

# Shifting Tastes, Advancing Technologies: A New Perspective on Income Inequality

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This paper examines how changing consumer demand affects income inequality in the context of technological change in the US. I develop a general equilibrium structural transformation model that incorporates time-varying demand shifters –Temporal Demand Growth Factors (TGFs). The estimates of TGFs reveal significant heterogeneity in demand patterns across goods and households. Counterfactual analysis shows that TGF-driven demand effects substantially moderate the rise in income inequality due to technological change. In the absence of these demand effects, the increase in income inequality between 1989 and 2021 is 73% larger. Changes in demand particularly benefit workers in less productive and more labour intensive non-routine manual and routine cognitive sectors, consistent with Baumol’s cost disease. The reallocation of economic activity towards sectors with lower productivity growth, driven by changes in demand, is associated with more equitable income distribution, suggesting that demand driven slowdown in productivity growth is not necessarily detrimental to our economic wellbeing.

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# 1 Introduction

Income inequality has been a persistent and growing concern in advanced economies over the past few decades (Saez and Zucman, 2020; Piketty, Saez, and Zucman, 2018). To date, much of the literature has focused on production-side factors, examining how changes in technology and the nature of work affect wage structures and employment patterns. For example, technological advancements have been linked to rising income disparities through skill-biased and routine-biased technological change (Acemoglu and Restrepo, 2022; Acemoglu and Autor, 2011; Autor, Levy, and Murnane, 2003). However, less attention has been given to the evolving nature of consumer demand as an additional force in shaping these distributional outcomes. This paper addresses this gap by exploring a fundamental question: How do changes in consumer demand affect income inequality? By focusing on the changing demand in addition to changing production technologies, I provide a more comprehensive understanding of the forces driving income disparities.

The existing literature has largely focused on supply-side explanations for rising inequality. A significant body of work has identified skill-biased technological change as a primary contributor, demonstrating how technological advancements have disproportionately benefited highly skilled workers, thereby widening wage differentials (Katz and Murphy, 1992; Autor, Levy, and Murnane, 2003). Building on this foundation, more recent studies have highlighted the impact of routine-biased technological change, which has led to job polarization and further wage disparities (Goos, Manning, and Salomons, 2014; Autor and Dorn, 2013).

On the demand side, structural transformation models have examined how changes in sectoral composition arise through income effects and relative prices (Buera et al., 2022; Comin, Lashkari, and Mestieri, 2021; Boppart, 2014; Herrendorf, Rogerson, and Valentinyi, 2013; Buera and Kaboski, 2012; Ngai and Pissarides, 2007). However, even in these demand-focused models, changes in consumption patterns are still ultimately governed by production-side factors, since both income and relative prices are determined by production. In the absence of changes in income or relative prices, the consumption structure in these models remains stable over time. This implies that even if technological progress leads to improvements in product quality, it will not alter consumption patterns unless it affects income or prices. Consequently, these models may not fully capture the potential effects of evolving consumer demand on structural change and income inequality, neglecting other potential sources of changes in consumption patterns, such as product quality or taste shocks.

This paper makes several key contributions to the literature. First, I develop a novel general equilibrium structural transformation framework that integrates time-varying demand shifters, Temporal Growth Factors (TGFs), into a model with technological change. Second, using the estimates from the proposed framework, I document significant changes in consumer demand over the period of 1989-2021 and show that these changes are heterogeneous across different households and goods. Third, I demonstrate a substantial impact of TGFs-driven demand effects on wages and income inequality. The results reveal that these demand effects play a crucial role

in shaping income distribution, often counteracting the negative effects of technological change.

The model in this paper builds on the canonical structural transformation model with non-homothetic preferences, used by [Buera et al. \(2022\)](#); [Comin, Lashkari, and Mestieri \(2021\)](#); [Herrendorf, Rogerson, and Valentinyi \(2013\)](#) among others. I extend this model by introducing time-varying demand shifters, TGFs. In the model, TGFs capture evolving consumer demand that is independent of price and income effects. They can account for unobservable changes in product quality due to technological advancements ([Syverson, 2017](#)), as well as taste shocks that affect spending allocations [Baqae and Burstein \(2023\)](#). These factors, often overlooked in traditional models, can significantly influence spending patterns in ways not captured by price or income adjustments alone.

In the model, preferences are heterogeneous across four households – non-routine cognitive, routine cognitive, non-routine manual, and routine manual.<sup>1</sup> Households consume four goods, each produced by one of the four sectors – non-routine cognitive intensive (NCI), routine cognitive intensive (RCI), non-routine manual intensive (NMI), and routine manual intensive (RMI).<sup>2</sup> Technological change is captured by a CRESH production function with endogenous factor-augmenting technical growth rates, building on similar CES production function specifications by [Herrendorf, Herrington, and Valentinyi \(2015\)](#) and [León-Ledesma, McAdam, and Willman \(2010\)](#). This specification allows for different elasticities of substitution between input pairs, providing greater flexibility in modelling production technologies across sectors.

