# HOUSEHOLD CONSUMPTION PATTERNS AND THE SECTORAL COMPOSITION OF GROWING ECONOMIES: A REVIEW OF THE INTERLINKAGES

# Household consumption patterns and the sectoral composition of growing economies: A review of the interlinkages

Andreas Chai
Griffith Business School

UNIDO

This is a background paper for UNIDO Industrial Development Report 2018: Demand for Manufacturing: Driving Inclusive and Sustainable Industrial Development.

**Table of Contents**

**List of Tables**

**List of Figures**

**Abstract**

This study has three goals: first, we review how the composition of final demand tends to evolve as household income grows. Second, we examine the implications of these trends in demand on the industrial composition of growing economies. Finally, we discuss how these evolving consumption patterns are themselves linked to a range of demographic, geographic and social factors that may account for differences observed in cross-country consumption patterns.

# 1    Introduction

Household spending is the essential driving force of economic growth – it represents more than half of GDP in most developed economies. As their wealth grows, households tend to rapidly alter their spending patterns, and a wide variety of new goods enters the consumption basket. This phenomenon is widely viewed as a welfare-enhancing feature of modern economic development (Romer, 1990; Grossman and Helpman, 1991; Barro and Sala-i-Martin, 1995). Recent years have witnessed the growing popularity of domestically-orientated growth strategies (e.g. Deer and Song, 2012). This has motivated policymakers to take a renewed look at the evolving character of final demand and its influence on the industrial composition of growing economies. It is therefore timely to review precisely what is known about how the composition of household spending evolves as it expands and its growth implications.

This paper discusses the longstanding conjecture that changes in the industrial composition of growing economies are linked to changes in the composition of household demand (e.g. Kuznets, 1973; Foellmi and Zweimüller, 2008). Over the past 150 years, research on household spending patterns has revealed that large, non-marginal increases in household income tend to accompany economic development, which has a pervasive influence on the composition and magnitude of household spending across almost all domains of spending. The best known example of this is Engel's Law, which states that the share of household spending on food tends to decline as households grow richer. Beyond that, households consume a wider variety of goods (Jackson, 1986), more expensive types of goods and services (Bils and Klenow, 2001A), and the overall dispersion of household spending across different consumption domains tends to grow (Clements and Gao, 2012). Moreover, differences in the spending patterns of affluent households rise (Chai et al., 2015). While low- and middle-class households tend to spend in a relatively similar manner, spending patterns among affluent households differ considerably, likely due to the greater discretionary power these households enjoy in terms of spending. All in all, income effects are typically found to have a much stronger impact on consumption patterns than price effects (Brown and Deaton, 1972; Lavoie, 1994; Clements et al., 2006).

The evolving character of consumption patterns has important implications for industry growth and the wider economy. The most direct impact is the extent to which industries can realize increasing returns to scale. Moreover, income induced shifts in household spending create opportunities and challenges for both mature industries experiencing declines in demand growth as well as for new industries of the economy producing luxury goods. For mature industries, slowdowns in demand may reduce their capacity to achieve economies of scale and further trigger innovative activity as entrepreneurs and firms seek to delay slowdowns in growth via

product innovation. For new industries, demand growth can lead to increasing returns, thus enabling industries to dedicate more resources to Research & Development (R&D) activities (Foellmi and Zweimüller, 2006). New industries have to simultaneously contend with the issue that the heterogeneity in demand grows at high income levels in a way that limits the realization of scale economies. In the wider economy, the current literature suggests that income-induced shifts in household consumption also impact trade patterns, labour supply and wage inequality between unskilled and skilled workers.

This study has three broad goals: the first is to outline how the composition of final demand tends to evolve as household income grows. The second is to discuss what implications these trends in demand have for the industrial composition of growing economies. Finally, this study discusses how consumption patterns are linked to a range of demographic, geographic and social factors that may account for observed differences in cross country consumption patterns.

The paper's main arguments are:

- The composition of household spending tends to undergo fundamental changes as rising income fuels the expansion of household expenditure.
- As households become more affluent, they tend to consume a wider variety of household goods and the budget share of food spending tends to decline.
- Differences in spending patterns between households tend to grow as household income rises, creating new opportunities for niche markets and higher quality goods.
- Households cease to increase their spending on some goods and services that appear to have reached saturation levels of expenditure.
- These saturation levels are subject to change in light of new innovations and changes in income distribution and relative prices.
- Uneven technological change across sectors can also impact the composition of spending by reducing the overall share of household spending dedicated to manufacturing.
- On the sectoral level, evolving patterns of final demand can impact the realization of economies of scale and the level of innovative activity.
- In the wider economy, the evolving pattern of demand also affects trade flows, labour supply and the accumulation of human capital.
- Economic development influences the character of demand via rising income inequality, urbanization, increases in the opportunity cost of time, falls in fertility rates and family size.

These points highlight the existence of important dynamic linkages between the manner in which demand grows and the relative size of different industries in the economy. These links have the potential to form part of an autocatalytic process through which the demand and supply side of the economy influence each other and coevolve. Yet this process is neither inevitable nor smooth. Slowdowns in aggregated demand in combination with productivity improvements imply that economic resources need to be reallocated as mature industries face stagnation and new ones emerge. In addition, the strength of the links between consumption and production strongly depends on how widely income growth is distributed across households, the competitiveness of industries, the extent to which the economy is oriented towards producing for domestic markets and functional and flexible markets for factor resources. From an international perspective, since evolving demand may influence the international competitiveness of export industries, a further issue arises around synchronized shifts in demand within the economy which are similar to shifts occurring in other economies (Matsuyama, 2009; Hallak, 2010).

This paper is structured as follows. Section 2 briefly summarizes the concept of demand-driven structural change. It also discusses the main properties of Engel Curves (ECs) and the notion of demand saturation. Section 3 discusses how two well-known macroeconomic trends mentioned in the structural change literature tend to impact consumption patterns: Engel's Law and Baumol's disease. Section 4 outlines the broader connections between household consumption patterns and economic development. Section 5 concludes the paper.

## 2      Demand-driven structural economic change

Structural economic change describes the long-term process through which certain industries experience faster growth than others, which leads to the reallocation of employment and capital across industries (Chenery, 1968; Krueger, 2008). The typical structural change experienced by growing economies can be summarized as follows. The agricultural sector tends to dominate during the early stages of development. During industrialization, the spread of the factory systems of production tends to propel the manufacturing sector into a dominant position. At later stages of development, the services sector eventually emerges as the largest sector of the economy (Herrendorf et al., 2014). There are a number of different reasons why this may occur. Differences in the rate of technological change, factor endowments, export opportunities and sectoral price trends may all play a role (Chenery, 1968; Kuznets, 1973; Buera and Kaboski, 2012B).

To account for these structural changes, it is natural to look for causes that are 'endogenous' in the sense that they are intrinsically connected and a product of the economic development process. Such explanations are preferred because they may explain why many different economies experience relatively similar structural changes as their economies develop. Explanations relying on exogenous factors struggle to expound why structural changes are similar across a wide range of economies and historical eras.

Here many scholars have conjectured that the evolving nature of demand could play an important role in effecting structural change. Some examples, among others, include studies by Pasineti (1981), Aoki and Yoshikawa (2002), Metcalfe et al. (2006), Bertola et al. (2006), Pyka and Saviotti (2008) and Ciarli et al. (2010). According to this view, the agricultural sector tends to dominate low income economies because most of household spending is dedicated to consuming food. Industries begin to rise as households become wealthier and begin to diversify their spending which resulting in the growth of manufacturing and services.

An economy's industrial composition is thereby intrinsically linked to the composition of household spending. Given that demand shifts are income-induced, a positive feedback loop emerges between evolving patterns of demand and structural changes that drive up household income. Such thinking is not new. Ever since the industrial composition of Western economies underwent a radical transformation during the Industrial Revolution, scholars have studied how this phenomenon may be linked to systematic changes in the character of household spending (Engel, 1857; Fourastie, 1949; Clark, 1950; Kuznets, 1973).

## 2.1    Engel Curves

Engel Curves (ECs) describe the relationship between the household consumption of a good or service and household wealth. The latter is usually measured using the consumer's total expenditure or income. The former can take the form of either i) expenditure, ii) quantity consumed or iii) budget share. Expenditure and budget share ECs are the most commonly used. Note that budget share ECs are typically downward sloping, while expenditure ECs are upward sloping. The upward slope indicates that spending on a good tends to rise with income, even if spending declines as a proportion of all household spending, as reflected in the downward slope of the budget share EC.

Data for estimating ECs are typically sourced from national household expenditure surveys. By sampling a large number of households across a range of income levels, it becomes possible to study how consumption patterns of goods change with income, when other factors such as relative prices and household characteristics remain unchanged. As such, the underlying income

distribution of households is a major determinant of the length and shape of the EC (discussed further in Section 4). The goods chosen are usually aggregated across a range of similar commodities such as, for example, total food, clothing and transport. In other cases they can refer to the underlying characteristics of commodities, such as calories (Deaton and Subramanian, 1996) or variety (Jackson, 1986)

ECs provide the basis for calculating the income elasticities of goods. This measures the responsiveness of spending on a good to a change in the household income at a given income level. Income elasticities are used to predict how rising household income prompts changes in the composition of final demand. They answer the hypothetical question 'if household income grew by 1 per cent, how much would spending on a given good change?' Goods and services that possess income elasticities greater than unity are considered to be luxuries. This implies that as household income grows, the growth rate of spending on these goods is greater than income growth. Goods with an income elasticity between 0 and 1 are normal goods, which implies that consumption will remain constant (in the case of 0) or grow at the same rate as income (in the case of 1). Goods with a negative income elasticity are known as "inferior goods": consumption will fall as income rises. [1]

How accurate are income elasticities in predicting the growth rate of different goods and services? Figure 1 plots the relationship between estimated income elasticities and the relative growth rate of goods over a 20-year period in the United States (Aguiar and Bils, 2015). The horizontal axis reports the income elasticity of the good – the higher the value, the steeper the slope of the estimated EC. Goods and services that appear to the right of unity are considered luxuries. These include entertainment (ent) and education (educ). Goods and services to the left of unity and to the right of zero are considered normal goods, such as food eaten at home (foodhome) and utilities. Tobacco is the only good that appears to be an inferior good. The vertical axis reports the relative growth rate across a period of approximately two decades (1980/82 to 2008/10). Long-term growth rates in demand will be discussed further in Section 3.1. [2]

---

[1] The interpretation of income elasticities for budget share ECs differs in these critical values.

[2] This analysis is limited to one highly developed country. Open questions remain about the extent to which this accuracy holds in developing countries. Young (2012) reports growth trends and income elasticities in the consumption patterns of 29 sub-Saharan and 27 other developing countries.

**Figure 1**     **Relative expenditure growth and income elasticities for selected expenditure categories**
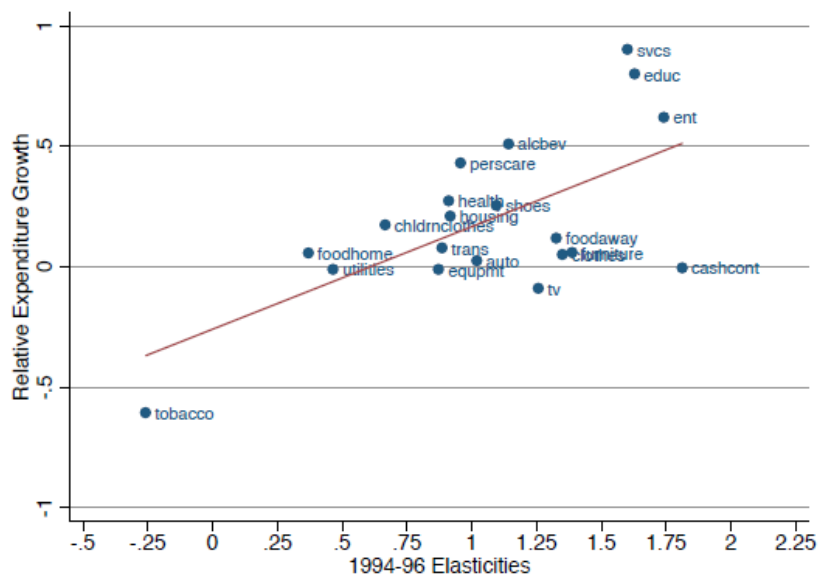


*Note:* This figure is a scatter plot of relative (high- versus low-income) expenditure growth over the sample period for each good versus expenditure elasticity. The vertical axis depicts the difference across high-income and low-income households in the log growth in expenditure for each good between 1980/82 and 2008/10. The horizontal axis is each good's estimated expenditure elasticity. The slope of the scatter plot's regression line is 0.425.
*Source*: Aguiar and Bils (2015).

ECs possess several important properties:

**A. Income elasticities vary significantly across categories**

Differences in the slope of ECs across goods are quite significant. As Figure 1 illustrates, this implies that the growth rate of demand for some goods and services will be higher relative to other goods and services. To get an idea of cross-country differences in income elasticities, Table 1 reports the income elasticities of eight highly aggregated expenditure categories found in Clements et al. (2006). Food spending consistently possesses the lowest income elasticity of all categories. In almost all cases, food income elasticity is not greater than unity, which supports Engel's law. Similar results are found in Aguiar and Bils (2015). These results support the notion that spending tends to shift from food spending to non-food categories as income grows. However, while several types of services tend to report high income elasticity, there is no clear evidence that services possess relatively higher income elasticities compared to goods (Section 5 will discuss this issue further).

