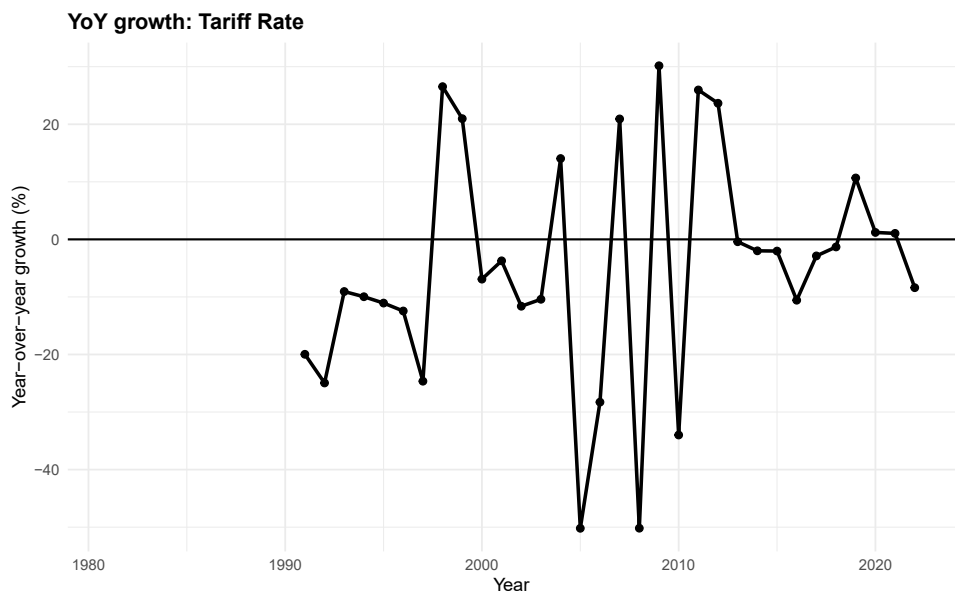


Figure 6.10: Year-over-Year Growth (%): Tariff Rate (%) on Manufactured Goods, 1990–2022

Figure 6.11 presents the pairwise correlation coefficients among the four variables—the Labor Share of Income, Capital-Labor Ratio, RIP, and Tariff Rate. In this thesis, pairwise correlations are used as descriptive evidence for theory refining rather than for causal claims. More specifically, they help indicate whether the variables move together in directions that are broadly consistent with the hypotheses and therefore reveal empirical patterns that may point to generative mechanisms.

Correlation reflects the direction and strength of a linear relationship between two variables: values range from -1 to +1, with 0 indicating no linear relationship and values closer to -1 or +1 indicating stronger negative or positive relationships (Schober et al., 2018, p. 1763). To describe the strength of these associations, this thesis follows the guideline thresholds suggested by Quinnipiac University (Politics): these guidelines classify correlation coefficients as perfect at -1 or +1, very strong between ± 0.9 and ± 0.7 , strong between ± 0.6 and ± 0.4 , moderate around ± 0.3 , weak around ± 0.2 , and negligible around ± 0.1 (Akoglu, 2018, p. 92). From a critical realist perspective, the resulting correlations do not establish causality, but they do help identify empirical patterns that can guide the search for deeper generative mechanisms.

The correlation matrix based on annual observations reveals several notable empirical patterns (Figure 6.11). It visualizes both the direction and strength of the linear relationships, where correlation coefficients range from -1 to +1. The labor share of income is moderately negatively correlated with the capital-labor ratio (-0.39), suggesting that higher capital intensity tends to be associated with a lower labor share. This pattern is consistent with H2, connecting capital deepening to a declining labor share of income.

In comparison, the labor share of income exhibits strong positive correlations with the RIP (0.47) and the tariff rate (0.44), indicating that increases or decreases in either variable tend to be associated with corresponding increases or decreases in the labor share of income. These co-movements are consistent with H1, H4 and H5, as lower RIP values and lower tariff rates are associated with a lower labor share of income.

Beyond these relationships, the capital-labor ratio is strongly negatively correlated with the RIP (-0.69) and very strongly negatively correlated with the tariff rate (-0.77), implying that lower values of either variable coincide with higher capital intensity. Finally, the strongest positive relationship in the correlation matrix is observed between the RIP and tariff rate (0.84), suggesting that higher tariff rates are associated with higher RIP values, and vice versa.

These level correlations should be interpreted cautiously, since they may partly reflect common long-term time trends, but do not necessarily indicate direct relationships. From a critical realist perspective, they remain empirical patterns that help refine the hypotheses, but are not causal claims themselves.

In contrast to the level correlations, the correlations based on the year-over-year changes are close to zero. This suggests that the observed associations mainly reflect longer-term co-movements, but not stable year-to-year relationships. These co-movements do not weaken the hypotheses, but indicate that the relevant indicators operate over long-term horizons instead of immediate annual changes.

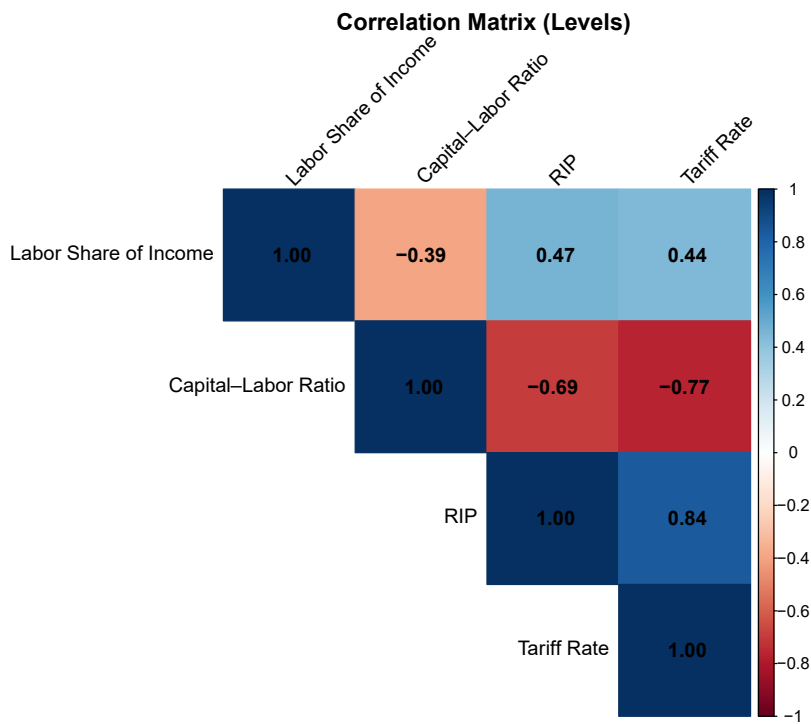


Figure 6.11: Correlation Matrix of Variables, Annual Data, 1981–2022

Qualitative Component

7.1 Qualitative Data Collection

The qualitative data collection draws on existing theoretical and empirical contributions to identify demi-regularities and generative mechanisms discussed in the literature. Sources were selected if they examined processes that could contribute to changes in the labor share of income in India's manufacturing sector, even when the decline was not their primary focus. More specifically, a source was considered relevant if it provided arguments on mechanisms related to technological progress, labor market processes, product market dynamics, trade liberalization, and policy implications. Studies addressing India's manufacturing sector more generally were not included if no connection to functional income distribution could be established.

The selected literature is used according to its analytical role in the mechanism framework. This includes contributions on technological progress (Abraham and Sasikumar, 2017; Sen and Das, 2015; Wang and Wang, 2025), labor market processes (Kapoor, 2015; Maiti, 2019; Saha et al., 2013; Sood et al., 2014), product market processes (Maiti, 2019; Veeramani and Basu, 2025), trade liberalization (Abraham and Sasikumar, 2017; Sen and Das, 2015; Saha et al., 2013; Veeramani and Basu, 2025) and policy implications (Hasan et al., 2013; Kapoor and Krishnapriya, 2019; Sood et al., 2014), as well as studies that help interpret the connection between the labor share of income and workers' material living conditions (Abraham and Sasikumar, 2017; Basole and Narayan, 2018; Bhattacharya et al., 2011; De Jong, 2015; Solow, 1956).

7.2 Qualitative Analysis

Informed by a critical realist research design, the qualitative component of this thesis aims to identify the underlying generative mechanisms and contextual conditions that

contributed to the observed decline in the labor share of income in India's manufacturing sector. More specifically, it explains the empirical patterns identified in Chapter 6, refines the hypotheses developed in the initial theoretical framework, and clarifies the mechanisms underlying changes in the relative price of investment goods (RIP), the capital-labor ratio, and tariff rates. The qualitative component complements the quantitative component by interpreting the observed empirical patterns and by investigating mechanisms that could not be established through the quantitative findings.

At the same time, the qualitative analysis considers mechanisms that may contribute to an increase in the labor share of income in order to capture countervailing dynamics. In this context, it is important for us to point out that, for instance, trade and technological progress can, through various mechanisms, have both positive and negative effects on the labor share of income. This approach aims to move beyond either-or thinking. In addition to identifying mechanisms that contributed to the decline in the labor share of income, the chapter therefore also examines conditions under which these mechanisms may operate differently.

Policy implications are included within the qualitative analysis, as they help clarify how the identified mechanisms might be modified under different structural conditions. They are interpreted through McAnulla's structure-discourse-agency framework (McAnulla, 1998, p. 10f.). Within this framework, policy recommendations can be understood as interventions that modify structural conditions, influence discursive interpretations, and guide social interactions (McAnulla, 1998, p. 10f.).