To estimate the model and perform counterfactual analysis, I construct a novel dataset that links quarterly household-level expenditures from the CEX data to sectoral production data. I do this using Input-Output Tables, Integrated Industry-Level Production Accounts (KLEMS), Current Population Survey (CPS), and the Occupational Information Network (O\*NET) data. Expenditure data is aggregated at the level of four households, and labour employed by sectors is split at the level of four occupation groups that are of the same four types as households. This dataset allows to analyze the interplay between changing consumer demand and production technologies in a general equilibrium setting.

The results of this paper provide new insights into the dynamics of income inequality and structural change. I find that TGFs play an important role in shaping wage distributions across sectors and households. Specifically, the analysis demonstrates that changing demand has particularly benefited workers in NMI and RCI sectors, partially offsetting negative production effects for households employed in these sectors. The magnitude of these effects is substantial: in the counterfactual scenario without demand effects, wages<sup>3</sup> in 2021 in the RCI sector are 10% lower across all household types, while wages in the NMI sector are 15% lower. Conversely, wages in the RMI sector are 25% higher in the absence of demand effects. These wage differentials underscore the importance of changing demand in shaping income distributions.

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<sup>1</sup>I split households into four types – non-routine cognitive, routine cognitive, non-routine manual, and routine manual, based on occupation of the reference person. Occupation type is determined based on O\*NET task measures, following [Acemoglu and Autor \(2011\)](#). For more discussion, see Section 2.

<sup>2</sup>Sector types are determined based on their relative labour type shares, as discussed in Section 2.

<sup>3</sup>CEX contains data on annual labour earnings. To match this, I also use annual labour earnings data from the CPS. In the paper, I refer to annual labour earnings as wages or income and use these terms interchangeably.

In the absence of the demand effects, income inequality, measured by the coefficient of variation (CV), would have increased by 73% more between 1989 and 2021. To put these effects into perspective, I compare them to a benchmark scenario with neither demand nor technological change effects. The results reveal that production effects alone would increase the CV by 0.086 relative to the benchmark, while demand effects alone would decrease the CV by 0.081. Strikingly, the magnitude of changes in income inequality due to demand effects is over 94% of that of production effects, but in the opposite direction. This finding suggests that evolving consumer demand has played a crucial role in moderating the rise of income inequality over the past three decades, largely counterbalancing the inequality-increasing effects of technological change. These results complement much of the existing literature that focuses primarily on technological change as the driver of inequality (e.g., [Acemoglu and Restrepo \(2022\)](#)), highlighting the critical importance of demand-side factors.

Moreover, I find that up to 20% of the TGF-driven demand effects arise from changes in household composition over time, particularly due to an increase in the share of non-routine cognitive households. Interestingly, this shift towards a larger proportion of these typically higher-income households does not exacerbate inequality as one might expect. Instead, the preferences of non-routine cognitive households, characterized by some of the largest TGF effects, contribute to moderating overall income inequality. As the share of non-routine cognitive households increases, so do the demand effects that counteract negative production effects on income inequality. This phenomenon creates a counterintuitive dynamic where, rather than inequality begetting more inequality, the changing composition towards higher-income non-routine cognitive households helps to temper income disparities through demand effects. This result adds a new dimension to our understanding of structural change, complementing work by [Buera et al. \(2022\)](#) on skill-biased structural change by emphasizing the role of evolving demand patterns alongside changing skill composition. It highlights a previously overlooked mechanism through which changes in the income distribution can, paradoxically, work to moderate rather than exacerbate inequality through shifts in consumer demand patterns.

This paper provides evidence that economic activity, driven by changing demand structure via TGFs, is shifting towards sectors with lower productivity growth and higher labour intensities, particularly, the RCI and NMI sectors. This finding is consistent with Baumol’s cost disease ([Baumol, 1967](#)). Unlike traditional interpretations, concerned with the decrease in productivity growth, the results in this paper suggest that such demand-driven reallocation of economic activity is not necessarily detrimental to our economic wellbeing. While this shift may contribute to slower aggregate productivity growth, it is associated with more equitable income distribution. These findings have profound implications for our understanding of economic growth in developed economies and its association with economic wellbeing metrics, such as income inequality.

The paper is organized as follows. Section 2 presents data and key stylized facts on consumption patterns and income inequality. Section 3 develops the theoretical framework, introducing TGFs and integrating them into a general equilibrium model with technological change. Section

4 describes the estimation strategy and sources of identification for the parameters governing households' and sectors' choices in equilibrium. Section 5 presents estimation results for the households' and sectors' problems and compares how the proposed model performs relative to the canonical model with non-homothetic CES preferences. Section 6 conducts counterfactual analyses to quantify the relative importance of demand effects on wages and wage distributions. Section 7 examines channels of TGF effects, and Section 8 performs a series of robustness checks. Section 9 explores the implications of TGF-driven structural change on income inequality and its relevance for Baumol's cost disease and slowing economic growth. Finally, Section 10 concludes.