**Table 1 Income elasticities for 8 commodities in 45 countries**

| Country | Food | Clothing | Housing | Durables | Medical | Transport | Recreation | Other |
|---------|------|----------|---------|----------|---------|-----------|------------|-------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 1. USA | 0.37 | 1.33 | 0.52 | 1.59 | 0.33 | 2.34 | 1.16 | 0.96 |
| 2. Switzerland | 0.96 | 1.41 | 0.40 | 1.44 | 0.79 | 1.54 | 1.23 | 1.06 |
| 3. Luxembourg | 0.43 | 1.11 | 0.92 | 1.63 | 2.03 | 1.26 | -0.08 | 1.08 |
| 4. Hong Kong | 0.48 | 2.39 | 0.18 | 1.13 | 0.75 | 1.16 | 0.68 | 1.06 |
| 5. Canada | 0.72 | 1.48 | 0.43 | 1.23 | 1.28 | 1.45 | 1.36 | 1.10 |
| 6. Germany | 0.67 | 1.45 | 0.25 | 1.50 | 0.63 | 1.97 | 0.27 | 1.87 |
| 7. Japan | 0.79 | 1.81 | 0.30 | 1.28 | 0.81 | 1.83 | 0.77 | 1.42 |
| 8. Denmark | 0.45 | 1.61 | 0.36 | 1.50 | 0.27 | 2.47 | 0.97 | 1.01 |
| 9. Australia | 0.43 | 1.27 | 0.34 | 2.57 | 1.11 | 1.20 | 2.04 | 1.12 |
| 10. Sweden | 0.74 | 1.65 | 0.36 | 1.73 | 0.18 | 1.95 | 1.42 | 0.57 |
| 11. France | 0.42 | 0.83 | 0.64 | 1.85 | 0.15 | 1.82 | 1.55 | 1.48 |
| 12. Belgium | 0.43 | 1.20 | 0.54 | 1.75 | 0.81 | 1.32 | 0.77 | 1.83 |
| 13. Netherlands | 0.47 | 1.86 | 0.55 | 1.90 | 0.69 | 1.65 | 1.01 | 0.89 |
| 14. Norway | 0.57 | 1.22 | 0.46 | 1.36 | 1.53 | 2.20 | 1.08 | 0.72 |
| 15. Austria | 0.65 | 1.54 | 0.49 | 1.31 | 0.40 | 1.90 | 0.99 | 0.85 |
| 16. Singapore | 0.70 | 1.32 | 0.45 | 0.72 | 0.64 | 1.23 | 1.35 | 1.40 |
| 17. Italy | 0.70 | 1.77 | 0.49 | 1.60 | 1.01 | 1.58 | 0.85 | 0.92 |
| 18. Iceland | 0.31 | 1.15 | 0.47 | 1.84 | 0.56 | 2.02 | 0.87 | 1.23 |
| 19. UK | 0.61 | 1.01 | 0.30 | 1.67 | 0.80 | 1.69 | 0.87 | 1.47 |
| 20. Finland | 0.56 | 1.36 | 0.47 | 1.50 | 0.47 | 2.08 | 1.00 | 1.21 |
| 21. New Zealand | 0.38 | 1.36 | 0.93 | 1.55 | 0.71 | 1.45 | 0.88 | 1.03 |
| 22. Spain | 0.84 | 0.78 | 0.69 | 0.92 | 1.71 | 1.78 | 1.16 | 0.87 |
| 23. Israel | 0.52 | 1.87 | 0.25 | 2.32 | 0.51 | 2.07 | 1.81 | 0.66 |
| 24. Ireland | 0.44 | 2.04 | 0.42 | 1.72 | 0.83 | 1.58 | 1.74 | 1.43 |
| 25. Cyprus | 0.91 | 0.92 | 0.76 | 0.88 | 0.57 | 1.65 | 0.45 | 1.03 |
| 26. Taiwan | 0.75 | 1.29 | 0.43 | 1.16 | 1.08 | 2.37 | 1.14 | 1.84 |
| 27. Korea | 0.91 | 1.29 | 0.50 | 1.68 | 1.04 | 1.25 | 0.91 | 1.10 |
| 28. Portugal | 0.27 | 0.26 | 2.22 | .90 | 0.69 | 2.28 | 0.76 | 1.07 |
| 29. Greece | 0.52 | 2.23 | 0.56 | 1.20 | 1.89 | 1.31 | 1.75 | 1.23 |
| 30. Venezuela | 0.54 | 1.39 | 0.99 | 2.61 | 0.35 | 1.81 | 0.19 | 1.21 |
| 31. Mexico | 0.64 | 1.73 | 0.26 | 1.26 | 0.75 | 1.81 | 1.64 | 1.01 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 32. Malta | 0.62 | 0.97 | 1.31 | 1.00 | 0.47 | 1.26 | 0.79 | 1.70 |
| 33. Puerto Rico | 0.95 | 0.90 | 0.88 | 0.96 | 1.22 | 1.29 | 1.20 | 0.81 |
| 34. Hungary | 0.77 | 1.21 | 1.12 | 1.49 | 0.91 | 0.75 | 1.88 | 0.96 |
| 35. Fiji | 0.92 | 0.62 | 1.04 | 0.48 | 2.66 | 1.63 | 0.97 | 0.71 |
| 36. Thailand | 0.63 | 1.09 | 0.54 | 1.61 | 1.22 | 1.84 | 1.12 | 1.14 |
| 37. Colombia | 0.88 | 1.58 | 0.13 | 1.55 | 2.37 | 1.12 | 1.07 | .83 |
| 38. Iran | 0.59 | 1.13 | 1.15 | 1.42 | 1.50 | 1.30 | 1.61 | 2.26 |
| 39. South Africa | 0.74 | 1.40 | 0.32 | 1.27 | 0.73 | 1.52 | 1.11 | 1.26 |
| 40. Ecuador | 0.88 | 1.55 | 0.47 | 1.87 | 0.55 | .91 | 1.00 | 1.00 |
| 41. Jamaica | 0.71 | 1.32 | 0.79 | 1.72 | 0.98 | .90 | 0.73 | 1.63 |
| 42. Sri Lanka | 0.93 | 1.10 | 0.11 | 1.81 | 0.85 | 1.38 | 0.58 | 1.37 |
| 43. Honduras | 0.95 | 0.31 | 1.45 | 1.17 | 0.92 | .94 | 0.64 | 1.08 |
| 44. India | 0.98 | 1.33 | .67 | 1.49 | 2.20 | .10 | 2.71 | 1.22 |
| 45. Zimbabwe | 1.00 | 1.08 | 1.09 | 0.72 | 0.50 | 2.00 | 0.73 | 1.13 |
| 46. Mean | | | | | | | | |
| Countries 1-25 | 0.58 | 1.43 | .48 | 1.54 | 0.78 | 1.73 | 1.05 | 1.13 |
| Countries 26-45 | 0.76 | 1.19 | .80 | 1.37 | 1.14 | 1.39 | 1.13 | 1.23 |
| Countries 1-45 | 0.66 | 1.32 | .62 | 1.46 | 0.94 | 1.58 | 1.08 | 1.17 |

*Note:* Economies are ranked by income.
*Source*: Clements et al. (2006)

## B. Heteroscedasticity

A second important feature of EC estimates that the differences in spending patterns between consumers of the same income level tend to grow with income. Among the low income segments, household spending tends to have patterns that are very similar to spending patterns dominated by food. As income grows, differences grow considerably as a greater share of spending is discretionary in nature and basic needs cease to dominate as priorities. In Figure 2, these growing differences are reflected in the variation around the mean (heteroscedasticity). The increase in errors may be attributable to a number of reasons, including a measurement error: affluent households are less likely to participate in household surveys than lower income households.[3] However, it is worth noting that the variation seems to grow over time, as economies develop and household income rises. This has led some to argue that this variation is behavioural in nature (Chai et al., 2015). At high income levels, some households may still choose to dedicate all of their income to food, while others hardly spend any of their income for food. This variation is far smaller for low income households.

---

[3] In addition, models may be omitting important explanatory variables.

**Figure 2          The presence of heteroscedasticity in Engel Curves**
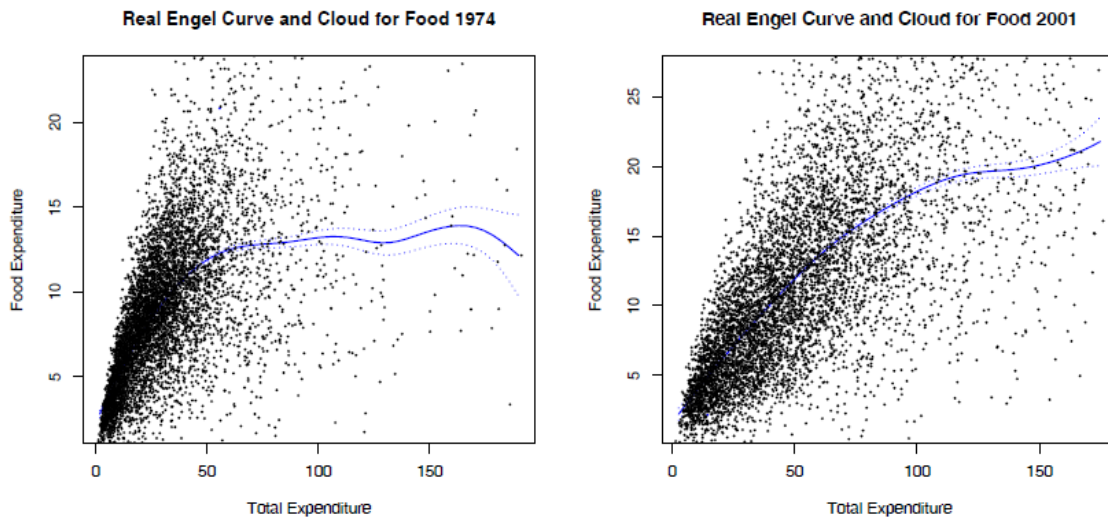


*Source*: Chai and Moneta (2014).

This phenomenon is likely related to the specialization of consumption patterns at high income levels where households enjoy greater discretionary power over spending. At low income levels, discretionary power is relatively limited as households dedicate most of their income to satisfying a universal set of basic needs that relate to spending on food, shelter and clothing. At higher income levels, the expansion of spending is much more heterogeneous in nature and dependent on the tastes, social influences and learning patterns of consumers (Witt, 2001; Gualerzi, 2001, 2012; Fremstad, 2016). Thus, reaching saturation level of household spending on necessities leaves affluent households able to pursue other consumption priorities that are more unique in nature. In this sense, the variation in consumer spending could be optimistically interpreted as a sign that consumers possess greater discretionary power in making spending decisions. Given that rich households tend to buy higher quality good (Bils and Klenow, 2001A; Clements et al., 2012), this variation suggests that affluent households specialize in certain goods and services and concentrate their spending on these limited number of expenditure categories. As a result, markets for consumers are likely to be small-scale niches where a small number of consumers have relatively higher willingness to pay for goods (Foellmi and Zweimüller, 2008; Malerba et al., 2007; Guerzoni, 2010).

As affluent households specialize in different expenditure categories, this implies that rising income tends to expand the variety of goods and services that is consumed by the overall population of households (Chai et al., 2015). Evidence of a positive relationship between household income and the aggregate diversity of spending has been found in a number of studies of cross-country demand analysis (Theil and Finke, 1983; Falkinger and Zweimüller,

1996; Clements et al., 1996, 2006, 2012). For example, in a study featuring 91 consumption items across 57 countries, Falkinger and Zweimüller (1996) found a strong positive relationship between a country's per capita income and the number of items it consumed. The poorest country in the sample (Tanzania) consumed 19 out of a possible 91 items, which is much lower than the 90 products consumed by the richest country in the sample (United States).

## C. Stability

A third characteristic of ECs is that their position and shape may be subject to change over time for a number of reasons (Moneta and Chai, 2012). A key issue in this regard is the extent to which expenditure categories are aggregated. Highly aggregated ECs are likely to exhibit more stability relative to ECs for individual goods and services (Aguiar and Bils, 2015). However, analysing ECs on a highly aggregated level can be misleading as the shape of ECs can be fundamentally dependent on the level of aggregation (Blundell and Stoker, 2005). Therefore, great care should be taken when making inferences about individual consumer behaviour using highly aggregated ECs (Hildenbrand, 1994). For these reasons, disaggregated ECs should be favoured when attempting to study the nature of non-homothetic preferences.

On the disaggregated level, a number of factors can change the shape and position of the EC:

- **Market participation rates.** For some durable goods, such as fridges and televisions, household income and the price of the good may be such that consumers cannot afford to purchase it. If a large share of the population lies below the threshold level of income required to purchase a good (as reflected in the participation rates), then the lower end of the EC may be subject to significant changes over time as a larger share of households reaches the threshold level of income and enters the market (Matsuyama, 2002). When a large number of new households enters the market, the shape of the EC among the low income levels shifts. Households that do not consume a good are usually ignored in the estimation of ECs, as zero expenditures are removed from the sample (Fry et al., 2000).

- **Relative prices**. Some goods that are necessities do not have many substitutes. If the price of these goods rises and demand is relatively price inelastic, the EC could shift upwards due to the inelastic nature of demand. Likewise, falls in price lead to a downward shift in the EC. Fuel and electricity is a typical example of price increases resulting in upward shifts in the EC (Moneta and Chai, 2014). If there are differences in the price elasticities of rich and poor households, the magnitude of the shifts will vary across observed income levels, resulting in changes in both the position and shape of the EC.

- **Changes in income distribution.** As Haavelmo (1947) notes, the ordinary family-expenditure functions of the EC cannot be assumed to remain invariant under transformations in income distribution. These changes can impact both the number of consumers in a particular market, as well as the observed differences in spending levels on a particular good between the poor and rich. There is typically a positive correlation between income and the average price paid for a good. Rich households tend to buy more expensive versions of the same good compared to low income households (Bils and Klenow, 2001A). Income inequality growth tends to follow a skewed distribution which is consistent with a small share of households attaining much higher incomes than the average (Chotikapanich et al., 2012). Depending on the underlying shape of the EC for a good, this could lead to either an increase or decline in income elasticity.

## 2.2    Demand saturation[4]

Many argue that household spending on a good with a fixed set of characteristics has an absolute upper limit beyond which expenditure ceases to rise in response to increasing income (see inter alia Aoki and Yoshikawa, 2002; Metcalfe et al., 2006; Saviotti, 2001).[5] As Pasinetti puts it, 'there is no commodity for which any individual's consumption can be increased indefinitely. An upper satiation level exists for all types of goods and services although at different levels of real income' (1981, p. 77, see Figure 3 below).[6] It is worth noting that demand-driven structural change does not depend on the existence of a saturation level. This phenomenon continues to take place as long as income elasticities across goods differ significantly. The concept demand saturation also differs considerably from the concept 'market saturation' used in the marketing and diffusion of innovation literature (e.g. Rogers, 2010). Market saturation refers to a situation in which all potential customers of a new product have adopted it. Demand saturation refers to the individual level and describes a level of spending on a good beyond which household spending ceases to rise. This suggests that a household has consumed 'enough' and the underlying need that motivated it to consume has been satiated at this level of spending.

Why does demand saturation occur? Slowdowns in demand reflect changes in individual preferences that take place precisely because suppliers have fully satisfied the underlying needs that originally motivated increasing consumption growth (Witt, 2001; Chai, 2015). Note that the notion primarily related to satiation entails the quantity consumed rather than the level of

---

[4] This section addresses the questions "What is the concept of saturation point?  Does it exist for all goods and services? How can we explain the differences in saturation points across goods and services?"

[5] The economic historian Kindelberger (1989) also vigorously asserted that Engels law applied to all goods".

[6] Brown and Deaton (1972) define 'absolute saturation' as the hypothesis that a finite level of demand exists which is not exceeded, either as income increases or as prices decrease indefinitely.

expenditure. The presence of demand saturation effectively represents a bottleneck on sectoral growth as demand growth could eventually cease once the population has reached the saturation level for the good (see Figure 3 below). As a result, markets may potentially stagnate as further gains in household income tend to be redirected towards the consumption of other goods. A saturation level implies that no matter how much household income increases, household expenditure on a good with a fixed set of characteristics and price stays constant at a certain level.