Coding constitutes the first step of our qualitative analysis. It involves the use of both theory-informed, deductive codes guided by the initial theoretical framework, and topic-based, inductive codes derived directly from the selected sources (Mukumbang, 2023, p. 104). Deductive codes were used to capture mechanisms already anticipated in the framework, while inductive codes made it possible to capture additional processes and mechanisms from the literature. Through axial coding, these codes are linked to identify connections between contexts, mechanisms, and observed outcomes (Mukumbang, 2023, p. 104). A passage was treated as a mechanism-observation dyad when it linked a specific process to an observed outcome, and as a context-mechanism-observation triad when it additionally specified structural and historical conditions under which that process operated. The initial theoretical framework served as a guide, while remaining open to refinement through the qualitative material. The following section presents the structures, contexts, generative mechanisms, and observations identified through this coding process in order to refine and substantiate plausible mechanism-based explanations for the decline in the labor share of income (Mukumbang, 2023, p. 104).

7.3 Qualitative Findings

Our qualitative findings confirm that the labor share of income in India's manufacturing sector declined and was influenced by a variety of mechanisms embedded in diverse contexts. The analysis identified five categories of mechanisms: technological progress, labor market processes, product market processes, trade liberalization, and policy-related dynamics. These findings refine the initial theoretical framework developed in Chapter 5 by showing that the decline in the labor share of income can be explained by the interaction of various mechanisms and by the conditions under which they are activated. In the following section, we present these categories and provide the essential background to generate a better understanding of how they operate and affect functional income distribution.

7.3.1 Technological Progress

Supporting our initial theoretical framework, a substantial body of literature finds that technological progress contributed to the decline in the labor share of income in India's manufacturing sector (Abraham and Sasikumar, 2017; Hasan et al., 2013; Kapoor, 2015; Kapoor and Krishnapriya, 2019; Maiti, 2019; Saha et al., 2013; Sen and Das, 2015; Veeramani and Basu, 2025; Wang and Wang, 2025). Our findings on technological progress both confirm and further refine our initial framework. More specifically, they distinguish between different technological mechanisms, incorporate R&D activity as an additional mechanism, and show how these mechanisms are intensified by trade liberalization processes. In the following, we present the mechanisms through which technological progress affects the labor share of income.

Capital Intensity and Technology Intensity

As outlined in our initial framework, increasing capital intensity and technology intensity contribute to the decline in the labor share of income. Capital intensity and technology intensity are closely related but analytically distinct. Capital intensity refers to the increasing use of capital relative to labor, while technology intensity describes the adoption of more advanced production technologies, including machinery. In the literature under study, these processes operate through a common mechanism chain: cheaper capital goods and increasing capital intensity raise the use of machinery, reduce labor intensity, thereby contributing to the decline in the labor share of income.

Veeramani and Basu show that the sharp decline in the labor share of income in India's organized manufacturing is driven by the rising presence of capital-intensive industries (Veeramani and Basu, 2025, p. 10). Kapoor complements this by stating that production became more capital-intensive across capital- and labor-intensive industries (Kapoor,

2015, p. 354). This increase in capital intensity led to a rise in the profit share, while the wage share declined (Kapoor, 2015, p. 355). Consistent with this development, economic growth has favored industries that rely more heavily on capital and "skilled" workers rather than "unskilled" labor (Kapoor, 2015, p. 352). This outcome, together with the increasing capital intensity of production, explains the limited contribution of manufacturing to job creation (Kapoor, 2015, p. 352). Sen and Das demonstrate that the resulting decrease in labor intensity is particularly unexpected in labor-intensive industries, since labor in these sectors is the source of comparative advantage (Sen and Das, 2015, p. 109). They also confirm that the decline in labor intensity in overall manufacturing is mirrored by the decline in the labor share of income (Sen and Das, 2015, p. 112). A main reason for the decreasing labor intensity is the rise in the ratio of the real wage rate to the rental price of capital, since this made capital cheaper compared to labor, encouraging companies to replace labor with machines (Sen and Das, 2015, p. 112f.).

Abraham and Sasikumar illustrate that, alongside the negative effect of the increasing capital-labor ratio on both the wage share and the emoluments share, the composition of capital in manufacturing has also shifted (Abraham and Sasikumar, 2017, p. 39f.). Aligned with our initial model, the rise in IT-based capital within total capital led to a decrease in both the wage share—due to a decline in labor demand—and the emoluments share (Abraham and Sasikumar, 2017, pp. 36, 40f.). In addition, the substitution of technology for less-skilled workers further reduced the wage share (Abraham and Sasikumar, 2017, p. 42). This is particularly important for the qualitative component, as it addresses H3, which could not be operationalized in the quantitative analysis. The qualitative components highlights the technological mechanism through which changes in the composition of capital contributed to the decline in the labor share of income.

Taken together, these patterns of technological progress can be interpreted as a mechanism-observation dyad, where rising capital and technology intensity act as the underlying mechanisms driving the observed decline in the labor share of income.

R&D activity

R&D activity affects the labor share of income by shaping employment composition. As highlighted by Wang and Wang, R&D activity—treated as a proxy for technological change—influences employment (Wang and Wang, 2025, p. 104). More specifically, companies engaging in R&D experience a higher share of permanent workers (Wang and Wang, 2025, p. 1). Companies that invest in R&D are more likely to hire permanent staff than those that do not (Wang and Wang, 2025, p. 3, 10). In addition, companies with higher R&D intensity employ a greater share of skilled production workers on a permanent basis compared to companies without such investment (Wang and Wang, 2025, p. 1). To achieve innovation objectives, Indian companies require a higher proportion of qualified

production workers rather than an expansion of non-production workers (Wang and Wang, 2025, p. 10). In addition, the share of permanent workers relative to temporary workers is higher in companies engaged in R&D (Wang and Wang, 2025, p. 10)(Wang and Wang, 2025, p. 1).

At the same time, R&D activity declined steadily from above 0.85 in 2008 to below 0.65 in 2020. This relatively low level of innovation suggests that technological sophistication of Indian manufacturing firms remained far below the frontier observed in the OECD countries Poland and South Korea (Wang and Wang, 2025, p. 2). In this thesis, this is interpreted as suggesting that the wage gains associated with R&D activity were concentrated among a small group of permanent "skilled" production workers, rather than generating broad-based wage growth. Although R&D increases the proportion of permanent workers and the demand for skilled production workers, its limited reach in the broader labor force may have restricted its positive effect on the labor share of income.

Through a different mechanism, Veeramani and Basu identify a negative relationship between R&D intensity and the labor share of income (Veeramani and Basu, 2025, pp. 21, 25). They argue that R&D leads to a shift toward capital-labor substitution and reduced labor demand, which in turn reduces the labor share of income (Veeramani and Basu, 2025, pp. 21, 25). Apart from that, the shift towards capital-intensive manufacturing results in fewer people being employed, which further reduces the labor share of income (Veeramani and Basu, 2025, p. 2).

Taken together, even though the underlying mechanisms differ, R&D affects the labor share of income through multiple channels. R&D activity should therefore be incorporated into our framework as a sub-mechanism of technology intensity, since it shapes employment composition and contributes to the decline in the labor share of income. From an axial coding perspective, these results serve as a mechanism-observation dyad, in which R&D activity functions as a generative mechanism through its effects on the composition of employment and capital-labor substitution, contributing to the observed decline in the labor share of income.

7.3.2 Labor Market Processes

Looking at the specific case of India's manufacturing sector, an analysis of the papers under study makes it clear that, in addition to technological progress—a factor often emphasized in theory in connection with a reduction in the labor share of income—processes in the labor market also contributed to the decline in the labor share of income (Abraham and Sasikumar, 2017; Hasan et al., 2013; Kapoor, 2015; Kapoor and Krishnapriya, 2019; Maiti, 2019; Saha et al., 2013; Sen and Das, 2015; Sood et al., 2014; Veeramani and Basu, 2025; Wang and Wang, 2025). Labor market dynamics therefore constitute an additional set of mechanisms that influence how income is distributed between labor and capital. Looking at

Chapter 5, these labor market processes correspond directly to H6, while also refining it by showing that, alongside strict labor market regulations and the contractualization of labor, changes in workers' bargaining power, other emoluments per worker, the uncompensated rise in workdays, and the feminization of employment contributed to the decline in the labor share of income. In the following, various interrelated mechanisms of labor market processes are presented, beginning with the effects of labor market regulations.

Labor Market Regulations

In particular, labor market regulations play a crucial role in shaping labor market dynamics (Abraham and Sasikumar, 2017; Hasan et al., 2013; Kapoor, 2015; Kapoor and Krishnapriya, 2019; Saha et al., 2013; Sen and Das, 2015; Sood et al., 2014; Veeramani and Basu, 2025). As Hasan, Mitra and Sundaram emphasize, India's manufacturing depends more heavily on capital-intensive production techniques compared to countries with similar development levels and factor endowments (Hasan et al., 2013, p. 212). They attribute this to India's strict labor market regulations in formal manufacturing, which contributed to a significantly higher capital intensity than would be expected in a labor-abundant economy (Hasan et al., 2013, p. 214). These labor regulations are comparatively stringent relative to those in European and Latin American countries, which face strict labor laws (Hasan et al., 2013, p. 222). An examination of labor regulations comparable to Section 5B of the Industries Development and Regulation Act (1947) suggests that mandatory external approval for dismissal exists only in Indonesia, Mexico, Sri Lanka, and India (Hasan et al., 2013, p. 222). In comparison, the absence of such approval requirements for layoffs and collective dismissals in China, relative to their legal mandate in India, points to a comparatively more rigid labor market in India (Hasan et al., 2013, p. 231).

Labor market regulations in India's manufacturing sector operate through a contradictory institutional mechanism. On the one hand, according to Abraham and Sasikumar, these labor market regulations are generally designed to reduce workers' vulnerabilities in regard to job security, income stability, and working conditions, thereby providing a basic layer of social protection (Abraham and Sasikumar, 2017, p. 37). On the other hand, these protections also raise hiring, firing, and other quasi-fixed labor costs, which in turn strengthen capital-labor substitution (Abraham and Sasikumar, 2017, pp. 5, 37). In this way, employment protection may improve workers' formal security while at the same time reducing firms' incentive to hire permanent labor. Kapoor as well as Sen and Das argue that India's labor market rigidity—among the most protective globally—discourage firms from hiring permanent workers and encourage a shift toward more capital-intensive production despite relatively low labor costs (Kapoor, 2015, p. 354)(Sen and Das, 2015, p. 112). This mechanism helps explain the persistent decline in labor intensity in organized manufacturing (Sen and Das, 2015, p. 112). Veeramani and Basu complement this argument by showing that India's labor market rigidity inhibits major companies from

labor-intensive production, leading to a reduction in the labor share of income (Veeramani and Basu, 2025, p. 5).

From the perspective of axial coding, India's strict labor market regulations can be integrated into a context-mechanism-observation triad, where this regulatory environment constitutes the context, the resulting rise in capital intensity reflects the mechanism of capital-labor substitution, which, in turn, leads to a decline in the labor share of income, as presented in the subsection "Capital Intensity and Technology Intensity", thereby representing the observed outcome.

In response to these regulatory pressures and cost considerations, firms increasingly adjust their employment structures to maintain flexibility. Kapoor notes that reducing the number of permanent workers serves as a way to circumvent stringent labor market regulations, particularly the Industrial Disputes Act (IDA) (Kapoor, 2015, p. 356). State-level variation in the implementation of the IDA further shows that the effects of labor regulation were not uniform across India. According to Maiti, the IDA (1947) established broad national guidelines for labor relations, while delegating their implementation and amendment to state governments within India's federal democratic system. These arrangements led to considerable variation in both labor regulations and their enforcement across states (Maiti, 2019, p. 3f.). Thus, state-level variation is a contextual condition influencing how strongly labor regulations contributed to contractualization and employment adjustment. Kapoor's findings show that states with more flexible labor market regulations experienced an increase in employment, which is consistent with the expectation that rigid labor regulations tend to have adverse effects on employment (Kapoor, 2015, p. 367).

Contractualization of Labor

Building on the role of labor market regulations, contractualization of labor contributes to the decline in the labor share of income. The underlying mechanisms are outlined in this subsection. This subsection shows that contractualization operates through various interconnected mechanisms. It allows companies to circumvent labor regulations, expands informal employment, reduces social protection, lowers quasi-fixed labor costs, and increases inequality in the labor market.

Kapoor and Krishnapriya show that the IDA is limited to permanent employees, but it does not cover contract workers (Kapoor and Krishnapriya, 2019, p. 4). This institutional limit is crucial, as it allows firms to circumvent labor regulations by shifting away from permanent employment toward more flexible forms of labor. This indicates that, as noted by Maiti, the mere existence of labor laws does not necessarily lead to labor market rigidity in practice (Maiti, 2019, p. 14). Instead, market dynamics and the socio-political environment play a crucial role when the implementation of the law is inadequate (Maiti, 2019, p. 14).

Therefore, it would be misleading to attribute weak employment growth in manufacturing solely to labor regulations, since these rules mainly apply to permanent employees. To bypass these, companies are increasingly employing contract workers (Kapoor, 2015, pp. 352, 372f.). Most papers under study document a pronounced shift in organized manufacturing from regular employment toward contract labor (Abraham and Sasikumar, 2017; Kapoor, 2015; Kapoor and Krishnapriya, 2019; Sen and Das, 2015; Sood et al., 2014; Saha et al., 2013; Maiti, 2019). For instance, Kapoor and Krishnapriya's study shows that the share of directly employed workers declined from 61.12 percent in 2000-01 to 50.40 percent in 2015-16, while the share of contract workers in total employment increased from 15.5 percent to 27.90 percent during the same time period (Kapoor and Krishnapriya, 2019, p. 2). Importantly, over half of employment growth in organized manufacturing was driven by the rise in contract workers (Kapoor and Krishnapriya, 2019, pp. 2, 28).

The process of contractualization can be observed across states with varying labor market regulations: The growing use of contract labor has been observed in both flexible and inflexible states (Kapoor, 2015, pp. 369, 371)(Kapoor and Krishnapriya, 2019, p. 11). The pattern differs across them: flexible states experienced a larger rise in the proportion of contract labor, whereas inflexible states had a larger fall in the proportion of directly employed workers. This indicates that labor market regulations shape the form of employment adjustment. In flexible states, companies appear more able to expand contract labor directly, while in inflexible states they rely more strongly on reducing direct employment and depending on contract labor to circumvent strict employment protection for permanent workers (Kapoor, 2015, p. 371).

The widespread pattern of contractualization is not only a response to regulatory constraints but is also supported by the broader institutional framework shaping labor markets. As Maiti highlights, organized manufacturing is legally supported by the Contract Labor Regulations Act (1970), which allows firms to employ contract workers and adjust the composition of their workforce, at least in the medium run (Maiti, 2019, p. 14).

Yet the contractualization of labor comes at a high social cost: since contract workers are employed under weak contractual arrangements that make them easy to dismiss, it is unclear whether employment growth based on the expansion of contract labor can be sustained over time (Kapoor, 2015, p. 356)(Kapoor and Krishnapriya, 2019, p. 28). Sood, Nath and Ghosh highlight that the increasing dependence on such workers—typically engaged through short-term contracts—signals a wide trend of informalization within India's organized manufacturing sector. Abraham and Sasikumar as well as Kapoor and Krishnapriya complement this by arguing that India's manufacturing sector in general has a dualistic nature, consisting of a relatively small formal sector with permanent employees compared to a large informal sector with contractual or casual wage employment (Abraham

and Sasikumar, 2017, p. 7)(Kapoor and Krishnapriya, 2019, p. 1). Even though India's labor regulations are among the strictest in the world, they only cover 10 percent of the total labor force (Kapoor and Krishnapriya, 2019, p. 4).

Large segments of the workforce in the informal sector are therefore not protected from arbitrary practices by employers (Kapoor and Krishnapriya, 2019, p. 4). Compared to permanent employees, contract workers generally earn lower wages, lack social security coverage under various legal provisions, are typically not unionized, can be easily fired, and experience inferior conditions in terms of health, safety and welfare (Kapoor, 2015, p. 356)(Kapoor and Krishnapriya, 2019, p. 2)(Saha et al., 2013, pp. 180, 193). Sood, Nath and Ghosh complement this by highlighting that the type and duration of job contracts are key indicators of employment quality and job security (Sood et al., 2014, p. 61). Their evidence from organized manufacturing shows that most workers lack secure employment: in 2011-12, 77.5 percent had no written contracts, while only 17.41 percent of total employees held written contracts lasting longer than three years (Sood et al., 2014, p. 61).

This contractualization of labor has distributive effects: As Saha, Sen and Maiti note, the employer's decision to hire contract workers contributes to lowering the wages of permanent workers (Saha et al., 2013, p. 184). In addition, Sood, Nath and Ghosh document that the expansion of contract labor has been accompanied by a decline in the wage share of workers in gross value added (Sood et al., 2014, p. 61). Capital has clearly increased, as seen by the rise in profit share, specifically in the 2000s (Sood et al., 2014, p. 61). Abraham and Sasikumar's study further shows that a higher share of contract workers reduces the wage share in total gross value added, likely due to the lower wages paid to workers in the organized sector—despite their wages growing faster than those of permanent workers (Abraham and Sasikumar, 2017, p. 40)(Kapoor and Krishnapriya, 2019, p. 3). It also finds that the decline in the emoluments share is driven not only by lower wage rates but also by the absence of quasi-fixed costs due to contract labor (Abraham and Sasikumar, 2017, p. 40). Increasing contractualization therefore leads to a decline in both wage and emoluments shares (Abraham and Sasikumar, 2017, p. 40ff.). This process is accompanied by inequalities within the labor market. According to Sood, Nath and Ghosh, managerial salaries have increased considerably compared to workers' wages in the 2000s, implying growing wage inequalities in the formal manufacturing sector (Sood et al., 2014, p. 60).

Taken together, these findings uncover a context-mechanism-observation triad. In particular, the institutional context of strict labor market regulations encouraged companies to adopt contract labor, which operated as the mechanism by lowering wages and reducing social protection, thereby leading to a decline in the labor share of income.

Bargaining Power

The distributive effects of the contractualization of labor are closely connected with changes in bargaining power. The weakening of bargaining power operates through three related channels: contract labor substitutes for unionized permanent labor, workers have limited legal recourse, and trade unions are weakened more broadly. Kapoor and Krishnapriya's results show that the rise in contract workers coincided with a period in which wages outpaced those of permanent workers (Kapoor and Krishnapriya, 2019, p. 3). This is because companies employing contract labor can weaken the bargaining power of permanent employees—often unionized—and, in turn, put downward pressure on their wages (Kapoor and Krishnapriya, 2019, p. 6). Although higher relative wages for contract labor compared to permanent labor would normally be expected to reduce their use, firms may still expand their employment since doing so is less expensive than employing permanent workers and limits the bargaining power of permanent employees, narrowing the wage gap between contract and permanent workers (Kapoor and Krishnapriya, 2019, pp. 3, 28). Sood, Nath, and Ghosh support this view by arguing that permanent workers' bargaining power has been weakened by the state's stance toward contractual labor and its position regarding trade unions (Sood et al., 2014, p. 64). This results in effects on employment conditions and income distribution: even permanent employees are affected by increasingly precarious employment conditions, including less job security, social protection, stagnant real wage growth and the decline in the wage share, while temporary employment makes it more difficult for employees to organize in trade unions (Sood et al., 2014, pp. 63, 67). Because they often lack the financial resources, employees are unable to take legal action against the illegal dismissal in a labor court (Sood et al., 2014, pp. 66). The decrease in bargaining power, closely tied to the contractualization of labor, leads to a decline in the labor share of income. Abraham and Sasikumar further note that the weakening of trade unions' bargaining power contributes to the decline in the labor share of income (Abraham and Sasikumar, 2017, p. 6). Maiti complements this by highlighting that the decline in the wage share itself is an indicator of the weakening bargaining power of workers (Maiti, 2019, p. 9).