**Figure 3**          **The demand saturation hypothesis**
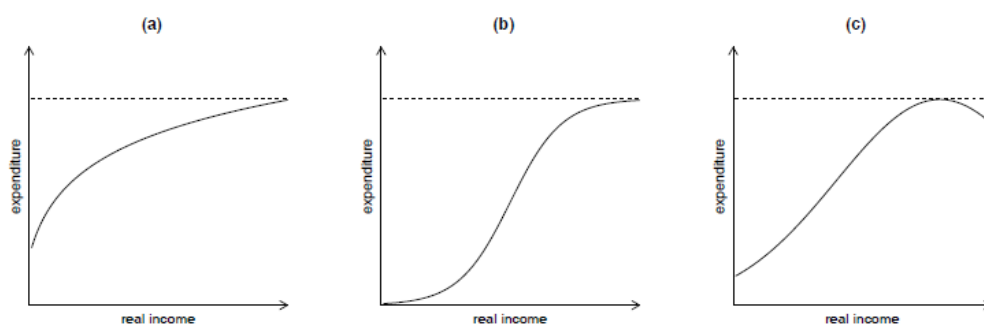


*Note:* a) is the hypothesized EC for goods 'necessary for physiological reasons' (e.g. food); b) is the hypothesized EC for almost all other cases; c) is the hypothesized EC for inferior goods.
*Source:* Pasinetti (1981:73).

Empirical evidence suggests that demand saturation occurs in certain goods and services, but not in others. It is worth noting that much of this evidence strongly depends on the functional form chosen in the empirical analysis.[7] In the following, the focus is on non-parametrically estimated quantity and expenditure ECs, which make no prior assumptions about the shape of the EC. The most prominent example of saturation in ECs is the case of food consumption. As households become more affluent, it has been widely observed that their budget share on food tends to decline as household income grows (Clements and Chen, 1996). Moneta and Manig (2014) provide more evidence for saturation in the quantity of calories consumed. In their cross-sectional empirical investigation of contemporary Russian food spending patterns, the authors examined the relationship between calorie consumption and income (see also Subramanian and Deaton, 1996). Examining an even broader range of expenditure categories using UK data on real expenditure ECs, Moneta and Chai (2014) found that such flat and stable ECs (consistent with the saturation hypothesis) tend to be more pronounced in goods, but much less prevalent in

---

[7] Certain mathematical procedures can successfully suppress evidence for saturation. For example, the log-linear estimates favoured by some studies (e.g. Comin et al., 2015) suggest that income elasticity of goods is constant across all income levels. However, non-linear ECs which allow for the slope of the EC to vary across income levels tend to produce much more accurate results (e.g. Banks et al., 1997; Moneta and Chai, 2014).

services.[8] However, saturation is far from universally present across all expenditure categories. There are a number of reasons why demand saturation may differ or be absent across countries, time spans and different goods categories.

- **Distribution of income**. Empirically observing saturation in ECs strongly depends on the underlying income distribution. Specifically, it is critical for a segment of the population to have reached the saturation level. If the entire population consumes a good at a level below the saturation level, the result is linear ECs. No change in the slope at high income levels of the EC would be observed. This could account for why a linear EC might be the best functional fit for ECs of certain goods and services (Lewbel, 2007). Likewise, it is also important that a segment of the population is located below the saturation level of expenditure. If all households have reached the saturation level, the EC would essentially be flat.

  It is interesting to note that rising income results in shifts in food EC that correspond to these expectations (see Figure 4 below). The ECs for sugar and milk in the UK in 1974 were much steeper relative to their counterparts in 2001. As a greater proportion of the population reaches the saturation level, the income elasticity of a good decreases over time such that former luxuries tend to become necessities. Consequently, the empirical measurement of demand saturation should be calibrated to the observed income distribution in economies.

- **Innovations and supply side conditions:** Another important factor determining the saturation level of spending is the emergence of new, higher quality varieties of goods and services. For several consumption domains with high rates of technological change, there is little evidence of demand saturation. A good example is the change in the EC for telephones and telegrams between 1974 and 2001. This period witnessed the invention of the mobile phone, which created new demand for this category across all income classes (see Figure 5 below). If product innovations take place unevenly across expenditure categories, this could explain why spending on some categories has grown faster than in other categories. In particular, Bils and Klenow (2001b) found that consumer spending tended to shift towards spending categories that featured faster quality growth. In contrast, process innovations that lower the cost of goods and services may shift spending *away* from spending categories and lower the saturation level of spending (see Section 3.2).

---

[8] This finding that demand saturation is more prevalent in goods rather than services is consistent with existing stylized facts denoting that rising household income is positively correlated with a reduction in the share of consumer spending on goods and an increase in the share of consumer spending dedicated to services (Herrendorf et al., 2013; Boppart, 2014).

**Figure 4**          **The impact on ECs when a greater share of ECs reaches the saturation level**
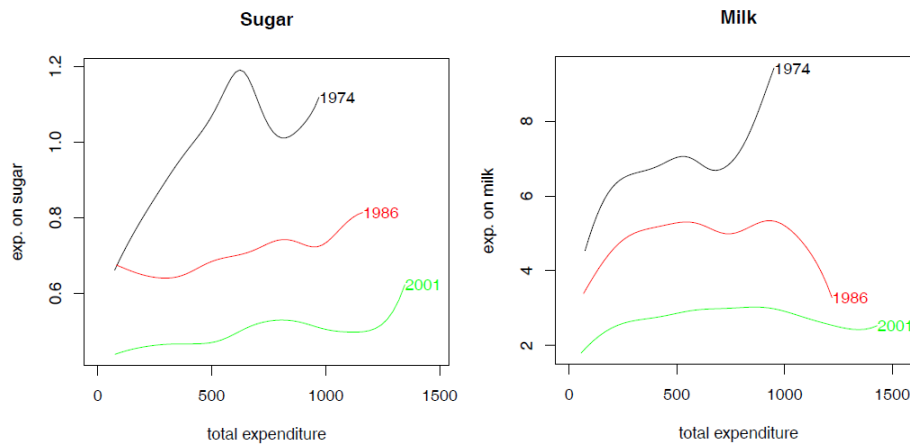


*Note:* Non-parametrically estimated Engel Curves for sugar and milk for the UK.
*Source:* Moneta and Chai (2014).

**Figure 5**          **Impact of new innovations on EC – the case of telephones**
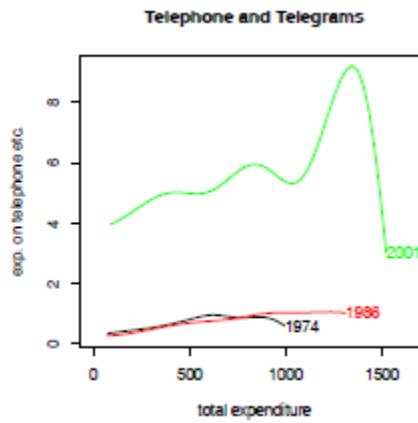


*Note:* Non-parametrically estimated Engel Curves for telephones for the UK.
*Source*: Moneta and Chai (2014).

- **Social effects.** In terms of differences across spending categories, certain goods may be related to needs that are difficult to saturate, such as social status (Hirsch, 1978; Frank, 1985). The satisfaction derived from the consumption of such goods and services depends on how much others have spent on the same good. As a result, as average spending levels increase, further spending increases in household spending could be triggered (Hopkins and Kornienko, 2004). Heffetz (2011) found that there was a correlation between the income elasticity of goods and the extent to which they are visible to others. Typical status goods include jewellery, clothes and automobiles (Charles et al., 2010; Heffetz, 2011; Kaus, 2012).

Demand saturation may also influence how sensitive consumers are to price changes. For example, using a meta-regression to study household level data from around the world, Green et al. (2013) found that demand for food was more responsive to price changes among poor households (see also Theil et al., 1989). This relates to the broader idea embodied in Pigou's Law which states that there is a proportional relationship between income and uncompensated own-price elasticities of demand for a single good (Pigou, 1910; Clements et al., 1984, Finke et al., 1984; Selvanathan and Selvanathan, 1993; Snow and Warren, 2015). Consumers are more responsive to price changes with respect to luxury goods than they are for necessities.

In case of demand saturation, this logic implies that falling income elasticities also cause declines in the price sensitivity of households. Several scholars have explicitly linked demand saturation to falls in the own price elasticity of goods (Pasinetti, 1983; Lavoie, 1994; Applebaum and Schettkat, 1999). If true, this suggests that rising income not only triggers shifts in the composition of spending but could also fundamentally change the nature of competition in these markets as producers have a greater incentive to compete by improving the quality (rather than the price) of goods (Waldman, 2000).

## 3    Engel Law and Baumol's cost disease

This section examines two well-known trends that drive change in global household consumption patterns: Engel's Law and Baumol's cost disease.

### 3.1    Engel's Law

A considerable amount of evidence suggests that consumption patterns of very low income households are quite homogenous and concentrated on food spending. According to a recent survey of the world's poorest households, spending on food represented about 50 per cent to 70 per cent of their budgets (Banerjee and Duflo, 2007). Moreover, the dominance of food expenditure among poor households is found to also hold in cross-country comparisons of per

capita consumption collected from over 30 countries between 1960 and 1982 by Clements and Chen (1996). The authors found that the average food expenditure for the 12 Least Developed Countries (LDCs) was about 40.44 per cent of their total per capita consumption. By contrast, the same budget share among 18 OECD countries was 29.59 per cent – a difference of about 10 per cent. In terms of the theoretical significance of this homogeneity, it seems to reflect that basic needs related to nourishment dominate household spending priorities at low levels of income. There is little doubt that biological evolution has endowed individuals with a set of universal basic needs, of which the most elementary is the need for nutritious materials necessary for survival, namely food and water (Witt, 2001; Chai and Moneta, 2012).

**Engel's Law** states that the budget share dedicated to food declines as household income rises (Engel, 1857; Houthakker, 1957). In terms of the magnitude of this effect, Banerjee and Duflo (2007) state that a 1 per cent increase in overall expenditure translates into about two-thirds of a percent increase in the average population's budget share spending on food by a poor family. Elsewhere, Thomas and Strauss (1997) found an elasticity of demand for food with respect to expenditure per capita for about one quarter of the poorest urban households in Brazil. On a more aggregate perspective, evidence for Engel's Law can also be found when comparing the spending patterns of poor and rich countries (Houthakker, 1957). Figure 6 below highlights cross-country evidence for the EC, depicting the food budget share of national spending on the vertical axis and per capita GDP on the horizontal axis.

**Figure 6          Food budget share and per capita GDP for 45 countries**
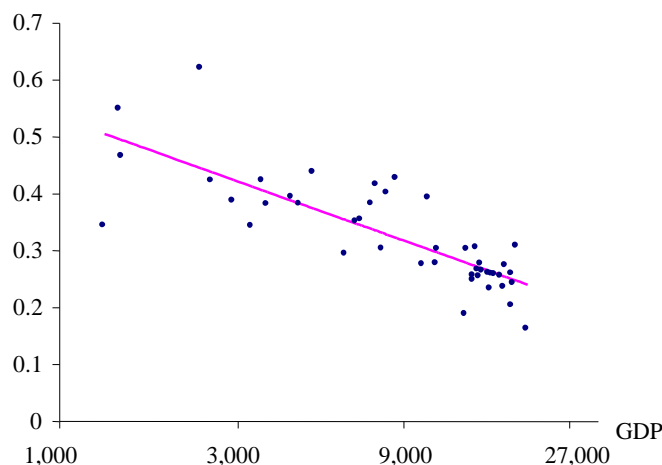


*Source*: Clements et al. (2006).

Examining long-term changes in the U.S. and UK household budget share of food spending (see Table 2 and 3 below), Engel's Law predicted that the budget share on food spending would decline in the presence of rapid economic growth. In the United States, food expenditure represented the largest share of household spending in 1901 (42.5 per cent), which was no longer the case in 2003, where it represented 13.1 per cent of average household spending only. This is a 29.4 per cent decline in the budget share of spending on food. At the same time, in spite of this decline, the absolute total of average annual household spending on food rose by nearly USD 5,000 per household. Lebergott (1994) attributed this increase to the emergence of food products that are more nutritious, more convenient and tastier. Non-food spending increased from 57.5 per cent to 86.9 per cent within the same time period – an approximate 80-fold increase that occurred in just over 100 years.

These trends can be compared with Table 3, which reports changes in household budget shares in the UK between 1975 and 1999 (Blow et al., 2004). The average real weekly total expenditure by households—excluding spending on housing and adjusted to account for household composition—increased by slightly more than 50 per cent between 1975 and 1999, from GBP 96.39 to GBP 145.28.

**Table 2  Changes in U.S. annual consumption expenditure shares, 1901 to 2003**

| Expenditure Category | 1901 | | 2003 | | Change in expenditure share |
|---|---|---|---|---|---|
| | US$ | budget share | US$ | budget share | |
| Food | 327 | 42.5 | 5,357 | 13.1 | - 29.4 |
| Alcoholic beverages | 12 | 1.6 | 384 | 0.9 | - 0.7 |
| Housing | 179 | 23.3 | 13,359 | 32.8 | +9.5 |
| Apparel and Services | 108 | 14 | 1,694 | 4.2 | -9.8 |
| Transportation* | NA | NA | 7,770 | 19.1 | NA |
| Healthcare | 40 | 5.2 | 2,384 | 5.9 | + 0.7 |
| Entertainment | 12 | 1.6 | 2,069 | 5.1 | + 3.5 |
| Personal care products and services | NA | NA | 526 | 1.3 | NA |
| Reading and Education | 8 | 1.1 | 901 | 2.1 | +1 |
| Tobacco | 11 | 1.4 | 305 | 0.7 | - 0.7 |
| Charity Contribution | 10 | 1.3 | 1,324 | 3.2 | + 1.9 |
| Expenditure, all items | 769 | | 40,748 | | + 5,198 |

*Note:* 1901 estimate for transportation and personal car products and services were not reported in the BLS as these were reported in the 'miscellaneous' category. Lebergott (1993) roughly estimated the per capita personal consumption of transport at 4.3 per cent and personal care expenditure at less than 1 per cent of the budget share in 1901.

*Source*: U.S. Department of Labor (2006).

**Table 3 UK consumption expenditure shares between 1975 and 1999**

| Expenditure Category | 1975 | | 1999 | | Change in budge share |
|---|---|---|---|---|---|
| | GBP | Per cent | GBP | Per cent | |
| Food | 18.29 | 24.6 | 17.18 | 14.8 | -9.8 |
| Private transport | 6.42 | 8.6 | 12.96 | 11.1 | +2.5 |
| motor vehicles | 3.34 | 4.5 | 9.25 | 8.0 | +3.5 |
| Clothing | 7.47 | 10.1 | 8.99 | 7.7 | -2.4 |
| Catering | 3.08 | 4.1 | 7.54 | 6.5 | +2.4 |
| Leisure goods | 3.74 | 5.0 | 7.22 | 6.2 | +1.2 |
| Household durables | 5.86 | 7.9 | 7.00 | 6.0 | -1.9 |
| Holidays | 1.60 | 2.2 | 5.92 | 5.1 | +2.9 |
| Alcohol | 4.41 | 6.0 | 5.84 | 5.0 | -1 |
| Domestic fuel | 4.66 | 6.2 | 4.88 | 4.2 | -2 |
| Entertainment | 1.91 | 2.6 | 3.99 | 3.4 | +0.8 |
| Private health care | 1.42 | 1.9 | 3.38 | 2.9 | +1 |
| Communications | 0.85 | 1.1 | 3.09 | 2.7 | +1.6 |
| Tobacco | 3.09 | 4.1 | 2.52 | 2.2 | -1.9 |
| Education | 0.48 | 0.6 | 2.01 | 1.7 | +1.1 |
| Public transport | 1.75 | 2.4 | 1.94 | 1.7 | -0.7 |
| Domestic services | 0.90 | 1.2 | 1.46 | 1.3 | +0.1 |
| Miscellaneous | 5.06 | 6.8 | 10.95 | 9.4 | +2.6 |

*Source*: Blow et al. (2004).