Workers' bargaining power is further weakened by regulatory changes. As Sood, Nath and Ghosh note, firms sought greater flexibility under conditions in which the retrenchment of permanent workers was more difficult (Sood et al., 2014, p. 63). An amendment to the Industrial Employment (Standing Orders) Act (1946) in 2003 allowed firms to hire workers for predetermined periods (Sood et al., 2014, p. 63). These workers are formally not contract workers, but are similarly employed on a temporary basis (Sood et al., 2014, p. 63). This reform was justified as a way to increase flexibility. Yet enabling firms to hire fixed-term workers meant that their previous entitlements to social security benefits were eliminated, further weakening their bargaining power (Sood et al., 2014, p. 63).

Importantly, bargaining power also unfolds through a counterintuitive feedback loop. Saha, Sen and Maiti further document that the percentage of contract employment rises with stronger bargaining power for permanent employees (Saha et al., 2013, pp. 181, 190, 193). More specifically, both proxies—the "lockout to strike ratio" and "union density"—used in their study show that increased bargaining power leads to intensified contractualization of labor (Saha et al., 2013, p. 190). Contractualization and bargaining power are mutually reinforcing, as firms respond to stronger worker bargaining power by expanding contract labor, which in turn further weakens labor's position.

These findings reveal two context-mechanism-observation triads. First, strict labor market regulations and their uneven application—including regulatory changes—enabled the contractualization of labor (context), resulting in the weakening of permanent workers' bargaining power through increasingly precarious employment conditions (mechanism), thereby contributing to a decline in the labor share of income (observation). Second, stronger bargaining power among permanent workers, captured by the lockout to strike ratio and union density (context), shaped companies' incentives to expand contract labor (mechanism), thereby leading to a decline in the labor share of income (observation).

Other Emoluments Per Worker

A change in other emoluments per worker also affects the labor share of income. As Abraham and Sasikumar note, an increase in other emoluments per worker lowers the wage share but raises the emoluments share (Abraham and Sasikumar, 2017, p. 39). This suggests the negative impact of quasi-fixed employment costs on the wage share (Abraham and Sasikumar, 2017, p. 39). When the quasi-fixed costs related to permanent employment rise, firms tend to lower the wage share by replacing permanent employees with cheaper forms of labor such as contract workers. At the same time, these cost increases contribute to a rise in the emoluments share. However, when firms avoid these costs through contractualization, total compensation relative to income declines (Abraham and Sasikumar, 2017, p. 39).

As companies circumvented quasi-fixed costs through increasing contractualization, the proportion of employees receiving other emoluments declined. As a result, total compensation relative to income decreased, leading to a decline in the labor share of income. These findings can be seen as a context-mechanism-observation triad, where rising quasi-fixed employment costs (context) led firms to employ contract labor (mechanism), thereby contributing to a decline in the labor share of income (observation).

Feminization of Employment

The decline in the labor share of income can also be explained by changes in the workforce composition, specifically the increase in female employment. As Abraham and Sasikumar

highlight, there has been a growing feminization of permanent employment, leading to the decline in the wage share and emoluments share (Abraham and Sasikumar, 2017, pp. 29, 40). India's labor market is characterized by wage discrimination along caste and gender lines (Abraham and Sasikumar, 2017, p. 7). As women get lower wages than men, the rising share of women in permanent employment contributes to a decline in the wage share (Abraham and Sasikumar, 2017, p. 40). One explanation for employing more female workers as permanent employees is offered by Abraham and Sasikumar, who suggest that management relies on lower assertiveness in wage bargaining among female workers, making it easier to push through its decisions (Abraham and Sasikumar, 2017, p. 40). Evidence from Sood, Nath, and Ghosh further shows that women are significantly worse off than men in terms of job quality (Sood et al., 2014, p. 60). The wages of directly employed female workers are considerably lower than those of contract workers (Sood et al., 2014, p. 60).

Summarizing the findings of Abraham and Sasikumar and those of Sood, Nath and Ghosh shows that the increasing feminization of employment went along with significantly lower wages for permanently employed women, lower job quality and weaker bargaining power, contributing to the decline in the labor share of income. These patterns can be interpreted as a context-mechanism-observation triad, where growing female employment forms the context, while gender-wage discrimination, weaker bargaining power of female employees, and lower job quality operate as the mechanism, thereby leading to a reduction in the labor share of income (observation). In general, it should be noted that this analysis is constrained by a binary classification of gender in the underlying data.

7.3.3 Product Market Processes

Besides labor market processes, the literature under study highlights that product market processes also contribute to the decline in the labor share of income through various mechanisms (Maiti, 2019; Veeramani and Basu, 2025). These are introduced here because they interact with technological progress and labor market regulation, while also constituting analytically distinct channels marked by mark-ups and market-share reallocation.

Mark-Up

First, mark-up affects the labor share of income. In Maiti's framework, mark-up is defined as the price over marginal cost ($\mu = \frac{P}{MC}$) and captures companies' market power (Maiti, 2019, p. 16). Market power is directly related to the Lerner Index ($\beta = \frac{P-MC}{P}$). The Lerner Index can be expressed as $\beta = 1 - \frac{1}{\mu}$, linking it directly to mark-up (Maiti, 2019, p. 16). Maiti finds that the coefficient on the Lerner Index is positive when using material costs and fuels as instruments (Maiti, 2019, p. 18). This implies that higher mark-ups

allow firms to capture a larger share of surplus, thereby contributing to a decline in the labor share of income (Maiti, 2019, pp. 18, 21).

These findings can be interpreted as a mechanism-observation dyad, in which mark-up operates as the mechanism by allowing companies to retain more surplus, while the decline in the labor share of income is the observation.

Market Share Reallocation

Another driver of changes in the labor share of income is market share reallocation. Veeramani and Basu's findings show that the labor share of income was driven in large part by a shift in market shares—both within and across industries—in favor of capital intensive companies (Veeramani and Basu, 2025, pp. 2f., 6, 25).

They situate these findings in previous research suggesting that a falling labor share is linked to market share shifting toward dominant companies with lower labor shares (Veeramani and Basu, 2025, p. 5). In addition, research finds that increasing market concentration is closely connected to a reduction in the labor share of income. Evidence from U.S. manufacturing illustrates that the increasing share of value added captured by bigger companies with low labor shares drives much of this decline (Veeramani and Basu, 2025, p. 5). At the same time, India's labor market regulations impose substantial barriers to exit, reducing companies' incentives to rely on labor-intensive production (Veeramani and Basu, 2025, p. 5). Consequently, the labor share of income declines by reinforcing market share reallocation toward less labor-intensive companies (Veeramani and Basu, 2025, p. 5). Veeramani and Basu further support these findings with their own research (Veeramani and Basu, 2025, p. 6).

These findings can be interpreted as a context-mechanism-observation triad, aligned with axial coding. Under conditions of increasing market concentration, rigid labor market regulations, and technological change, market share reallocation toward capital-intensive and skill-intensive industries (mechanism) contributed to the decline in the labor share of income in India's manufacturing sector (observation).

7.3.4 Trade Liberalization

A detailed analysis of our papers illustrates that India's trade liberalization reforms in the 1990s played a significant role in enhancing technological progress as well as labor market and product market processes (Abraham and Sasikumar, 2017; Kapoor, 2015; Maiti, 2019; Saha et al., 2013; Sen and Das, 2015; Veeramani and Basu, 2025). In this sense, trade liberalization is not treated here simply as a separate mechanism, but as a broader context that activated and reinforced other mechanisms contributing to the decline in the labor share of income. The following section explains how this occurred.

Trade Liberalization and Technological Progress

First, literature confirms our initial framework that trade intensified the increase in the capital-labor ratio (Abraham and Sasikumar, 2017; Sen and Das, 2015). As Sen and Das argue, in response to trade liberalization, labor intensity declined in India's formal manufacturing (Sen and Das, 2015, p. 108). This decline was driven by an increased ratio of real wages to capital costs, which was caused by a reduction in the relative price of capital goods. Trade reforms in capital goods and reduced import tariffs on capital goods further strengthened this decline (Sen and Das, 2015, p. 108). In addition, import licensing for the majority of capital and technical equipment, as well as for manufactured intermediate inputs, was practically eliminated (Sen and Das, 2015, p. 113). As the protection of capital goods fell, machinery prices declined consistently in comparison to the wage rate, which encouraged firms to replace labor with machinery (Sen and Das, 2015, p. 115). Whereas a decrease in the relative price of capital contributed to increased investment in machinery, it discouraged firms from taking on additional workers (Sen and Das, 2015, pp. 108, 113). Abraham and Sasikumar complement this by highlighting that the liberalization of foreign investment standards increased investment in India, leading to a decline in capital costs (Abraham and Sasikumar, 2017, p. 7).

From an axial-coding perspective, these findings can be interpreted as a context-mechanism-observation triad: Trade, characterized by reduced tariffs and removed import restrictions on machinery and intermediate inputs, was the condition for the decline in the relative price of investment goods, which in turn decreased the labor share of income, as firms increasingly substituted capital for labor in the post-reform period. By facilitating access to imported capital goods, trade policy reforms also intensified the adoption of advanced technology, as such goods embodied these technologies.