This data suggest that the overall increase in consumer spending has been unevenly distributed across different expenditure categories. Specifically, there seems to be:

- A declining budget share of expenditure on goods, such as clothing and, to a lesser extent, household durables.

- A declining budget share of expenditure on alcohol and tobacco. This can be attributed to rising prices caused by an increase in taxes on these goods. For example, the relative price of alcohol in the UK rose by some 40 per cent between 1975 and 1999 (Blow et al., 2004).

- A stable to moderately rising budget share on expenditure on services such as health care, education and entertainment.

- Increasing expenditure on transport, including motor vehicles.

These patterns suggest that rising income induces important shifts in the composition of household demand away from food and towards manufactured durables and services. They do not reveal any evidence of the notion that the growth rates of services are higher than those of manufactured goods. These trends are, however, consistent with the argument that more wealthy

households demand a greater variety of goods as they derive utility from jointly consuming these goods with a number of other similar variants (Anderson et al., 1992; Drescher et al., 2008). Important shifts also occur within categories. For example, in food spending, there is a natural decline in the budget share for grains and cereals, while the budge share for meats and other proteins tends to increase (Wu, 1999). Further substitution effects are discussed in Section 4.

## 3.2    Baumol's cost disease

In contrast to Engel's Law, which predicts shifts between food spending and non-food spending due to changing consumer preferences induced by rising income, Baumol's cost disease describes a shift in consumption between manufactured goods and services due to changing relative prices. 'Baumol's disease' is driven by an uneven spread of observed technological change across the manufacturing and the service sectors. In the manufacturing sector, technological change tends to result in a range of process innovations through which the costs of production tend to rapidly decline (Baumol, 1967; Iscan, 2010). This is not the case in the service sector which tends to experience relatively slow technological change, known as 'Baumol's disease'. It is thought that this is due to the capital intensive nature of goods and the labour intensive nature of services. As a consequence, the prices of manufactured goods tend to fall rapidly relative to those of services. If there is a low degree of substitutability between goods and services, this could explain why households tend to spend more on services and less on manufactured goods.[9] Evidence of the impact of Baumol's disease is presented in Figures 7 and 8 below.

Figure 7 illustrates the long-term trends in U.S. household spending on manufactured goods as presented in Boppart (2014). The trend indicates that the share of manufactured goods in total expenditure declines over time. The main categories include "motor vehicles and parts", "furnishings and durable household equipment", "recreational goods and vehicles", "food and beverages purchased for off-premises consumption", "clothing and footwear", "gasoline and other energy goods" and "other durable/nondurable goods." The dashed line represents the predicted values obtained by regressing the logarithm of expenditure share on time and a constant. Note that even if the budget share of manufacturing is declining, this does not exclude the possibility that the absolute total expenditure on manufactured goods may grow over time. It is thought that this decline in the budget share of expenditure is related to the falling relative prices of manufactured goods. Figure 8 highlights the long-term trends in the relative prices of

---

[9] There are real challenges in estimating the quality of services, which suggest there are upward biases in the price estimates of services (Boskin, Dulberger, Gordon, Griliches, and Jorgenson, 1996).

goods and services in the UK, as presented in Blow et al. (2004). The relative prices between goods and services in the UK between 1975 and 1999 are presented in Figure 8. They show that the price of services steadily increased during this period, while the price of durable goods declined. The price of non-durable goods (mainly food) remained relatively constant.

**Figure 7          Long-term trends in U.S. household spending on manufactured goods**
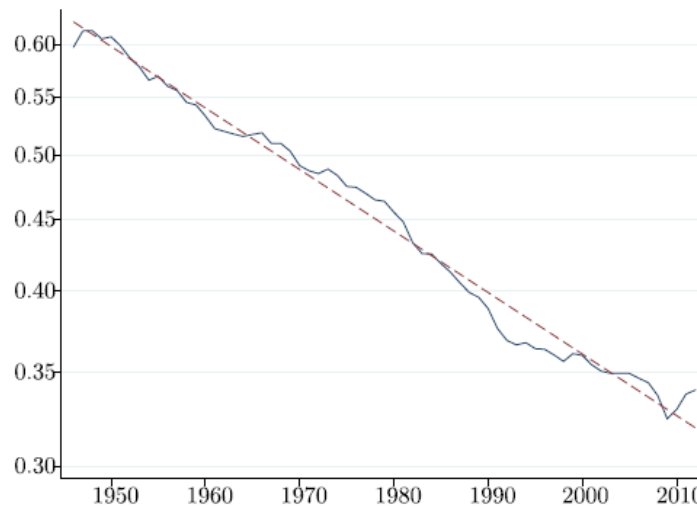


*Source*: Boppart (2014).

**Figure 8          Relative price of services in the UK, 1975-1999**
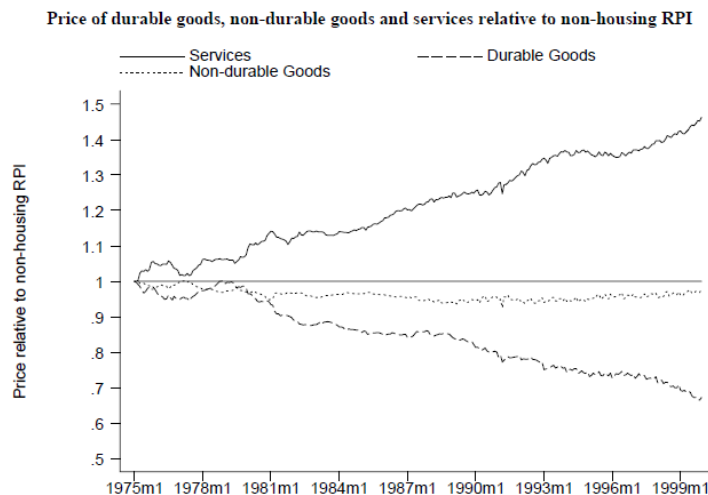


*Source*: Blow et al. (2004).

The law of demand predicts that the rising price of services will lead to a decline in the quantity consumed. However, this appears to not be the case (Boppart, 2014). There are two possible explanations for why demand for services may be unresponsive to falling prices. First, there are few substitutes between goods and services. In some instances, it is feasible for consumers to

switch from services to (presumably cheaper) goods. For example, rather than consume a meal at a restaurant (which is service-intensive), people may consume meals at home (which is more goods and time-intensive). However, in most cases, there are no viable goods that may substitute for services, like financial services (e.g. banking and insurance), leisure services (e.g. overseas holidays) and education services.

It is worth noting that the literature on Baumol's cost disease focuses primarily on process innovations when considering the manner in which technological change in manufacturing industries impact consumption patterns. This type of innovation relates to cost-saving measures that enable producers to save resources in the production process. There is also the potential for technological change to create product innovations which relate to improving the quality and characteristics of goods and services. As has been frequently noted in innovation studies (e.g. Christensen, 1997), these changes have the potential to stimulate demand growth and increase consumers' willingness to pay for products. Thus, on a more disaggregated level, there are several instances where the impact of product innovation has caused increases in spending (Bils and Klenow, 2001B, see also Figure 5).

### 3.3    Some key differences

This section discusses some basic differences between Engel's Law and Baumol's cost disease in terms of how they impact industries and consumption patterns.

- **Industries.** The main difference between these two forces driving structural change is which sectors are affected. Engel's law essentially describes demand-driven shifts between food and non-food spending. For the manufacturing and services industries, the impact of Engel's law is positive as the extent of the market grows. In contrast, Baumol's disease describes supply-driven shifts between manufactured goods and services. As a result, it is likely that Engel's Law tends to have a stronger impact on the overall composition of spending in low income economies where the share of household spending on food is considerably larger and the agricultural industry more dominant. Baumol's disease is likely more relevant among developed economies where the share of household spending on manufacturing and services is relatively larger.[10]

---

[10] This would also suggest that demand-driven structural change is more relevant for economies experiencing low levels of economic development. Boppart argues that the relative importance of income effects as a determinant of aggregate structural change decreases over time (2014).

- **Underlying drivers.** Another important difference relates to the underlying mechanism that drives change in consumption patterns. In the case of Engel's Law, rising income is the key factor that induces change in consumption patterns as this drives an inherent shift in preferences, irrespective of the state of the economy and the level of technological progress present in the sectors. As a result, Engel's Law is likely to be more universally observable across a wide range of economies. The key enabling factor that drives this change is increasing household income and non-homothetic preferences. In the case of Baumol's disease, this effect takes place not as income rises, but over time, as technological change lowers the relative price of manufactured goods. This is a relatively complex process that depends on the extent to which industries invest in R&D, as well as the competitiveness of markets that influence both innovative activity and the extent to which the adoption of new technologies translates into lower prices (Aghion et al., 2005). While these potential inhibitors are likely to be absent in large developed countries like the United States (as discussed in Boppart, 2014), they may be a major determining factor in less developed countries. In closed economies, where there is a relatively low level of technological progress, low levels of international imports and limited foreign direct investment, the impact on Baumol's disease on consumption patterns could be negligible.

- **Engel Curves**. One common element that these effects share is that both will have a stronger impact on low income households relative to high income households. This is because according to Engel's Law, poor households tend to spend more of their budget on food. As regards Baumol's disease, poor households are more price elastic (sensitive to price changes) compared to high income households. As mentioned in Section 2.1, many low income households may record zero expenditure on durable goods and other luxuries. The falling price of manufactured goods could stimulate a larger share of households to participate in manufactured goods. This would magnify the differences between the observed spending levels of the rich and poor on manufactured goods, thereby creating steeper ECs for manufactured goods.[11] This may explain why manufactured goods appear to be luxuries in developing countries, but necessities in developed countries. *[Authors note: I can expand on this point more once the empirical analysis of ECs has been completed.]*

---

[11] Only Baumol's Law has an impact on the shape of ECs over time. This is because Engel's Law is inherently reflected in the shape of food and non-food ECs, as these curves describe income effects.

- **Magnitude.** A final difference relates to the relative impacts on consumption patterns. While Engel's Law impacts consumption patterns through income effects, Baumol's disease impacts work by changing the relative prices of consumer goods. Thus, the final impact each of these effects has on consumption depends on the price and income elasticity of demand. Here it is typically found that income effects have a much larger impact on consumption patterns relative to price effects (Deaton and Muellbauer, 1980; Lavoie, 1994). As mentioned by Clements et al. (2006), allowing consumption to be proportional to income explains about one-half of the total variation in consumption patterns, while using a conventional demand model (which takes changes in relative prices into account) explains a further half of the remaining one-half. These results suggest that income effects are much more important determinants of consumer spending than relative prices.

## 4 The broader picture: Consumption vis-à-vis economic development (revised)

Previous Industrial Development Reports have discussed how the manufacturing sector is an important source of long-term economic growth and structural change (IDR, 2013; IDR 2016). This section extends this work by adopting an economy-wide perspective to discuss how rising household income, which accompanies long-term economic growth, can create further opportunities for manufacturing industries to develop. As mentioned in Section 3, much evidence suggests that household spending tends to undergo fundamental changes as households' income grows and they are able to satisfy their basic needs, thereby increasing their discretionary power and expanding the variety of goods and services consumed (Kindleberger, 1989; Lebergott, 1994).

The core concept here is the notion of a virtuous cycle of manufacturing consumption. In short, this circle describes a self-reinforcing process in which the natural pursuit of profit by entrepreneurs and firms trying to meet existing and emerging needs of consumers creates the conditions for new phases of economic growth, as basic needs become largely satiated, new incomes are generated and richer consumers pursue new priorities. Figure 9 provides a guide to these links that will be discussed in detail below. The starting point of this figure is the observation that rising income generates important changes in consumption patterns that create new opportunities for manufacturing industries (Arrow B in the figure discussed in Section 3.1 above and Section 4.1 below). In turn, these changes in demand create new profit opportunities and can stimulate innovative activity in the manufacturing sector and a general increase in the variety and quality of available goods (arrow A+D and detailed in Section 4.2).

The emergence of new industries and markets has two important effects on consumers. First, they generate additional income gains and employment opportunities, such that the composition of household spending may trigger further changes in the composition of household spending. Secondly, these new industries can improve living standards by making new varieties available and realizing economies of scale that enable the prices for those new varieties to fall and be consumed by a wider portion of the population (as discussed in Section 3.2 above). The mass adoption of new goods implies that what was once a luxury only affordable to the richest segments of society has become a mass consumption good accessible to billions of people (Arrow C detailed in Section 4.3). In addition to improving the welfare of consumers, the growth of manufacturing also generates economic development (new arrow – industrial development and economic development).

**Figure 9**          **Overview of links between consumption and production**
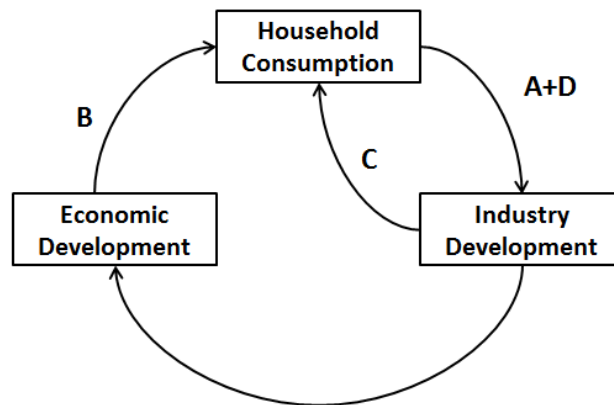


## 4.1    Income-induced shifts in household consumption (Arrow B)

Considerable research has uncovered new facts about how household spending patterns tend to evolve as households become more affluent. As discussed in Section 3.1, rising household income induces shifts in the composition of spending such that the budget share of food spending declines and spending on non-food items grows. In terms of how precisely non-food spending grows, there are a number of forces at play:

**Greater demand for variety.** Initially, when moving from low income to middle income levels, households tend to diversify their spending by expanding the variety of goods and services consumed across a wide range of expenditure categories (Theil and Finke, 1983; Saviotti, 1996; Clements et. al., 2006; Drescher et al., 2008). In a study on UK household data, Jackson (1984) found a positive propensity to consume a variety of items as household income increases. The effect of income on variety consumption was found to be particularly strong

among the expenditure categories clothing, transportation and health (Jackson, 1984, p. 13). More recently, Drescher et al. (2008) focused on variety consumption of soft drinks, and found that households have a positive and significant willingness to pay for more variety in their consumption basket, controlling for the other hedonic characteristics of soft drinks. On average, households were found to have a willingness to pay a 1.95 per cent higher price for a 50 per cent increase in the variety of soft drinks consumed. Examining international spending patterns across nine broad categories, Clements et al. (2006) found that the spending patterns of households in rich countries tended to be more evenly distributed in comparison to the spending patterns of low income economies *[Author's note: a similar pattern can be observed in recent World Bank data – see Alessio Moneta's paper].*

**Rising demand for quality.** Beyond consuming a wider variety of goods and services, a second force at play appears to be a shift away from consuming greater quantity towards consuming higher quality goods. Bils and Klenow (2001a) used U.S. household expenditure data to estimate "quality Engel Curves", which examine how the average unit price paid by a household changes as its income changes (proxied by total consumption). They found that across 66 goods, which represented 80 per cent of total household expenditure, the quality of those household goods (as reflected in the average unit price) tended to increase by 3.7 per cent between 1980 and 1996. Quality plays a much more important role in relation to manufactured durable goods, such as washing machines, fridges and automobiles that will be used over longer periods of time (Gowrisankaran and Rysman, 2012). Quality growth may be uneven across expenditure categories, which could explain why spending on some categories has grown faster than in other categories (Bils and Klenow, 2001b). *[Author's note: this can be linked to World Bank data which indicates that middle income households around the world tend to spend more on manufactured and quality goods, where quality is much more important than quality, i.e. durables like fridges, motorbikes, televisions and motorbikes ].*

**Changing time and cognitive constraints.** Some suggest that time constraints have reshaped the composition of demand because rising income increases the opportunity cost of consumption, so that households tend to undertake consumption activities which take less time (are more convenient) but are more good-intensive (e.g. Gronau and Hamermesh, 2012). According to the household production theory (Becker, 1965), this can indirectly impact consumption patterns by raising the shadow price of time. Households have to choose between spending time working or spending time on domestic activities. As their wages rise, they move from time-intensive consumption activities towards other activities that are goods or services-intensive. For example, working parents earning a high income may choose to send their child

to after school care rather than take care of the child themselves. They may opt to hire domestic cleaners or eat more meals outside the home rather than do their own cleaning or cooking, thereby saving time.

Apart from how rising household income impacts consumption patterns, there are a number of other channels through which the overall process of economic development can indirectly impact the composition and growth rate of household consumption patterns in the long run.[12] These include:

**Rising income inequality** Income inequality tends to widen as economies develop (Chotikapanich et al., 2012). How does this impact consumption patterns? In terms of ECs, Section 2 discussed the potential for change in income distribution that affects both income elasticity and the underlying number of consumers observed to be consuming a particular good or service. In addition, the tendency for preferences to change with a rising income implies that rising income inequality will result in more distinct consumption baskets between the rich and the poor in the economy. While low income households may dedicate more spending to basic necessities, the basket of goods and services consumed by the rich is likely to be more oriented towards luxury goods and services (Clements and Gao, 2012). From a theoretical perspective, Foellmi and Zweimüller (2008) hypothesized that changes in household income distribution may also foster the emergence of higher quality products by creating a wealthy class of households willing to pay high prices for new products. Elsewhere, it is argued that rising income inequality could lead to a decline in spending on conspicuous goods (Hopkins and Kornienko, 2004). If household demand expands along a hierarchy of goods (Bertola et al., 2006), growing income inequality could also foster declines in the economies of scale, as this would lead to the population's expenditure patterns becoming more dispersed across the goods hierarchy. Growing income differences within a population imply that the population's total expenditure will be dispersed across a wider range of goods and services linked to segments of the hierarchy of demand. If all households possessed the same income, spending would be more concentrated in the basket of goods and services preferred by the given income level. In contrast, growing income inequality could generate a reduction in the market's scope for any given good.

**Changing tastes.** A longstanding hypothesis is that the underlying motivations that drive consumption tend to change with income and are endogenously influenced by economic and market institutions (Bowles, 1998; Witt, 2001; Fremstad, 2016). At low income levels,

---

[12] Industrial development can also influence the relative prices of goods (e.g. Baumol's effect). This will be discussed under arrow C below.

consumption is motivated by seeking to fulfil basic needs. By contrast, affluent consumers tend to demand entertainment service to avoid boredom (Scitovsky, 1976), focus on status goods (Frank, 1985; Heffetz, 2011) or defensive goods, such as insurance, that are used to avoid pain rather than attain pleasure (Hawtrey, 1925). More recently, Witt (2001) has argued that, besides certain biologically-evolved 'basic needs' that are fixed and universally shared among consumers, other needs may be acquired through associative and social learning (see also Gualerzi, 2001; 2012). New consumer motivations may also be shaped by the growing complexity of consumer lifestyles and rising information asymmetry between consumers and producers that accompanies the emergence of specialized goods and markets (Earl, 1986; Langlois, 2001; Earl and Potts, 2004; Dulleck and Kerschbamer, 2006).

**Urbanization** is a common feature of the economic development process where a greater share of the population is located in densely populated areas (Davis and Henderson, 2003). Urbanization has resulted in reduced levels of per-capita calorie consumption and hence per-capita food consumption (Huang and David, 1993). For example, urban London workers consumed only 68 per cent of calories per equivalent adult of rural workers' consumption at the same level of income (Clark et al., 1995). This is likely due to differences in the nature of work and sedentary lifestyles that results in lower calorie demand among urban residents.

Beyond food, urbanization influences the consumer's lifestyle and spending decisions in a variety of ways. Due to lower search and transaction costs, urban residents generally have greater access to a wider variety of goods and services (Wu 1999). Urban areas feature more retail choices in a wide variety of markets. This results in markets being more competitive, resulting in gains in consumer surplus. Public transport investments also tend to be concentrated in urban areas, lowering spending on private transport (Blow et al., 2004). Due to the scarcity of land in urban areas, households in densely populated areas tend to spend more on rent or mortgage repayments. On the supply side, the benefits of urbanization have been widely discussed in the literature on agglomeration effects. For firms, being located in cities enables input sharing, technological sharing and the pooling of labour markets (Rosenthal et al., 2003). In terms of the environmental impact, urbanization will slow the growth rate of residential energy consumption in China, for example (Wang, 2014).

**Family size.** The decline in fertility that is broadly associated with rising household income generates two key implications that have important connotations for household consumption patterns. In developing countries, a key impact of family size on consumption patterns is in the domain of food consumption. Large families tend to spend less on food on a per capita basis relative to small households. Deaton and Paxson (1988) found that this pattern held across a

wide range of developed and developing countries, including the U.S., UK, France, Taiwan (ROC), Thailand, Pakistan and South Africa. There are a number of likelihood reasons for this, including the realization of economies of scale in food consumption by large households (Nelson, 1988).

In developing countries, one likely important source of scale economies is home-grown food (Gan and Vernon, 2003; Jayasinghe et al., 2016). Small-scale vegetable farming is a common feature of rural life through which families can supplement their monetary income by growing their own food. The International Fund for Agricultural Development estimates that 75 per cent of the world's 1.2 billion poor live in rural areas (IFAD, 2011). Of these, an estimated 50 per cent are food-producing small-holder farmers (Morton, 2007). Because of its time-intensive nature, it seems intuitive that the capacity of large households to grow their own food enables them to realize economies of scale by enjoying relatively lower per capita costs of maintaining a given material standard of living. Rather than purchase food, large households in rural areas may choose to spend more time growing their own food. As economies develop, the declining family size tends to limit the household's ability to achieve economies of scale in food consumption.

**Ageing population.** The world's population is getting older. The number of people over the age of 60 is projected to reach 1 billion by 2020 and almost 2 billion by 2050, representing 22 per cent of the world's population. This effect is spread globally – in nearly every country of the world, the share of the population aged over 60 is projected to increase (Bloom et al., 2010). As the population ages, overall spending is likely to decline. Spending by households tends to closely follow income over the lifecycle. Danziger et al. (1982) showed that the elderly spend less than the non-elderly at the same level of income, and that the very oldest have the lowest average propensity to consume. As personal savings appear to be higher among the elderly, this could lead to an increased demand for financial services.

In terms of how the composition of spending may be affected, studies have shown a declining trend in food intake, in particular a decrease in fat intake among older households (Morley, 2001). Other spending shares are set to increase. In almost all OECD countries, demand for health care is projected to increase with the rising share of an ageing population, followed by energy consumption (except for Japan) and housing expenditure (Martins et al., 2005). Other studies have found that expenditure share on food, health and body care, energy, holiday and travelling expenses and furniture increases with ageing, while expenditure on clothing, transport and communication decline (Zitter, 1988; Lührmann, 2005).

## 4.2   Impact on industry development (Arrows A+D)

We now turn to consider the economic implications of these demand side trends for manufacturing industries in a closed economy setting. This builds on a number of previous studies which, as mentioned in Section 2, have argued that shifts in demand can induce important change in the industrial compositions of growing economies (i.e. Engel, 1857; Fourastie, 1949; Clark, 1950; Kuznets, 1973; Pasinetti, 1981).

### A. Economies of scale in new markets

As households diversify their spending away from food towards manufactured goods, the potential to realize greater economies of scale in industries linked to the production of such goods emerges. Whereas previously, private investment in infant manufacturing or service industries may not have been plausible, rising household income tends to raise the expected profits from such investment as the potential number of consumers grows. The scale of demand is a key constraint in the division of labour (Smith, 1776; Marshall, 1919; Young, 1928; Chandler, 1977; Langlois, 2003). Put simply, low volumes of demand can limit the degree to which firms will specialize in production. If the volume of demand is high and the tastes of consumers are relatively homogenous, this encourages economies of scale and specialization in production (Stigler, 1951; Sctiosky, 1976; Bresnahan and Gambardella, 1998). By contrast, if the volume of demand for a good is low or the character of demand is quite heterogeneous, the firms' incentive to invest in organizing production efficiently and in skills and training will be limited. As such, industries in countries with large populations can be expected to realize a greater degree of increasing returns to scale.

Empirical evidence exists at the micro and macro level to support this thesis. Recent industry-level evidence on the impact demand has on vertical integration has been reviewed by Bresnahan and Levin (2012). Other studies have found that the most important source of growth in sectoral output is the size of the market (Chenery and Syquin, 1975; Chenery et al., 1986). Using a sample of rapidly growing economies over the period from the early 1950s to the 1970s, Chenery et al. (1986) found that in countries with a population of over 20 million, the expansion of domestic demand accounted for 72-74 per cent of the increase in domestic industrial output. Industries most affected by population size are manufacturing industries such as metals, chemicals and petroleum, paper and automobiles (Chenery and Taylor, 1968). Consequently, manufacturing industries appear to have more weight in the economies of large countries at earlier stages of economic development (relative to small countries). Using 1963-2007 data for 159 economies, including a subset of 107 small economies, Haraguchi and Rezonja (2013) also found that population density had a positive and significant effect on the

real value added per capita of textiles, machinery and equipment, motor vehicles, printing and publishing, chemicals and wearing apparel. Among small countries, population density was found to have a negative effect for certain industries including wood products, basic metals and electrical machinery and apparatus. Elsewhere, Davis and Weinstein (1999, 2003) found that production increased more than one-for-one with local demand for a given good in OECD economies and Japan.[13]

As noted by Matsuyama (2002), economies of scale contribute to industry take-off as it fosters a 'trickle-down' process: falling average costs drive down the price of once scarce and luxurious items, enabling a greater number of households to consume the good, which in turn further drives down the prices of these goods. The continuously falling price of luxuries then enables wealthy consumers to further diversify and adopt goods that were previously too expensive, restarting the mass adoption process.

In addition to the growing depth of demand in these new sectors, it is worth noting that the homogeneity of demand can have an important impact on the extent to which firms realize economies of scale. As far back as 1919, Marshal argued that much of the American growth in the nineteenth and early twentieth centuries was due to "the homogeneity of the American demand for manufacturing goods", which enabled standardization and mass production (Marshall, 1919, p. 146 as cited in Langlois 2001, p. 107). It has also been revisited in the recent literature on general purpose technologies (see Bresnahan and Gambardella, 1998; Lipsey et al., 1998; Lipsey et al., 2005). Moreover, if preferences systematically change as income rises, this implies that income inequality could hinder increasing returns, as it essentially magnifies differences in the consumption baskets of the rich and the poor (discussed further in Section 4.4).

## B. Innovative activity

The growth rate of demand may also impact the level of innovative activity within newly emerging industries. Schmookler's hypothesis states that inventive activity within industries is responsive to the pull of demand. Demand growth increases the expected future profits from innovation (Schmookler, 1966; Scherer, 1982). Empirical evidence for this effect is relatively mixed (Kleinknecht and Verspagen, 1990; Fontana and Guerzoni, 2008). This is likely attributable to the complex nature of the innovation process that requires adequate levels of R&D capability at the micro level as well as the correct institutional regimes and incentive

---

[13] Seel also Head and Ries (2001).

structures at the macro level (Nelson and Rosenberg, 1993; Freeman, 2002; Fageberg and Srholec, 2008).

A second theory is the 'escaping satiation' hypothesis which states that as household incomes rise and a greater proportion of consumers reaches the saturation level of spending on a good, the associated slowdown in demand growth stimulates inventive activity (Witt, 2001; Falkinger, 2001). This suggests that the characteristics of goods will evolve and adopt new features in light of demand saturation. If successful, such product innovations effectively push the saturation level of spending to a higher level. As a result, the shape of ECs could exhibit systematic instability over time as slowdowns in demand trigger product innovations (Chai and Moneta, 2014; Moneta and Chai, 2014).

A third hypothesis suggests that the heterogeneity of demand may help influence innovative activity. Expert consumers can help firms develop new products (Teubal, 1979; von Hippel, 1986). It is argued that markets with a higher number of specialized consumers have a higher probability of witnessing the introduction of novelties which have been co-developed with consumers (Jeppsen and Molin, 2003; von Hippel, 2005). Segments of specialized consumer preferences can also create 'niche markets' which can potentially sustain new prototype goods that may not be competitive in the wider mass market. Thereby, the existence of niche markets can play a critical role in industry evolution (Saviotti, 1996; Guerzoni, 2010; Malerba et al., 2007). As such, the heterogeneous character of demand is considered a type of potential resource or 'capability' that firms can utilize in the innovation process.

### 4.2.1 Economy-wide effects: trade, labour supply and wage inequality

Apart from fostering the growth of newly emerging industries and markets, the evolving character of household demand affects other important aspects of the economy including trade, labour supply and wage inequality. In terms of trade patterns, three specific effects are discussed in the literature. Firstly, the 'home market effects' suggests countries export those goods for which there is high domestic demand (Lindner, 1961; Krugman, 1980; Chenery, 1980). This is a natural corollary to the notion that a large market size fosters the division of labour (see Section 4.1 above). Several studies have sought to empirically verify this effect (Davis and Weinstein, 1996, Davis and Weinstein, 1999, Head et al., 2002, Hansen and Xiang, 2004, Yu, 2005, Brülhart and Trionfetti, 2009).[14] Evidence suggests that the effect is pervasive across a wide range of industries. However, an ongoing challenge here is distinguishing the impact of market

---

[14] Using OECD data, Davis and Weinstein (1999:395) report that the responsiveness of net exports to increases in local demand is about 66 per cent. In the same paper, the responsiveness of net exports in Japan to local demand was estimated to be 70 per cent at the prefecture level.

size from other factors that drive economies of scale, such as factor endowments. This appears to remain a largely unresolved issue (Weder, 2004).