Trade Liberalization and Labor Market Processes

Besides strengthening the capital-labor ratio, trade liberalization also intensified the decline in the labor share of income by expanding contract labor and weakening workers' bargaining power (Kapoor, 2015; Maiti, 2019; Saha et al., 2013). Saha, Sen and Maiti show that even though India gradually opened up to foreign trade and investment in 1991, its labor laws remained largely unchanged (Saha et al., 2013, p. 181). Trade unions opposed layoffs and outsourcing. Nevertheless, companies developed mechanisms to employ contract labor, and following the economic reforms of 1991, this practice became increasingly widespread (Saha et al., 2013, p. 181). The proportion of contract workers in total employment in formal manufacturing rose from twelve percentage points in 1985 to 26 percentage points in 2004 (Saha et al., 2013, p. 181). As companies increasingly hired contract workers, trade liberalization reforms contributed to rising precarization of employment in the organized labor market (Saha et al., 2013, p. 193).

Maiti complements this by showing how changes in product and labor market conditions, driven by trade, affected India's formal manufacturing sector between 1998 and 2014 (Maiti, 2019, p. 4f.). More specifically, trade weakened the demand for workers, which reduced workers' bargaining power and shifted income away from them (Maiti, 2019). This decline in bargaining power was closely connected to the contractualization of labor, which both reflected and reinforced workers' weaker position. A decline in bargaining power can be identified across all forms of states: neutral, pro-workers and pro-employer states (Maiti, 2019, p. 9).

Saha, Sen and Maiti further argue that this contractualization was driven by rising import penetration, which increased from 1997 and 2003 (Saha et al., 2013, pp. 181, 190, 193). This import penetration, in turn, contributed to the increase in the proportion of contract workers in organized manufacturing from 1998 to 2004 (Saha et al., 2013, p. 181). More specifically, the proportion of contract workers increased by 9 percentage points during this period, of which around three-tenths can be attributed to rising import penetration (Saha et al., 2013, p. 190). Similarly, Kapoor argues that import competition following trade liberalization intensified informal labor, as lower wages for such workers and savings on social benefits decrease companies' costs (Kapoor, 2015, p. 356).

As presented in Subsection 7.3.2 ("Contractualization of Labor"), contractualization reduced the labor share of income in India's manufacturing sector. In summary, trade liberalization contributed to the growth of contract work. Seeing this in terms of axial coding, trade liberalization built the context that intensified the decline in the labor share of income (observation) by increasing the use of contract labor (mechanism). At the same time, trade liberalization (context) contributed to the decline in the labor share of income (observation) by further weakening workers' bargaining power (mechanism).

Trade Liberalization and Product Market Processes

Maiti's findings show that trade liberalization strengthens the effect of market power (Maiti, 2019, p. 19). On the one hand, rising competitiveness in production due to trade reduces the impact of mark-ups, thereby improving the labor share of income (Maiti, 2019, p. 19). On the other hand, this market outcome effect has to be differentiated from the bargaining effect discussed in the subsection on "Trade Liberalization and Labor Market Processes" (Maiti, 2019, p. 19). Even where increased competition places downward pressure on mark-ups and may support the labor share of income, trade liberalization can simultaneously weaken workers' bargaining power, thereby reducing the labor share of income. In this thesis, these findings are treated as opposing, yet simultaneously acting mechanisms. In general, the observed decline in the labor share of income suggests that the negative labor market effect outweighed the positive product market effect.

From an axial coding perspective, these processes can be interpreted as overlapping

context-mechanism-observation triads, where trade liberalization forms the context, intensified product market competition and weakened bargaining power represent distinct mechanisms, and the combination of these mechanisms represents the observed labor share of income.

7.3.5 Policy Implications

As the literature under study highlights, the interaction of mechanisms connected to technological progress, labor market processes, product market processes, and trade liberalization affected the labor share of income in India's manufacturing sector. For instance, capital-labor substitution, stricter labor market regulations, contractualization, weakened bargaining power, market power, and market-share reallocation contributed to the decline in the labor share of income. At the same time, the literature also points to mechanisms that, under certain conditions, could contribute to an increase in the labor share of income, such as increased product-market competition. In the following, we outline which policy implications are proposed in the papers to mitigate this decline. The policy implications section is included in Chapter 7 because it forms part of the qualitative analysis by showing—through a structure-discourse-agency perspective—how the identified mechanisms might be modified under different structural conditions. We must emphasize that these policy implications cannot always be considered inherently positive or negative.

Minimum Wage

The literature highlights how a minimum wage could be seen as a solution, but could also deepen the problem (Kapoor and Krishnapriya, 2019; Saha et al., 2013). Saha, Sen and Maiti point out that minimum wages serve as an indicator of the bargaining power of permanent employees (Saha et al., 2013, p. 190). As the law stipulates that contract workers must receive not less than the minimum wage, a rise in this wage results in a decrease in contract work and a strengthening of the bargaining power of permanent employees (Saha et al., 2013, p. 190). In this sense, the minimum wage example is used to illustrate a possible countervailing policy mechanism, while also showing the trade-offs involved in attempts to raise the labor share of income.

From a structure-discourse-agency perspective, this policy can be understood through McAnulla's macro-morphogenetic cycle, which consists of "structural conditions (t1)", "discursive shaping (t2)", "social interaction (t3-t4)", "discursive reshaping (t4)", and "structural elaboration (t5)" (McAnulla, 1998, p. 10). In this case, the existing wage structure and employment relations form the structural condition (t1). Kapoor and Krishnapriya show that a uniform national minimum wage for contract workers is necessary, arguing that since companies' decisions to employ contract workers are profit-driven,

contract workers' wages must be the same as those of directly employed workers, thereby reinforcing a discourse of wage equality (Kapoor and Krishnapriya, 2019, p. 28). However, they also mention potential negative effects, such as increased costs for companies (Kapoor and Krishnapriya, 2019, p. 29). These competing interpretations (t2) shape how companies and workers respond to the policy (t2-t3). As Saha, Sen and Maiti also highlight, higher bargaining power among permanent employees influences firms' incentives (t3) to expand the use of contract labor (Saha et al., 2013, pp. 181, 190, 193). Under one possible pathway, companies may respond to higher wage floors by seeking greater flexibility, reinforcing prevailing discourses of labor flexibility (t4), thereby contributing to a restructuring of employment relationships and a declining labor share of income (t5). Under another, a uniform minimum wage combined with stronger bargaining power may increase overall wages without major employment shifts, thereby supporting social protection and contributing to an increase in the labor share of income (t4-t5).

Fixed-Term Employment Regulation

Taking a related perspective, the literature emphasizes that protecting the employment conditions of labor in India is essential (Kapoor and Krishnapriya, 2019, p. 29)(Sood et al., 2014, p. 67). In this context, another policy recommendation is the implementation of stricter regulations on fixed-term employment. Kapoor and Krishnapriya further show that fixed-term employment needs to be regulated (Kapoor and Krishnapriya, 2019, p. 29). Integrating a structure-discourse-agency framework, the use of fixed-term contracts creates precarious employment, forming the structural condition (t1). This employment is framed as a problem requiring regulatory intervention (t2). To protect employees, policymakers could set clear limits on the maximum durations of consecutive fixed-term contracts, as well as limit the number of extensions, and mandate clear justifications for any renewal (t3). Such interventions contribute to discursive reshaping, as norms around acceptable employment practices evolve (t4). Such safeguards and conversations, over the long term, may lead to more permanent employment, contributing to structural elaboration (t5) (Kapoor and Krishnapriya, 2019, p. 29). This could improve employment quality and increase the labor share of income, since Abraham and Sasikumar point out that an increase in total employment has a positive effect on the wage share as well as the emoluments share (Abraham and Sasikumar, 2017, p. 39). However, this policy creates a clear tension: as permanent employment involves quasi-fixed costs, companies may again have incentives to substitute away toward contract labor, thereby contributing to a decline in the wage share (Abraham and Sasikumar, 2017, p. 40).

7.3.6 Connecting the Labor Share of Income with Material Living Conditions for Workers

A declining labor share of income does not necessarily mean that workers' material living conditions worsened. One useful way to assess these living conditions is to look at real wages, which are commonly used by economists and economic historians as a proxy for material living standards since they capture the quantity of goods and services that workers can purchase with their wage earnings (De Jong, 2015, p. 50). Whereas declining real wages imply a worsening in material living conditions, rising real wages indicate improving material living conditions (De Jong, 2015, p. 50). Generally, real wage studies focus on the average wage of broad socioeconomic groups, making them particularly relevant for the present study, as changes in real wages directly affect the material living conditions of workers in India's manufacturing sector (De Jong, 2015, p. 50).

Against this background, available evidence on real wages in India's organized manufacturing sector suggests that workers' material living conditions did not simply worsen alongside the labor share of income (Basole and Narayan, 2018, pp. 10, 25). Using ASI data, Basole and Narayan show that real wages per employee in organized manufacturing increased by 40 percent between 1983 and 2016 (Basole and Narayan, 2018, pp. 10, 25). At the same time, the growth was uneven: real wages increased steadily from 1983 to 1996, then stagnated or even declined from 1996 to 2007, before rising again from 2007 onward until 2016 (Basole and Narayan, 2018, pp. 10, 25).