A second influence of demand on trade flows is the Lindner Hypothesis (Lindner, 1961). Recognizing the non-homothetic nature of demand, the Lindner Hypothesis postulates that two countries with similar per capita income trade disproportionately with each other because of comparable tastes and preferences. For example, consumers in high income countries tend to spend relatively more on automobiles compared to consumers in low income countries. As a result, high income countries are more likely to trade automobiles with each other than with low income economies. When considering aggregated trade flows, there is little evidence to support this idea (Hallak, 2010). However, when examining trade flows on the sectoral level, empirical results are more encouraging (Vollrath et al., 2006). Hallak (2010) examined world trade flows for 116 differentiated industries and found empirical evidence for more than two-thirds of the observed industries. This study notes that evidence for the Lindner Hypothesis appears to be stronger among high income economies where demand for high quality consumer goods is greater.

A third channel through which the character of demand can impact trade patterns is consumers who may display a bias towards domestically produced goods over imports. This issue has been briefly considered in the relatively limited literature on Armington elasticities that measure how easily households are willing to substitute between domestically produced and foreign goods given some change in the relative price of imports (Armington, 1969; Trefler, 1995). In markets where there is a degree of product differentiation among domestic goods, it is argued that consumers will be less responsive to changes in the price of imports. At the same time, much depends on how consumers perceive the quality of imports relative to the quality of domestically produced goods.

Regarding labour supply, the extent to which households decide to self-produce certain activities or rely on market-supplied goods and services is a major factor affecting the industrial composition of the economy. There are many industries that produce goods and services that were formerly produced by households. Examples include child care, education, cooking, spinning, weaving, sewing, gardening, transportation and trade (Reid, 1935; Gronau, 1986; Buera and Kaboski, 2012b). In more traditional agrarian economies, household production and consumption patterns tended to be relatively autonomous and was not reliant on external markets. As noted by De Vries (1994, 2009), autonomous households may have little incentive to earn income if they are able to self-produce many of the goods that are available on external markets. In this way, the emergence of new consumer aspirations and the availability of higher

quality goods and services are critical to expand labour supply by providing households with a greater incentive to work. Recent research on cross-country differences in labour participation rates also finds that if households exhibit strong preferences for home production, labour supply will be negatively impacted (Freeman and Schettkat, 2005).

In terms of demand, the extent of the market tends to grow as rising wages motivate wage earners to substitute time-intensive activities, such as cooking a meal at home, with activities that are more reliant on market-supplied goods and services, such as eating at a restaurant (Becker, 1965; Gronau, 1986). Another source of demand growth for such services could be limited cognitive constraints. As skills required for work become more specialized, workers in highly skilled occupations are less likely to possess other skills related to home production (Scitovsky, 1976; Earl, 1986; Buera and Kaboski, 2012A). Therefore, undertaking home-produced activities becomes more costly, and households first need to learn and acquire skills in the activities they are able to in order to domestically produce consumption activities.

Finally, household consumption patterns may also impact wage inequality. The literature on 'skills-biased structural change' links evolving household consumption patterns to growing wage inequality in the workforce. In the US economy between 1977 and 2005, the difference in wages earned by workers possessing at least a college degree over workers with a high school degree or less grew by around 50 percentage points. It is argued that this growth in wage inequality is partly due to income-induced shifts in household spending patterns which tend to favour industries that employ high-skilled labour (Buera and Kaboski, 2012A; Caron et al., 2014; Buera et al., 2015). Industries employing high skilled labour include financial intermediation, real estate and business services, education and health and social work (Buera et al., 2015). Using a 2004 database of 94 countries and 57 industries, Caron et al. (2014) also found a strong positive correlation between the income elasticity of goods and the extent to which skilled labour is used in their production.

## 4.3 Impact on household living standards and consumer welfare

The mass adoption of new goods and services can, in turn, benefit households by lowering prices and enabling households to consume both a wider range of goods, as well as higher quality goods. Manufacturing goods tend to feature prominently in this diversification process. Their adoption benefits household living standards in a number of different ways: i) giving consumers greater freedom to choose goods and services that better satisfy their preferences; ii) via the adoption of motorbikes and automobiles, this fosters mechanization in the farming industry, thereby increasing returns to land and labour; iii) via the adoption of mobile phones,

which improves households' access to information, health and financial services, enabling regional commodity markets to function more efficiently and households to reduce search costs and discover new arbitrage opportunities.

The most direct assessment of these benefits is found in the estimated gains in consumer surplus from variety growth (Hausman, 1999; Broda and Weinstein, 2004; Bresnahan and Gordon, 2008; Greenwood and Kopecky, 2013). The gains from variety growth are considered to be substantial and this is particularly the case for manufactured goods, such as washing machines, automobiles or personal computers, which increase the productive capacity of households (Raff and Trajtenberg, 1996; Petrin, 2002; Buera and Kaboski, 2012B). Welfare gains from personal computers was estimated to be about 2-3 per cent of total consumption expenditure in the United States, while gains from electricity consumption were estimated to be 92 per cent of total consumption expenditure (Greenwood and Kopecky, 2013). Elsewhere, one basic example is tea and sugar. Prior to the 19th century, the European diet was composed of beer, grains, meat, milk and water. The introduction of tea and sugar to the European diet in the 19th century was estimated to be worth about 15 per cent of the total consumption of the average consumer (Hersh and Voth, 2009).

Many of these estimates are derived from consumers in developed economies. It is likely that welfare gains are even higher in rural areas in developing economies where manufactured goods play an important role in raising productivity and access to information. In economies with large agricultural sectors, there is little doubt that the mass adoption of manufactured goods such as motorcycles and automobiles are important for increasing land and labour productivity in the rural areas (Pingali, 2007; Mottaleb et al., 2016). Similarly, mechanical refrigeration has improved living standards by enabling perishable commodity markets to become more regionally integrated, thereby dampening price volatility and improving food security (Goodwin et al 2002). Another prominent example is the mobile phone that has enabled consumers to gain unprecedented access to financial services, information (reducing search costs), health and entertainment services (Aker and Mbiti, 2010).

## 4.4    Impact of industrial development on economic development (new arrow)

As discussed in the IDR 2016 (Chapter 3, page 81), the manufacturing sector represents an engine of economic growth. Because productivity in manufacturing is higher than in other sectors, shifting resources to manufacturing provides static and dynamic productivity bonuses. The manufacturing sector also provides special opportunities for capital accumulation, spatial concentration, agglomeration economies and dynamic economies of scale (Kaldor, 1966, 1967;

Szirmai, 2012). Finally, manufacturing goods are also internationally tradable, so the sector can profit from both domestic and global demand (Kaltenberg and Verspagen, 2015). Manufacturing is also argued to be a driver of technological change, and it has more opportunities to profit from global technology and knowledge flows (Kaldor, 1966).

## 5. Challenges facing the virtuous circles

The links between household spending patterns and the manufacturing sector discussed above are tentative. Clearly, situations may arise where such links are not feasible because, for example, the manufacturing sector is focused on export opportunities. In other cases, household income may be so low that incremental increases in income do not induce substantial shifts in consumption patterns away from food expenditure items. A number of other factors may also inhibit the dynamic interaction between rising household income and the manufacturing sector:

- **Low consumer confidence:** In relation to Arrow B (Section 4.1), a number of factors may hinder the extent to which rising income is translated into additional consumer expenditure (Katona, 1968). This can include income insecurity (Crouch, 2012), volatile asset prices (Lemmon and Portniaguina, 2006), inadequate social security nets (Lusardi, 2010), high education and health costs (Baldacci et al., 2010) and inadequate access to savings facilities and lines of credit (Van Raaij and Gianotten, 1990). In addition, volatile economic conditions may trigger households to engage in precautionary savings in order to allow them to deal with adverse future shocks.

- **Reallocation of resources.** In relation to the impact on industry development (Section 4.2, Arrows A+D), the reallocation of resources towards new industries requires entrepreneurs and firms to identify new market opportunities and invest more resources into the production of new, potentially profitable goods and services demanded by newly affluent households. This assumes entrepreneurs have the ability to undertake R&D and adequately assess new market opportunities. It also assumes that the financial sector is willing to support a wave of new investments into newly emerging industries. A lack of R&D capacity and/or shallow financial markets may generate the conditions in which the firms and entrepreneurs are unaware or may not capitalize on emerging profit opportunities.[15]

---

[15] New industries also require technological capabilities and access to skilled workers. These factors are discussed in the IDR 2014 report.

- **Competitive markets.** For economies of scale to generate falling prices (Section 4.2), it is assumed that producers pass on any cost savings to consumers in the form of lower prices. However, competition tends to be relatively low in small markets. In addition, demand among first adopters tends to be relatively inelastic to price. As a result, rather than lowering prices, firms may be tempted to engage in rent seeking rather than lowering prices as the extent of the market grows. Adequate antitrust or competition policies are necessary to avoid excessive rent-seeking behaviour.

## 6. Conclusion

In sum, significant changes in expenditure patterns that occur as household income rises may transform the industrial composition of the economy. As households become wealthier and begin to diversify their spending beyond basic necessities, the growth rates of manufacturing and services industries begin to rise. By affecting the growth rate of demand at the sectoral level, innovative activity within industries and the broader industrial composition of the economy is intrinsically linked to the manner in which the composition of household spending evolves as income grows. This opens up the possibility of a positive feedback loop between the growth of the demand side and that of the supply side of the economy. As industries grow by serving the needs of consumers, these needs become satiated and households dedicate further increases in expenditure to other consumption priorities that stimulate growth in other industries. Structural change generates rising household income which creates the conditions for further structural change.

Beyond influencing sectoral growth rates, an evolving economy can impact the structure of the wider economy. In terms of trade patterns, the accelerating growth rate in demand may improve the international competitiveness of industries by enabling them to realize economies of scale. Evolving demand can also drive up inequality in wages between skilled and unskilled labour, as wealthier households tend to dedicate more of their spending to industries that are skill-intensive, such as education and financial services. Moreover, evolving household preferences in relation to whether they rely on home-produced or market-produced goods and services will further impact the size of the market in certain service industries.

As many have noted, this process of co-evolution between the composition of final demand and the industrial composition of the economy is neither inevitable nor smooth (Pasinetti, 1981; Saviotti and Pyka, 2008; Ciarli et al., 2010). Slowdowns in aggregated demand in combination with productivity improvements, imply that economic resources need to be reallocated as mature industries face stagnation and new industries emerge. In addition, the strength of the

links between consumption and production strongly depends on how widely income growth is distributed across industries, their competitiveness, the extent to which output is oriented towards domestic markets and functioning and flexible markets for factor resources.

If the evolving nature of demand indeed exerts an influence on the industrial composition of economies, a deeper question relates to what direction the economy is evolving towards and whether demand will always continue to expand in the long run (Keynes, 1933; Pecchi and Piga, 2008). Thus requires a deeper understanding of the underlying causes responsible for triggering shifts in the composition of household spending. In a nutshell, as households grow affluent, their needs change in a way that creates new spending priorities. While much of household spending at low income levels is dedicated to the satisfaction of basic needs, these needs are satiable. As a result, new priories emerge rapidly which drives households to diversify their spending and envelop a wider range of goods and services. However, while basic needs are universally shared among households, these new priorities are more unique to specific cultures and more fluid (Chai and Moneta, 2012). As a consequence, the spending patterns of high income households are much more volatile and heterogeneous than those of low income households. In terms of the direction of demand evolution, this paper has touched on a number of possible explanations that account for the fact that some goods are luxuries while others are not. These include: i) frequent rates of product innovations that improve the quality of goods; ii) the positional nature of highly visible goods; iii) the rising opportunity cost of time and outsourcing of certain home production activities; and iv) the learning of new needs .

In terms of understanding global development patterns in the era of global free trade, these suggest that a deeper issue may account for differences in the growth rates of economies. This deeper issue is the degree to which shifts in demand within an economy are synchronized with those that take place in partner economies (Matsuyama, 2000, 2009). The phenomenon of demand-driven structural change suggests that a crucial factor in achieving rapid long-term economic growth depends on the timing of these shifts in demand and whether or not the changes occur before or after they take place in other economies in the region.

Some of the income-induced changes are not likely to be universally observable. While some of these trends, such as Engel's Law, are widely observed to take place across a range of economies, the emergence of other trends is more conditional on the characteristics of the supply side (e.g. Baumol's cost disease). In addition, the overall impact of demand on the industrial composition of economies strongly depends on how oriented the economy is to producing goods and services for the domestic market. In small and open economies, structural change is much more likely to be driven by factor endowments and global trends in

international trade (Corden, 1982). Finally, demographic and urbanization trends also appear to have a major influence on how demand evolves and may in some cases accelerate the rate of demand-driven structural change. Economies with more urbanized populations are likely to possess lower transaction costs and deeper markets that enable the realization of increasing returns. As such, the manner in which income induces changes in household spending patterns will not necessarily follow the same path across all economies. Rather, this expansion is likely to be influenced by the economy's level of openness, urbanization and the demographic features of the population.

## References

Ades, A. F., and Glaeser, E. L. (1999). Evidence on Growth, Increasing Returns, and the Extent of the Market. The Quarterly Journal of Economics, 114(3), 1025-1045. doi: 10.1162/003355399556205

Aghion, P., Bloom, N., Blundell, R., Griffith, R., and Howitt, P. (2005). Competition and Innovation: An Inverted-U Relationship. The Quarterly Journal of Economics, 120(2), 701-728. doi: 10.1162/0033553053970214

Aguiar, M., and Bils, M. (2015). Has Consumption Inequality Mirrored Income Inequality. American Economic Review, 105(9), 2725-2756. doi: 10.1257/aer.20120599

Aker, J. C., & Mbiti, I. M. (2010). Mobile phones and economic development in Africa. The Journal of Economic Perspectives, 24(3), 207-232.

Aoki, M., and Yoshikawa, H. (2002). Demand Saturation-Creation and Economic Growth. Journal of Economic Behavior and Organization, 48(2), 127-154. doi: 10.1016/S0167-2681(01)00229-3

Appelbaum, E., & Schettkat, R. (1999). Are prices unimportant? The changing structure of the industrialized economies. Journal of Post Keynesian Economics, 21(3), 387-398.

Armington, P. S. (1969). A Theory of Demand for Products Distinguished by Place of Production Staff Papers - International Monetary Fund, 16(1), 159. doi: 10.2307/3866403

Assad, S. W. (2008). The Rise of Consumerism in Saudi Arabian Society. International Journal of Commerce and Management, 17(1/2), 73-104. doi: 10.1108/10569210710774767

Baldacci, E., Callegari, G., Coady, D. P., Ding, D., Kumar, M., Tommasino, P., & Woo, J. (2010). Public expenditures on social programs and household consumption in China. IMF Working paper WP/10/69.

Banks, J., Blundell, R., & Lewbel, A. (1997). Quadratic Engel curves and consumer demand. Review of Economics and statistics, 79(4), 527-539.

Banerjee, A. V., and Duflo, E. (2007). The Economic Lives of the Poor. The Journal of Economic Perspectives, 21(1), 141-167. doi: 10.1257/089533007780095556

Barro, R. J., and Sala-i-Martin, X. (1995). Economic Growth. New York: McGraw-Hill.


Baumol, W. J. (1967). Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis. American Economic Review, 57(3), 415-426.