Technological progress is central to understanding this development, as capital deepening can raise labor productivity and thereby contribute to higher real wages and improved material living conditions for workers. According to Solow's growth theory, a higher capital-labor ratio increases labor productivity and the marginal product of labor (Solow, 1956, pp. 69, 79). Since real wages are determined by the marginal product of labor, capital deepening is expected to increase real wages (Solow, 1956, p. 79). Supporting this argument, Bhattacharya shows that labor productivity significantly influences real wages in India's manufacturing sector (Bhattacharya et al., 2011, p. 295). As noted before, Abraham and Sasikumar illustrate that the majority of Indian states experienced an increase in the capital-labor ratio between 2000 and 2012 (Abraham and Sasikumar, 2017, p. 33). This is supported by our quantitative evidence, which shows that the capital-labor ratio substantially increased between 1981 and 2022 (Figure 6.7).

While the increase in real wages suggests an improvement in workers' material living standards, Abraham and Sasikumar examine a broader measure of labor compensation, namely annual earnings per employee, including both wages and non-wage benefits. Evidence from Abraham and Sasikumar shows that while the labor share of income declined steadily, real earnings per employee increased between 1980 and 2013, suggesting that workers' material living standards improved even as the labor share of income

fell (Abraham and Sasikumar, 2017, p. 13). Yet labor productivity grew at least 2.5 percentage points faster than earnings per employee throughout the period. As a consequence, employee compensation failed to keep pace with productivity gains, implying that a substantial share of the productivity gains accrued to non-labor factors rather than employees (Abraham and Sasikumar, 2017, p. 13). The decline in the labor share of income in India's manufacturing sector should therefore be interpreted as a widening gap between productivity growth and earnings growth, but not as a fall in workers' real earnings.

Taken together, the cited evidence suggests that this decline does not provide evidence of deteriorating material living conditions. Instead, real wages lagged behind productivity growth, leading to a decline in the labor share of income.

Discussion, Limitations and Future Outlook

8.1 Discussion

Our mixed-methods research identifies the empirical patterns in the labor share of income, but also makes visible the generative mechanisms and contextual conditions through which these patterns emerged. By combining quantitative and qualitative analysis, we show not only what changed in India's manufacturing sector, but also how and under which conditions these changes contributed to the decline in the labor share of income.

Our quantitative analysis shows that the labor share of income in India's organized manufacturing sector declined by approximately 12 percent from 1981 to 2022, despite rising wages in absolute terms. This decline was driven by the faster growth of net value added (Y) relative to total emoluments (W), indicating that employee compensation increased more slowly than the value generated in the sector. In this sense, the labor-share ratio indicates a redistribution of income away from labor relative to capital. At the same time, the growth dynamics analysis shows that the labor share of income fluctuated strongly, without a persistent annual upward or downward trend over the period 1981-2022. The graphical time-series analysis reveals periods of recovery, including during the global financial crisis or the COVID-19 crisis. Yet short-term fluctuations did not alter the broader long-term pattern, as the labor share of income remained below its level of the 1980s.

The decline in the labor share of income should, however, not be interpreted as evidence of a worsening in employees' material living conditions. Evidence on real wages per employee indicates that employees' living standards improved over the period from 1983 to 2016, even while the labor share declined (Basole and Narayan, 2018, pp. 10, 25)(De Jong, 2015, p. 50).

As our initial theoretical framework suggests, certain observable indicators may point to generative mechanisms underlying the decline in the labor share of income. The quantitative component therefore examined the RIP, the capital-labor ratio, and the tariff rate. Three long-term patterns emerged in India's manufacturing sector: a falling relative price of investment goods (RIP), suggesting investment goods became relatively cheaper than consumption goods; a rising capital-labor ratio, indicating increasing capital intensity; and a falling tariff rate associated with trade liberalization. In addition, the negative correlation between the capital-labor ratio and the labor share of income suggests an empirical pattern consistent with the possibility that capital deepening contributed to the decline in the labor share of income. From a critical realist perspective, however, this correlation does not in itself identify a mechanism; it indicates a pattern that requires retroductive interpretation. Therefore, the task of the qualitative component is to identify the underlying structures and generative mechanisms that could explain the observed increase in the capital-labor ratio and its association with the decline in the labor share of income.

To find out why the capital-labor ratio increased, the thesis turns to a qualitative analysis to identify the underlying mechanisms and structures associated with this change and its contribution to the decline in the labor share of income. For this purpose, we draw on economic literature as a form of qualitative evidence, including both theoretical interpretation and secondary empirical analysis. This literature addresses not only technological progress and trade liberalization, but also labor market and product market processes. It is particularly useful for mechanism identification because it examines how these processes interact and also considers political and social dimensions, such as labor market regulations, the bargaining power of workers, and the social effects of missing social protection.

Our findings are meaningful from a critical realist perspective. Even though the qualitative analysis does not cover the full time period 1981–2022, it identifies generative mechanisms that are consistently highlighted in the literature. The findings suggest a mechanism chain in which trade liberalization reduced tariff barriers and the relative price of investment goods, encouraged capital deepening and technology intensity, intensified contractualization, weakened workers' bargaining power and interacted with product market processes. Through these interacting mechanisms, the observed increase in the capital-labor ratio and the decline in the labor share of income in India's manufacturing sector can be more clearly understood (Abraham and Sasikumar, 2017; Hasan et al., 2013; Kapoor, 2015; Kapoor and Krishnapriya, 2019; Maiti, 2019; Sen and Das, 2015; Sood et al., 2014; Saha et al., 2013; Veeramani and Basu, 2025). Accordingly, the initial theoretical framework is refined by showing that the decline in the labor share of income was driven by the interaction of technological, labor market, product market, and trade liberalization processes. These processes did not operate in isolation, but reinforced one

another and thereby contributed to the decline in the labor share of income (Figure 8.1).

Technological progress, trade liberalization, labor market processes, and product market processes should not be understood as unidimensional concepts. They are influenced by the interplay of various mechanisms, structures, and tendencies. This matters for answering the research question as the decline in the labor share of income cannot be explained through a single mechanism alone, but only through the interaction of multiple generative mechanisms.

More specifically, viewed through a critical realist lens, technological progress is an emergent process rather than a single cause. It arises through the interaction of causal mechanisms, structures, and social actors, and is therefore visible in different empirical forms. Thus, it is underpinned by multiple mechanisms and structural conditions, including changes in capital deepening, technology intensity, R&D activity, and various mechanisms of trade liberalization. This matters for interpreting our findings because the effects of technological progress on the labor share of income depend on how these underlying mechanisms interact in specific contexts.

It is immensely important to emphasize that technological progress does not automatically have a negative effect on the labor share of income. According to Acemoglu and Restrepo, technological change creates the opportunity to develop new labor-intensive tasks, which are crucial for wage growth. However, this requires different skills, demographic developments, and supportive policy and market conditions, including taxes and research and development spending (Acemoglu and Restrepo, 2019, p. 27). In the present case, the findings of Chapters 6 and 7 suggest that technology did not generate countervailing labor demand, as a rising capital-labor ratio contributed to the substitution of labor and thereby to the decline in the labor share of income.

In general, our findings support the view that technological progress contributed to a decline in the labor share of income through capital and technology intensity. In addition, our initial theoretical framework is refined by R&D activity. Wang and Wang show that R&D can strengthen more stable forms of employment (Wang and Wang, 2025, p. 2). However, they also show that R&D activity declined steadily from the late 2000s to 2020, limiting its broader positive effect on wage growth and the labor share of income (Wang and Wang, 2025, p. 2). Veeramani and Basu do not necessarily contradict this finding, but rather identify a different mechanism: under conditions of capital deepening, R&D activity can also contribute to a shift toward capital-labor substitution, thereby reducing the labor share of income (Veeramani and Basu, 2025, pp. 21, 25). R&D should be understood as an additional technological mechanism whose effects depend on the conditions under which it operates, as it can activate either labor-enhancing or labor-displacing tendencies. Against this background, technological progress has to be understood through a multidimensional lens. In policy and public discourse, technology is often framed as inherently

good or bad, but a critical realist perspective moves beyond this oversimplification without ignoring either risks or benefits. Instead, technological progress is part of a complex system of structures, power relations, values and agents. McAnulla emphasizes, social outcomes are affected by the interplay between structural conditions, discourse, and agency over time (McAnulla, 1998, p. 11). In his macro-morphogenetic model, discourse is understood as an ideational dimension of reality that mediates actors' interpretations of structural conditions, shaped by a discursive heritage (McAnulla, 1998, p. 10f.). This is important for the thesis because the effects of technological progress on the labor share of income depend not only on material processes such as capital deepening and R&D activity, but also on how these developments are interpreted in debates on labor flexibility and wage regulation. These interpretations influence how policymakers, companies, and workers respond to technological change and therefore shape the activation of the mechanisms identified in Chapter 7.

Labor market processes are also shaped by multiple mechanisms and tendencies that affect the labor share of income (Abraham and Sasikumar, 2017; Hasan et al., 2013; Kapoor, 2015; Kapoor and Krishnapriya, 2019; Maiti, 2019; Saha et al., 2013; Sen and Das, 2015; Sood et al., 2014; Veeramani and Basu, 2025; Wang and Wang, 2025). The difference between technological progress and labor market processes is that with the latter, the word itself makes it clear that the concept is characterized by extensive mechanisms. In particular, labor market regulations illustrate that institutions can have contradictory effects. While strict labor market regulations are intended to protect workers, Abraham and Sasikumar show that they can also encourage widespread contractualization, fragment the labor market and contribute to a decline in the labor share of income (Abraham and Sasikumar, 2017, pp. 5, 37, 40ff.). A potential policy response would therefore be to strengthen employees' protection without reinforcing companies' incentives to substitute permanent labor with more precarious forms of employment.