Becker, G. S. (1965). A Theory of the Allocation of Time. The Economic Journal, 75(299), 493-517.

Bertola, G., Foellmi, R., and Zweimüller, J. (2006). Income Distribution in Macroeconomic Models. United Kingdom: Princeton University Press.

Bils, M., and Klenow, P. J. (2001A). Quantifying Quality Growth. The American Economic Review, 91(4), 1006-1030. doi: 10.1257/aer.91.4.1006

Bils, M. andP. J. Klenow (2001B) The acceleration in variety growth. American Economic Review 91(2): 274-280.

Blonigen, B. A., and Wilson, W. W. (1999). Explaining Armington: What Determines Substitutability between Home and Foreign Goods? The Canadian Journal of Economics / Revue canadienne d'Economique, 32(1), 1-21.

Bloom, D. E., Canning, D., and Fink, G. (2010). Implications of Population Ageing for Economic Growth. Oxford Review of Economic Policy, 26(4), 583-612. doi: 10.1093/oxrep/grq038

Blow, L., Leicester, A., and Oldfield, Z. (2004). Consumption Trends in the UK, 1975-1999. Working Paper Series: London, Institute for Fiscal Studies.

Blundell, R., Browning, M., and Meghir, C. (1994). Consumer Demand and the Life-Cycle Allocation of Household Expenditures. The Review of Economic Studies, 61(1), 57-80. doi: 10.2307/2297877

Blundell, R., & Stoker, T. M. (2005). Heterogeneity and aggregation. Journal of Economic Literature, 43(2), 347-391.

Boppart, T. (2014). Structural Change and the Kaldor Facts in a Growth Model With Relative Price Effects and Non-Gorman Preferences: Structural Change and the Kaldor Facts. Econometrica, 82(6), 2167-2196. doi: 10.3982/ECTA11354

Boskin, M. E. D., Gordon, R., Griliches, Z., and D.Jorgenson. (1996). Toward a More Accurate Measure of the Cost of Living: Final Report to the Senate Finance Committee From the Advisory Commission to Study the Consumer Price Index. Washington, DC.

Bouis, H., and Haddad, L. (1992). Are Estimates of Calorie-Income Fxelasticities Too High?: A Recalibration of the Plausible Range. Journal of Development Economics, 39(2), 333-364.

Bowles, S. (1998). Endogenous preferences: The cultural consequences of markets and other economic institutions. Journal of economic literature, 36(1), 75-111.

Bresnahan, T., and Gambardella, A. (1998). The Division of Inventive Labor and the Extent of the Market. In E. Helpman (Ed.), Genral Purpose Technologies and Economic Growth (pp. 253-282). Cambridge, M.A.: MIT Press.

Bresnahan, T. F., & Gordon, R. J. (Eds.). (2008). The economics of new goods (Vol. 58). University of Chicago Press.

Bresnahan, T. F., and Levin, J. D. (2012). Vertical Integration and Market Structure (pp. 17889). Cambridge: National Bureau of Economic Research.

Bridgman, B. (2013). Home Productivity. Manuscript, Buerau of Economic Analysis.

Broda, C., & Weinstein, D. E. (2004). Variety growth and world welfare. The American Economic Review, 94(2), 139-144.

Brown, A., and Deaton, A. (1972). Surveys in Applied Economics: Models of Consumer Behaviour. The Economic Journal, 82(328), 1145-1236.

Browning, M. (1992). Children and Household Economic Behavior. Journal of Economic Literature, 30(3), 1434-1475.

Browning, M., and Crossley, T. F. (2001). The Life-Cycle Model of Consumption and Saving. The Journal of Economic Perspectives, 15(3), 3-22. doi: 10.1257/jep.15.3.3

Browning, M., and Meghir, C. (1991). The Effects of Male and Female Labor Supply on Commodity Demands. Econometrica, 59(4), 925-951.

Brülhart, M., and Trionfetti, F. (2009). A Test of Trade Theories When Expenditure is Home Biased. European Economic Review, 53(7), 830-845. doi: 10.1016/j.euroecorev.2009.03.003

Buera, F. J., Kaboski, J. P., & Rogerson, R. (2015). Skill biased structural change (No. w21165). National Bureau of Economic Research.

Buera, F. J., and Kaboski, J. P. (2012A). The Rise of the Service Economy. The American Economic Review, 102(6), 2540-2569. doi: 10.1257/aer.102.6.2540

Buera, F. J., & Kaboski, J. P. (2012B). Scale and the origins of structural change. Journal of Economic Theory, 147(2), 684-712.

Caron, J., Fally, T., & Markusen, J. R. (2014). International trade puzzles: a solution linking production and preferences. The Quarterly Journal of Economics, 129(3), 1501-1552.

Chai, A., and Moneta, A. (2010). Retrospectives: Engel Curves. Journal of Economic Perspectives, 24(1), 225–240.

Chai, A., and Moneta, A. (2012). Back to Engel? Some Evidence for the Hierarchy of Needs. Journal of Evolutionary Economics, 22(4), 649-676.

Chai, A., and Moneta, A. (2014). Escaping Satiation Dynamics: Some Evidence from British Household Data. Jahrbücher für Nationalökonomie und Statistik, 234(2), 299-327. doi: 10.1515/jbnst-2014-2-311

Chai, A., Rohde, N., and Silber, J. (2015). Measuring the Diversity of Household Spending Patterns. Journal of Economic Surveys, 29(3), 423-440.

Chandler, A. D. (1978). Visible Hand : The Managerial Revolution in American Business: Harvard University Press

Charles, K., Hurst, E., and Roussanov, N. (2009). Conspicuous Consumption and Race. Quarterly Journal of Economics,, 124(2), 425-467.

Chenery, H., Robinson, S., and Syrquin, M. (1986). Industrialization and growth : A Comparative Study New York: World Bank.

Chenery, H. B., and Taylor, L. (1968). Development Patterns: Among Countries and Over Time. The Review of Economics and Statistics, 50(4), 391-416.

Chotikapanich, D., Griffiths, W. E., D.S., P. R., and Valencia, V. (2012). Global Income Distributions and Inequality, 1993 and 2000: Incorporating Country-Level Inequality Modeled with Beta Distributions. . Review of Economics and Statistics, 94(1), 52-73.

Christensen, C. (1997). The Innovator's Dilemma. Harvard: Harvard Business School Press.

Ciarli, T., Lorentz, A., Savona, M., and Valente, M. (2010). The Effect of Consumption and Production Structure on Growth and Distribution. A Micro to Macro Model. . Metroeconomica, 61(1), 180-218. doi: 10.1111/j.1467-999X.2009.04069.x

Clark, C. (1950). The Distribution of Labour between Industries and between Locations. Land Economics, 26(2), 136-144.

Clark, G., Huberman, M., and Lindert, P. H. (1995). A British Food Puzzle, 1770-1850. The Economic History Review, 48(2), 215. doi: 10.2307/2598401

Clements, K. W., Finke, R., & Theil, H. (1984). Frich's conjecture and the own-price elasticity of the demand for food. Economics Letters, 15(1), 1-4.

Clements, K., and Chen, D. (1996). Fundamental Similarities in Consumer Behavior. Applied Economics, 28, 747-757.

Clements, K. W., and Gao, G. (2012). Quality, Quantity, Spending and Prices. European Economic Review, 56(7), 1376-1391.

Clements, K. W., Wu, Y., and Zhang, J. (2006). Comparing International Consumption Patterns. Empirical Economics, 31(1), 1-30. doi: 10.1007/s00181-005-0012-y

Corden, W. M., & Neary, J. P. (1982). Booming sector and de-industrialisation in a small open economy. The economic journal, 92(368), 825-848.

Constantinescu, C., Mattoo, A., and Ruta, M. (2015). The Global Trade Slowdown : Cyclical or Structural? (Vol. 7158). Washington, DC: World Bank Group.

Crouch, C. (2012). Beyond the Flexibility/Security Trade-Off: Reconciling Confident Consumers with Insecure Workers. British Journal of Industrial Relations, 50(1), 1-22.

Danziger, S., Gaag, J. V. D., Smolensky, E., and Taussig, M. K. (1983). Life-Cycle Hypothesis and the Consumption Behavior of the Elderly. Journal of Post-Keynesian economics, 5(2), 208-227.

Davis, D. R., and Weinstein, D. E. (1996). Does economic geography matter for international specialization? NBER Working Paper Series Cambridge, Mass National Bureau of Economic Research.

Davis, D. R., and Weinstein, D. E. (1999). Economic Geography and Regional Production Structure: An Empirical Investigation. European Economic Review, 43(2), 379-407. doi: 10.1016/S0014-2921(98)00063-4

Davis, D. R., and Weinstein, D. E. (2003). Market Access, Economic Geography and Comparative Advantage: An Empirical Test. Journal of International Economics, 59(1), 1-23. doi: 10.1016/S0022-1996(02)00088-0

Davis, J. C., and Henderson, J. V. (2003). Evidence on the Political Economy of the Urbanization Process. Journal of Urban Economics, 53(1), 98-125. doi: 10.1016/S0094-1190(02)00504-1

De Vries. (1994). The Industrial Revolution and the Industrious Revolution. Journal of Economic History, 54, 249-270.

Deaton, A., and Muellbauer, J. (1980). Economics and Consumer Behavior. Cambridge: Cambridge University Press.

Deer, L., and Song, L. (2012). China's Approach to Rebalancing: A Conceptual and Policy Framework. China & World Economy, 20(1), 1-26.

Dulleck, U., & Kerschbamer, R. (2006). On doctors, mechanics, and computer specialists: The economics of credence goods. Journal of Economic literature, 44(1), 5-42.

Earl, P. E. (1986). Lifestyle economics: consumer behaviour in a turbulent world. Wheatsheaf Books.

Earl, P. E., & Potts, J. (2004). The market for preferences. Cambridge Journal of Economics, 28(4), 619-633.

Engel, E. (1857). Die lebenskosten Belgischer arbeiter-familien fruher und jetzt. International Statistical Institute Bulletin, 9, 1-74.

Fagerberg, J., and Srholec, M. (2008a). National Innovation Systems, Capabilities and Economic Development. Research Policy, 37(9), 1417-1435.

Fagerberg, J., and Srholec, M. (2008b). National Innovation Systems, Capabilities and Economic Development. Research Policy, 37(9), 1417-1435. doi: 10.1016/j.respol.2008.06.003

Falkinger, J. (2001). Satiation in an International Economy Escaping Satiation (pp. 187-197). Heidelberg: Springer Berlin Heidelberg.

Falkinger, J., and Zweimüller, J. (1996). The Cross-Country Engel Curve for Product Diversification. Structural Change and Economic Dynamics, 7, 79-97.

Falvey, R. E., and Gemmell, N. (1996). Are Services Income-Elastic?: Some New Evidence. Review of Income and Wealth 42(3).

Feder, G., Just, R. E., & Zilberman, D. (1985). Adoption of agricultural innovations in developing countries: A survey. Economic development and cultural change, 33(2), 255-298.

Finke, R., Lu, W. H., & Theil, H. (1984). A cross-country tabulation of own-price elasticities of demand. Economics Letters, 14(2), 137-142.

Foellmi, R., and Zweimüller, J. (2008). Structural Change, Engel's Consumption Cycles and Kaldor's Facts of Economic Growth. Journal of Monetary Economics, 55(7), 1317-1328. doi: 10.1016/j.jmoneco.2008.09.001

Fontana, R., and Guerzoni, M. (2008). Incentives and Uncertainty: An Empirical Analysis of the Impact of Demand on Innovation. Cambridge Journal of Economics, 32(6), 927-946. doi: 10.1093/cje/ben021

Fourastié, J. (1949). Le Grand Espoir Du XXe Sècle: pProgrès Technique, Progrès Economique, Progrès Social. Paris Presses Univ. de France.

Francois, J. F., and Kaplan, S. (1996). Aggregate Demand Shifts, Income Distribution, and the Linder Hypothesis. The Review of Economics and Statistics, 78(2), 244-250.

Frank, R. H. (1985). The Demand for Unobservable and Other Nonpositional Goods. American Economic Review, 75(1), 101-116.

Freeman, C. (2002). Continental, National and Sub-National Innovation Systems— Complementarity and Economic Growth. Research Policy, 31(2), 191-211.

Freeman, Richard B., and Ronald Schettkat, (2005). Marketization of Household Production

and the EU–US Gap in Work. Economic Policy, Vol. 20, No. 41, pp. 6–50.

Fremstad, A. (2016). Sticky Norms, Endogenous Preferences, and Shareable Goods. Review of Social Economy, 74(2), 194-214.

Frenzel Baudisch, A. (2007). Consumer Heterogeneity Evolving from Social Group Dynamics: Latent Class Analyses of German Footwear Consumption 1980–1991. Journal of Business Research, 60(8), 836-847.

Fry, J. M., Fry, T. R. L., and McLaren, K. R. (2000). Compositional Data Analysis and Zeros in Micro Data. Applied Economics, 32(8), 953-959. doi: 10.1080/000368400322002

Getzen, T. E. (1992). Population Aging and the Growth of Health Expenditures. Journals of Gerontology, 47(3), S98-S104.

Goodwin, B. K., Grennes, T. J., & Craig, L. A. (2002). Mechanical refrigeration and the integration of perishable commodity markets. Explorations in Economic History, 39(2), 154-182.

Gowrisankaran, G., & Rysman, M. (2012). Dynamics of Consumer Demand for New Durable Goods. Journal of Political Economy, 120(6), 1173-1219.

Gracia, A., and Albisu, L. M. (2001). Food Consumption in the European Union: Main Determinants and Country Differences. Agribusiness, 17(4), 469-488. doi: 10.1002/agr.1030

Green, R., Cornelsen, L., Dangour, A. D., Turner, R., Shankar, B., Mazzocchi, M., & Smith, R. D. (2013). The effect of rising food prices on food consumption: systematic review with meta-regression. Bmj, 346, f3703.

Greenwood, J., Seshadri, A., & Yorukoglu, M. (2005). Engines of liberation. The Review of Economic Studies, 72(1), 109-133.

Greenwood, Jeremy, and Karen A. Kopecky. "Measuring the welfare gain from personal computers." Economic Inquiry 51, no. 1 (2013): 336-347.

Gronau, R. (1986). Home production—a survey. Handbook of labor economics, 1, 273-304.

Grossman, G. M., and Helpman, E. (1991). Innovation and Growth in the Global Economy (Vol. 1). Cambridge, Mass: MIT Press.

Gualerzi, D. (2001). Consumption and Growth: Recovery and Structural Change in the US Economy. Cheltenham: Elgar.

Gualerzi, D. (2012). Towards a Theory of the Consumption: Growth Relationship. Review of Political Economy, 24(1), 33-50.

Guerzoni, M. (2010). The Impact of Market Size and Users' Sophistication on Innovation: The Patterns of Demand. Economics of Innovation and New Technology, 19(1/2), 113-126.

Haavelmo, T. M. (1947). Family Expenditure and the Marginal Propensity to Consume. Econometrica, 15, 335-341.