The contractualization of labor also affects the bargaining power of permanent workers. Similarly to R&D activity, bargaining power must be understood as a concept through a multidimensional lens. The relationship between bargaining power and contractualization operates through a feedback loop. As the literature under study emphasizes, permanent employees' bargaining power decreased as contractualization expanded and precarious employment conditions became more widespread, contributing to a decline in the labor share of income (Sood et al., 2014, p. 64ff.)(Abraham and Sasikumar, 2017, p. 6). At the same time, Saha, Sen and Maiti argue that rising bargaining power among permanent employees can itself encourage firms to expand contractualization of labor, as companies substitute contract for permanent labor to reduce costs, which also contributes to a decline in the labor share of income (Saha et al., 2013, p. 193). These findings move beyond linear explanations by showing that companies' strategies and workers' bargaining power interact dynamically under specific conditions. More specifically, this interaction is shaped by

labor market regulation, contractualization, trade pressure, and the institutional weakness of collective bargaining.

One such condition is the rise in quasi-fixed employment costs, highlighted by Abraham and Sasikumar, which further encourages the contractualization of labor (Abraham and Sasikumar, 2017, p. 39). Increases in other emoluments per worker lower the wage share while raising the emoluments share. As quasi-fixed costs associated with permanent employment rise, companies are encouraged to substitute permanent employees with contract labor (Abraham and Sasikumar, 2017, p. 39). While this initially increases the emoluments share, the increasing use of contract labor reduces the proportion of employees receiving such benefits. Consequently, total compensation relative to income declines, contributing to a decline in the labor share of income (Abraham and Sasikumar, 2017, p. 39).

Furthermore, labor market mechanisms also contributed to the decline in the labor share of income through changes in the workforce composition. In particular, the feminization of employment contributed this decline, as women were affected by wage discrimination and weaker bargaining power (Abraham and Sasikumar, 2017, pp. 7, 29, 40)(Sood et al., 2014, p. 60).

Moreover, product market processes matter because they explain how capital can retain a larger share of surplus not only through weakened labor market conditions, but also through companies' market power. According to Maiti, the mark-up, defined as the price over marginal costs and capturing companies' market power, as well as its proxy Lerner Index, affect the labor share of income (Maiti, 2019, p. 16). More specifically, higher mark-ups enable companies to capture a larger share of the surplus, thereby contributing to the decline in the labor share of income (Maiti, 2019, pp. 18, 19).

In addition, as Veeramani and Basu show, under conditions of increasing market concentration, rigid labor market regulations, and technological progress, market share reallocation functioned as an important driver of the observed fall in the labor share of income (Veeramani and Basu, 2025, pp. 5f., 25).

Trade liberalization strengthened various mechanisms that affected the labor share of income. A first channel operated through capital deepening. In particular, the findings suggest a mechanism chain in which trade liberalization lowered tariffs and removed import restrictions on machinery and intermediate inputs, reduced the relative price of investment goods, encouraged capital deepening, and thus put downward pressure on the labor share of income (Abraham and Sasikumar, 2017; Sen and Das, 2015). This interpretation is consistent with the correlation patterns identified in our correlation analysis. However, it is important to emphasize again that the correlation analysis does not establish causality, but captures associative patterns between the variables "Labor

Share of Income", "Capital-Labor Ratio", "Relative Price of Investment Goods" and "Tariff Rate".

A second channel operated through contractualization and bargaining power. Increased import penetration intensified the growth of contract labor, while trade pressure also weakened the demand for labor, thereby reducing employees' bargaining power and shifting income away from them, contributing to the decline in the labor share of income (Saha et al., 2013, p. 190)(Maiti, 2019).

A third channel operated through product market competition. According to Maiti, trade intensified product market competition, which can reduce mark-ups and potentially increase the labor share of income (Maiti, 2019, p. 19). Yet this effect was offset by a concurrent weakening of workers' bargaining power, contributing to a overall decline in the labor share of income (Maiti, 2019, p. 19).

Apart from the mechanisms that affect the labor share of income and mostly lead to a decline, policy implications must be emphasized as they show how the mechanisms identified in this thesis might be redirected under different conditions. They are not only a bridge to a future outlook, but also part of the answer of the research question, as they indicate how the decline in the labor share of income could be mitigated. These policy implications are multidimensional because their effects depend on discursive interpretations, actors responses, companies strategies, labor market institutions, and possible unintended consequences. Viewed through a structure-discourse-agency perspective, they show how the same mechanisms may operate differently when structural conditions, policy interpretations and social interactions change (Archer, 2011, p. 4)(McAnulla, 1998, p. 10).

First, we put Kapoor and Krishnapriya's as well as Saha et al.'s suggestion of a minimum wage into McAnulla's structure-discourse-agency model (Kapoor and Krishnapriya, 2019, p. 28f.)(Saha et al., 2013, pp. 181, 190, 193)(McAnulla, 1998, p. 10). The impact of minimum wage policy depends on how it is interpreted and how companies respond to those interpretations: Raising a uniform minimum wage for contract workers can be interpreted as supporting wage equality or as rising companies' costs, specifically for SMEs. The latter may incentivize companies to further contractualization, putting downward pressure on the labor share of income. However, under supportive institutional conditions, such as an effective minimum wage regulation and sufficient company capacity to absorb higher labor costs, a different outcome is possible. Under such conditions, higher wages are less likely to lead to employment losses. Instead, they can contribute to fairer pay and an increase in the labor share of income.

Second, we incorporate Kapoor and Krishnapriya's as well as Sood et al.'s emphasis on protecting employment conditions into the model (Kapoor and Krishnapriya, 2019, p. 29)(McAnulla, 1998, p. 10). In particular, we highlight the role of fixed-term contracts

as a structural condition of precarious employment that is increasingly framed as a policy problem. Stricter regulation of fixed-term contracts is needed to reduce precarious employment. Policy interventions such as limiting contract duration, restricting renewals and requiring clear justifications for extensions could help change the norms around acceptable employment practices and promote more stable, permanent jobs, which may contribute to an increase in the labor share of income. Yet this depends on how the companies adapt, as companies may respond by substituting toward other forms of contract labor. In this sense, the regulation of fixed-term contracts aims to interrupt the pathway from contractualization to precarization, which contributed to the decline in the labor share of income.

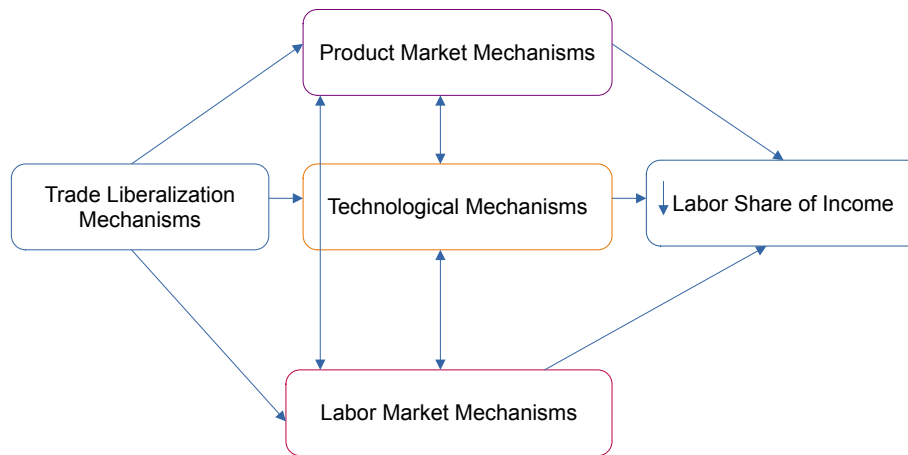


Figure 8.1: Refined Theoretical Framework

8.2 Limitations and Future Outlook

This thesis has several limitations, which also indicate directions for future research. First, integrating critical realism into a research process proved methodologically challenging. The main difficulty was translating its ontological and epistemological assumptions into the research design without compromising them. The identification and integration of latent codes posed a further difficulty, as it was not clear how to incorporate them consistently into the analysis. Second, the quantitative component mainly focuses on empirical patterns, pointing to generative mechanisms, but it does not establish causal mechanisms through econometric testing. Thus, the qualitative component is needed to identify the structures and mechanisms that could explain these patterns. Third, as the qualitative analysis relies largely on economic literature as secondary empirical and theoretical evidence, this raises a further limitation concerning the compatibility between econometric results and critical realist ontology. However, some flexibility is needed in how critical realist ontology and epistemology are interpreted and applied. Future research

could address these limitations by combining the present mixed-methods design with primary qualitative evidence, such as interviews, to identify mechanisms more directly. It could also examine more closely how the identified mechanisms vary across shorter historical periods.

Moreover, the dominance of economic perspectives limits what this thesis can capture about the decline in the labor share of income. Because the literature under study is drawn mainly from economics, the analysis is less able to address historical periodization, labor politics, cultural legitimation, worker experience, and conflicts around policy-making. Perspectives from historians, sociologists, political and cultural scientists would therefore be important for explaining how these social and political conditions shaped the interaction of the underlying mechanisms. In particular, cultural studies could help to explain which discourses, norms, needs, and values legitimized the decline in the labor share of income. A more strongly interdisciplinary approach would thus provide a fuller picture of the relations between the mechanisms identified in the thesis.

Especially in relation to the historical dimension, the qualitative analysis remains limited. While the quantitative component covers the period 1981–2022, the qualitative evidence only addresses parts of that broader timeframe. From a critical realist perspective, this is a limitation, since explanation requires identifying the specific causal powers operating within particular spatial and historical contexts. Consequently, the lack of specification for shorter time periods may limit our ability to fully capture how generative mechanisms—such as changes in trade policy, technological progress, and labor market institutions—interact and vary across different historical phases. This limitation is particularly relevant for the claims about trade liberalization, technological progress, and labor market institutions, since these mechanisms may have operated differently in the early reform period, the 2000s, and the post-2010 phase. The findings should therefore be understood as identifying mechanism patterns across the case rather than as providing equally strong historical explanations for every sub-period between 1981 and 2022.

While this thesis was initially motivated by the aim to adopt a broader range of disciplinary perspectives, the material used here consists primarily of economic theories and a philosophical concept. Since the decline in the labor share of income is not only an economic pattern but also a social problem with concrete effects on workers' lives, future research would benefit not only from a stronger interdisciplinary approach, but also from a transdisciplinary one. According to Jahn, Bergmann and Keil, transdisciplinarity goes beyond interdisciplinarity by not only combining academic perspectives, but also involving stakeholders outside academia in the research process (Jahn et al., 2012, p. 4). For the present research object, that would make it possible to incorporate the experiences and knowledge of workers, trade unions, companies, and policymakers, and thereby better capture how the identified mechanisms are perceived or contested in society. Therefore,

transdisciplinarity would add a more practice-oriented understanding of the decline in the labor share of income. However, Jahn, Bergmann and Keil note that this integration presents a key cognitive difficulty in the research process (Jahn et al., 2012, p. 4).

Moreover, this thesis does not focus on the heterogeneity within the workforce at the individual or group level. As a result, important dimensions of inequality remain outside the scope of the analysis, even though they may shape wage inequality, bargaining power, and thus the decline in the labor share of income. Future research could address this limitation by incorporating more micro-level data on gender, caste, ethnicity, class, education, region, and migration status to examine variation within the workforce more openly. This would also make it possible to explore more clearly how different social groups, such as people of color and homosexuals, are affected by the mechanisms identified in this thesis. In this way, future research could move beyond abstract explanations of the decline in the labor share of income toward a more inclusive account of its social implications, distributional conflicts, and policy relevance.

This thesis mainly focuses on the decline in the labor share of income, even though it also points to conditions under which the labor share of income could increase. Future research should therefore examine more directly the mechanisms that may place pressure on the labor share of income to increase. In particular, future research could investigate how trade liberalization, technological progress, labor market processes, and product market processes might, under specific conditions, support a rising labor share of income. Based on this, future research could examine the role of the capital share of income and develop more concrete policy solutions to counter the decline in the labor share of income.

Conclusion

This thesis addressed the following main research question:

What patterns characterize the labor share of income in India's manufacturing sector from 1981 to 2022, and which mechanisms generate these patterns?

To answer this question, the thesis developed an initial framework for explaining the decline in the labor share of income. Informed by critical realism, the framework emphasized the mechanisms underlying this phenomenon. It proposed technological mechanisms influenced by trade liberalization, and labor market mechanisms, as potential contributors to the decline in the labor share of income.

The mixed-methods research design refined this model. The revised theoretical framework suggests that the decline in the labor share of income was driven by the interaction of technological, labor market, product market, and trade liberalization mechanisms.

The quantitative analysis showed that India's organized manufacturing sector experienced a long-term decline in the labor share of income between 1981 and 2022. This decline occurred alongside a rising capital-labor ratio, a falling RIP, and, from 1990 onward, a declining tariff rate. The qualitative analysis then used retroduction to move from these observed patterns to the mechanisms that generated the decline in the labor share of income. By lowering tariffs and relaxing import restrictions on capital and intermediate goods, trade liberalization contributed to a fall in the RIP and encouraged capital deepening. At the same time, it also intensified contractualization and weakened workers' bargaining power. Moreover, R&D activity, strict labor market regulations, the feminization of employment, rising quasi-fixed employment costs, market concentration, and market-share reallocation also contributed to the decline in the labor share of income.

The thesis also addressed a secondary research question:

Which policy-related mechanisms could alter these dynamics to increase the labor share of income?

The analysis showed that increasing the labor share of income in India's manufacturing sector would require more than isolated reforms. Measures such as stronger minimum wages and stricter regulation of fixed-term and contract labor could help counter some of the processes that have contributed to the decline. From a structure-discourse-agency perspective, policy interventions are always shaped by how political actors, companies, and workers interpret and respond to them. For this reason, the success of policies remains uncertain.

Overall, this thesis showed that the decline in the labor share of income in India's manufacturing sector was not the result of one single cause. Rather, it emerged from several interconnected mechanisms, underscoring the need for political intervention across multiple policy areas simultaneously to counteract this trend. A higher labor share remains achievable, but only if distribution becomes a more central concern of economic policy. This would open up the possibility of strengthening labor's position, a necessary step in creating greater income equality.

APPENDIX A

Tables

Table A.1: Total Emoluments, Net Value Added and Labor Share of Income (%) in India's Organized Manufacturing Sector (Ministry of Statistics & Programme Implementation, 2025) (1981–2022)

Year	Total Emoluments	Net Value Added	Labor Share of Income (%)
1981	677,753.00	1,451,257.00	46.70
1982	804,609.00	1,667,368.00	48.26
1983	921,825.00	2,013,718.00	45.78
1984	1,066,021.00	2,088,716.00	51.04
1985	1,108,113.00	2,256,813.00	49.10
1986	1,229,918.00	2,555,224.00	48.13
1987	1,408,105.00	2,833,360.00	49.70
1988	1,572,832.00	3,463,480.00	45.41
1989	1,840,888.00	4,266,281.00	43.15
1990	2,058,633.00	5,151,459.00	39.96
1991	2,097,048.00	5,482,702.00	38.25
1992	2,756,026.00	7,124,819.00	38.68
1993	2,863,967.00	8,843,399.00	32.39
1994	3,534,151.00	10,851,699.00	32.57
1995	4,511,605.00	13,939,719.00	32.37
1996	4,640,358.00	15,735,887.00	29.49
1997	5,237,112.00	16,644,124.00	31.47
1998	4,462,585.00	14,546,105.00	30.68
1999	4,784,351.00	15,497,442.00	30.87
2000	5,071,873.00	14,362,141.00	35.31
2001	5,105,957.00	14,430,212.00	35.38
2002	5,515,801.00	17,234,004.00	32.01
2003	5,833,675.00	20,295,377.00	28.74
2004	6,440,594.00	25,990,686.00	24.78
2005	7,400,820.00	31,186,419.00	23.73
2006	8,875,099.00	39,572,526.00	22.43
2007	10,544,284.00	48,159,268.00	21.89
2008	12,944,123.00	52,776,558.00	24.53
2009	14,700,696.00	59,211,387.00	24.83
2010	18,329,574.00	70,457,581.00	26.02
2011	21,509,846.00	76,455,389.00	28.13
2012	23,805,727.00	85,194,869.00	27.94
2013	27,241,503.00	89,534,187.00	30.43
2014	30,741,306.00	97,516,172.00	31.52
2015	33,975,074.00	107,248,509.00	31.68
2016	37,516,385.00	114,591,911.00	32.74
2017	41,835,716.00	122,967,418.00	34.02
2018	46,207,983.00	127,646,637.00	36.20
2019	49,172,897.00	121,264,771.00	40.55
2020	48,389,031.00	133,578,860.00	36.23
2021	56,082,801.00	174,832,466.00	32.08
2022	64,049,070.00	188,041,113.00	34.06

Table A.2: Relative Price of Investment Goods (RIP) in India (1981–2022) (Feenstra et al., 2025)

Year	RIP
1981	1.2926
1982	1.3476
1983	1.3711
1984	1.4884
1985	1.6295
1986	1.5815
1987	1.5971
1988	1.5942
1989	1.6501
1990	1.6863
1991	1.6970
1992	1.6424
1993	1.6239
1994	1.6084
1995	1.6717
1996	1.6714
1997	1.5905
1998	1.5070
1999	1.4500
2000	1.3793
2001	1.3367
2002	1.2732
2003	1.2692
2004	1.3045
2005	1.2265
2006	1.2093
2007	1.1670
2008	1.2833
2009	1.2582
2010	1.2114
2011	1.2423
2012	1.2643
2013	1.2481
2014	1.2288
2015	1.2035
2016	1.1950
2017	1.1709
2018	1.2275
2019	1.2478
2020	1.2207
2021	1.2961
2022	1.3302

Table A.3: Capital-Labor Ratio in India's Organized Manufacturing Sector (1981–2022)

Year	Capital-Labor Ratio
1981	0.568
1982	0.650
1983	0.789
1984	0.900
1985	1.033
1986	1.158
1987	1.295
1988	1.479
1989	1.690
1990	2.119
1991	2.423
1992	2.901
1993	3.384
1994	3.983
1995	4.566
1996	5.272
1997	5.529
1998	6.146
1999	6.398
2000	6.513
2001	7.250
2002	7.218
2003	7.776
2004	7.775
2005	8.505
2006	9.075
2007	10.309
2008	12.031
2009	14.765
2010	16.229
2011	18.677
2012	21.691
2013	22.727
2014	23.007
2015	25.230
2016	27.355
2017	26.880
2018	27.082
2019	27.886
2020	29.333
2021	27.380
2022	28.199

Table A.4: India—Applied Tariff Rate on Manufactured Goods (Weighted Mean, (%))
(1990–2022) (Human Progress, 2025; World Bank Group, 2025)

Year	Tariff Rate (%)
1990	71.10
1991	56.91
1992	42.71
1993	38.84
1994	34.97
1995	31.10
1996	27.23
1997	20.52
1998	25.97
1999	31.41
2000	29.24
2001	28.15
2002	24.88
2003	22.29
2004	25.42
2005	12.66
2006	9.08
2007	10.98
2008	5.47
2009	7.12
2010	4.70
2011	5.92
2012	7.32
2013	7.29
2014	7.15
2015	7.00
2016	6.26
2017	6.08
2018	6.00
2019	6.64
2020	6.72
2021	6.79
2022	6.22

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