Hallak, J. C. (2010). A Product-Quality View of the Linder Hypothesis The Review of Economics and Statistics, 92(3), 453-466. doi: 10.1162/REST_a_00001

Hanson, G. H., and Xiang, C. (2004). The Home-Market Effect and Bilateral Trade Patterns. The American Economic Review, 94(4), 1108-1129. doi: 10.1257/0002828042002688

Hawtrey, Ralph G. 1925. The Economic Problem. London: Longmans.

Head, K., Mayertt, T., and Ries, J. (2002). On the Pervasiveness of Home Market Effects. Economica, 69(275), 371-390. doi: 10.1111/1468-0335.00289

Head, K., and Ries, J. (2001). Increasing Returns versus National Product Differentiation as an Explanation for the Pattern of U.S.-Canada Trade. The American Economic Review, 91(4), 858-876. doi: 10.1257/aer.91.4.858

Heffetz, O. (2011). A Test of Conspicuous Consumption: Visibility and Income Elasticities. The Review of Economics and Statistics, 93(4), 1101-1117.

Henderson, V. (2003). The Urbanization Process and Economic Growth: The So-What Question. Journal of Economic Growth, 8(1), 47-71. doi: 10.1023/A:1022860800744

Henry, L. M. (2014). Income Inequality and Income-Class Consumption Patterns. Economic Commentary (Cleveland)(2014-18), 1.

Herrendorf, B., Rogerson, R., and Valentinyi, Á. (2013). Growth and Structural Transformation NBER Wroking paper (Vol. 18996). Cambridge, MA: National Bureau of Economic Research.

Hersh, J., & Voth, H. J. (2009). Sweet diversity: colonial goods and the rise of European living standards after 1492.

Hildenbrand, W. (1994). Market Demand: Theory and Empirical Evidence. Princeton, NJ: Princeton Univ. Press.

Hirsch, F. (1978). Social Limits to Growth. London: Routledge.

Hopkins, E., & Kornienko, T. (2004). Running to keep in the same place: Consumer choice as a game of status. The American Economic Review, 94(4), 1085-1107.

Houthakker, H. S. (1957). An International Comparison of Household Expenditure Patters, Commemorating the Century of Engel's Law Econometrica, 25(4), 532.

Huang, J., and David, C. C. (1993). Demand for Cereal grains in Asia: The Effect of Urbanization. Agricultural Economics, 8(2), 107-124. doi: 10.1016/0169-5150(92)90025-T

IFAD. (2011) Rural Poverty Report. Rome: The International Fund for Agricultural Development.

Iscan, T. (2010). How Much can Engel's Law and Baumol's Disease Explain the Rise of Service Employment in the United States? B.E. Journal of Macroeconomics, 10(1). doi: 10.2202/1935-1690.2001

Jackson, L. F. (1984). Hierarchic Demand and the Engel Curve for Variety. The Review of Economics and Statistics, 66(1), 8.

Jayasinghe, M., Chai, A., Ratnasiri, S., and Smith, C. (2015). The Power of The Vegetable Patch. Paper presented at the PhD Conference on Economics and Business, Brisbane, Australia.

Jayasinghe, M., Smith, C., Chai, A., and Ratnasiri, S. (2016). The Implications of Income Dependent Equivalence Scales for Measuring Poverty in Sri Lanka. International Journal of Social Economics, 43(12), 1-17. doi: DOI 10.1108/IJSE-03-2015-0061

Jeppsen, L., and Molin, M. (2003). Consumers as Co-Developers: Learning and Innovation outside the Firm Working Paper Series, (Vol. 03-1). Copenhagen Department of Industrial Economics & Strategy, Copenhagen Business School

Kahrl, F., and Roland-Holst, D. (2008). Energy and Exports in China. China Economic Review, 19(4), 649-658. doi: 10.1016/j.chieco.2008.05.004

Kaus, W. (2013). Conspicuous Consumption and 'Race': Evidence from South Africa. Journal of Development Economics, 100(1), 63-73.

Kaldor, N (1966) , 1966. Causes of the Slow Rate of Growth of the United Kingdom. An Inaugural Lecture. Cambridge, MA: Cambridge University Press.

Kaltenberg, M. and Verspagen, B., 2015. Healthy Development: Uncovering Capabilities. Background paper prepared for the 2015 Industrial Development Report. Vienna: United Nations Industrial Development Organization.

Kaldor, N (1967) Strategic Factors in Economic Development. Ithaca, NY: Cornell University, New York State School of Industrial and Labor Relations.

Katz, L. F., & Murphy, K. M. (1992). Changes in Relative Wages, 1963-1987: Supply and Demand Factors. The Quarterly Journal of Economics, 107(1), 35-78.

Kearney, J. (2010). Food Consumption Trends and Drivers. Philosophical Transactions: Biological Sciences, 365(1554), 2793-2807. doi: 10.1098/rstb.2010.0149

Kennedy, E., and Reardon, T. (1994). Shift to Nontraditional Grains in the Diets of East and West-Africa - Role of Womens Opportunity Cost of Time Food Policy, 19(1), 45-56.

Ketkar, S. L., and Cho, W. (1982). Demographic Factors and the Pattern of Household Expenditures in the United States. Atlantic Economic Journal, 10(3), 16-27. doi: 10.1007/BF02300157

Kindleberger, C. (1989). Economic Laws and Economic History. Cambridge, UK,: Cambridge University Press.

Kleinknecht, A., and Verspagen, B. (1990). Demand and Innovation: Schmookler Re-examined. Research Policy, 19(4), 387-394. doi: 10.1016/0048-7333(90)90022-X

Greenwood, J., & Kopecky, K. A. (2013). Measuring the welfare gain from personal computers. Economic Inquiry, 51(1), 336-347.

Krüger, J. (2008). Productivity and Structural Change: a Review of the Literature. Journal of Economic Surveys, 22(2), 330-363.

Krugman, P. (1980). Scale Economies, Product Differentiation, and the Pattern of Trade. The American Economic Review, 70(5), 950.

Krusell, P., Ohanian, L. E., Ríos-Rull, J. V., & Violante, G. L. (2000). Capital-skill complementarity and inequality: A macroeconomic analysis. Econometrica, 68(5), 1029-1053.

Kuznets, S. S. (1973). Modern Economic Growth: Findings and Reflections. The American Economic Review, 63(3), 247-258.

Lancaster, K. (1971) Consumer demand: a new approach.NY: Columbia University Press.

Langlois, R. N. (2001). Knowledge, Consumption, and Endogenous Growth. Journal of Evolutionary Economics, 11(1), 77-93. doi: 10.1007/PL00003858

Langlois, R. N. (2003). The Vanishing Hand: The Changing Dynamics of Industrial Capitalism. Industrial and Corporate Change, 12(2), 351-385. doi: 10.1093/icc/12.2.351

Lardy, N. R. (2006). China: Toward a Consumption-Driven Growth Path Policy Briefs in International Economics. Washington DC: Peterson Institute for International Economics

Lavoie, M. (1994). A Post Keynesian Approach to Consumer Choice. Journal of Post Keynesian Economics, 16(4), 539-562.

Lebergott, S. (1994). Pursuing Happiness: American Consumers in the Twentieth Century. Journal of Macromarketing, 14(1), 83-88. doi: 10.1177/027614679401400114

Lemmon, M., & Portniaguina, E. (2006). Consumer confidence and asset prices: Some empirical evidence. Review of Financial Studies, 19(4), 1499-1529.

Levy, D. (1984). Testing Stigler's Interpretation of "The Division of Labor is Limited by the Extent of the Market". The Journal of Industrial Economics, 32(3), 377-389.

Lewbel, A. (2008). Engel Curves. In S. N. Durlauf & L. E. Blume (Eds.), The New Palgrave Dictionary of Economics (2 ed.). Basingstoke: Palgrave Macmillan.

Linder, S. B. (1961). An Essay on Trade and Transformation. New York.

Lipsey, R., Bekar, C., and Carlaw, K. (1998). What Requires Explanation? . In E. Helpman (Ed.), Genral Purpose Technologies and Economic Growth (pp. 15-54). Cambridge, M.A. : MIT Press.

Lipsey, R. G., Carlaw, K. I., and Bekar, C. T. (2005). Economic Transformations : General Purpose Technologies and Long-Term Economic Growth: General Purpose Technologies and Long-Term Economic Growth (Vol. illustrat). GB: Oxford University Press.

Lührmann, M. (2005). Population Aging and the Demand for Goods & Services. Mannheim MEA.

Lusardi, A. (2010). Financial capability in the United States: Consumer decision-making and the role of Social Security.

Malerba, F., Nelson, R., Orsenigo, L., and Winter, S. (2007). Demand, Innovation, and the Dynamics of Market Structure: The Role of Experimental Users and Diverse Preferences. Journal of Evolutionary Economics, 17(4), 371-399. doi: 10.1007/s00191-007-0060-x

Manig, C., and Moneta, A. (2009). More or Better? Measuring Quality versus Quantity in Food Consumption Papers on Economics and Evolution. Marburg: Philipps University

Marshall, A. (1919). Industry and Trade. London: MacMillan.

Matsuyama, K. (2009). Structural change in an interdependent world: A global view of manufacturing decline. Journal of the European Economic Association, 7(2-3), 478-486.

Metcalfe, S., Foster, J., and Ramlogan, R. (2006). Adaptive Economic Growth. Cambridge Journal of Economics, 30, 7-32.

Moneta, A., and Chai, A. (2014). The Evolution of Engel Curves and Its Implications for Structural Change Theory. Cambridge Journal of Economics, 38(4), 895-923.

Morley, J. E. (2001). Decreased Food Intake with Aging. Journals of Gerontology - Series A Biological Sciences and Medical Sciences, 56(2), 81-88. doi: 10.1093/gerona/56.suppl_2.81

Morris, M., Kaplinsky, R., and Kaplan, D. (2012). One Thing Leads to Another - Commodities, Linkages and Industrial Development. Resources Policy, 37(4), 408-416. doi: 10.1016/j.resourpol.2012.06.008

Morton, J. F. (2007). The Impact of Climate Change on Smallholder and Subsistence Agriculture Proceedings of the National Academy of Sciences of the United States of America (Vol. 104, pp. 19680-19685). Washington, DC: National Academy of Sciences.

Mottaleb, K. A., Krupnik, T. J., & Erenstein, O. (2016). Factors associated with small-scale agricultural machinery adoption in Bangladesh: Census findings. Journal of Rural Studies, 46, 155-168.

Nelson, J. A. (1988). Household Economies of Scale in Consumption: Theory and Evidence. Econometrica, 56(6), 1301-1314.

Nelson, R., and Rosenberg, N. (1993). Technical innovation and National Systems National innovation Systems: A Comparative Analysis. New York: Oxford University Press.

Oliveira-Martins, J., Organisation for Economic, C.-o., and Development. Economics, D. (2005). The Impact of Ageing on Demand, Factor Markets and Growth OECD Economic Department Working Papers. France: OECD.

Pasinetti, L. L. (1981). Structural Change and Economic Growth. Cambridge, UK: Cambridge University Press.

Petrin, A. (2002). Quantifying the benefits of new products: The case of the minivan. Journal of political Economy, 110(4), 705-729.

Pigou, A. C. (1910). A method of determining the numerical value of elasticities of demand. The Economic Journal, 20(80), 636-640.

Pingali, P. (2007). Agricultural mechanization: adoption patterns and economic impact. Handbook of agricultural economics, 3, 2779-2805.

Polterovich, V., Popov, V., and Tonis, A. (2010). Resource Abundance: A Curse or Blessing? New York, NY United Nations, Dep. of Economic and Social Affairs.

Raff, D. M., & Trajtenberg, M. (1996). Quality-adjusted prices for the American automobile industry: 1906-1940. In The Economics of new goods (pp. 71-108). University of Chicago Press.

Reardon, T. (1993). Cereals Demand in the Sahel and Potential Impacts of Regional Cereals Protection. World Development, 21(1), 17-35. doi: 10.1016/0305-750X(93)90134-U

Regmi, A. (2001). Changing Structure of Global Food Consumption and Trade In A. Regmi (Ed.), Agriculture and Trade Report. Washington, DC U.S. Department of Agriculture.

Rogers, E. M. (2010). Diffusion of Innovations (Vol. 5th). New York;London;: Free Press.

Romer, P. M. (1990). Endogenous Technological Change. Journal of Political Economy, 98(5), S71-S102. doi: 10.1086/261725

Rosenthal, S. S., & Strange, W. C. (2003). Geography, industrial organization, and agglomeration. Review of Economics and Statistics, 85(2), 377-393.

Ruprecht, W. (2005). The Historical Development of the Consumption of Sweeteners - A Learning Approach. Journal of Evolutionary Economics, 15(3), 247-272. doi: 10.1007/s00191-005-0253-0

Saviotti, P. P. (1996) Technological Evolution, Variety and the Economy. Edward Elgar Publishing.

Saviotti, P. P., and Pyka, A. (2008). Micro and Macro Dynamics: Industry Life Cycles, Inter-sector Coordination and Aggregate Growth. Journal of Evolutionary Economics, 18(2), 167-182. doi: 10.1007/s00191-007-0077-1

Sawtelle, B. A. (1993). Income Elasticities of Household Expenditures: A US Cross-Section Perspective. Applied economics, 25(5), 635-644.

Scherer, F. M. (1982). Demand-Pull and Technological Invention: Schmookler Revisted. The Journal of Industrial Economics, 30(3), 225-237.

Schmookler, J. (1966). Invention and Economic Growth. Cambridge Harvard University Press.

Schroder, C., Rehdanz, K., Narita, D., and Okubo, T. (2015a). The Decline in Average Family Size and Its Implications for the Average Benefits of Within-Household Sharing. Oxford Economic Papers-New Series, 67(3), 760-780. doi: 10.1093/oep/gpv033

Schroder, C., Rehdanz, K., Narita, D., and Okubo, T. (2015b). The Decline in Average Family Size and Its Implications for the Average Benefits of Within-Household Sharing. Oxford Economic Papers, 67(3), 760-780. doi: 10.1093/oep/gpv033

Scitovsky, T. (1976) The Joyless Economy. The Psychology of Human Satisfaction. Oxford University Press.

Selvanathan S (1993) A system-wide analysis of international consumption patterns. Kluwer Academic Publishers, Boston

Smith, A. (1776). An Inquiry into the Nature and Causes of the Wealth of Nations.

Snow, A., & Warren, R. S. (2015). Pigou's Law and the proportionality of income and price elasticities of demand. Economics Letters, 132, 136-138.

Stigler, G. J. (1951). The Division of Labor is Limited by the Extent of the Market. Journal of Political Economy, 59(3), 185-193. doi: 10.1086/257075

Subramanian, S., and Deaton, A. (1996). The Demand for Food and Calories. Journal of Political Economy, 104(1), 133-162. doi: 10.1086/262020

Szirmai, A., 2012. Industrialisation as an Engine of Growth in Developing Countries, 1950–2005. Structural Change and Economic Dynamics, 23(4), pp. 406–420.

Theil, H., Chung, C. F., & Seale, J. L. (1989). International evidence on consumption patterns (Vol. 1). Jai Pr.

Teubal, M., and Twiss, B. C. (1979). On User Needs and Need Determination: Aspects of the Theory of Technological Innovation In Industrial Innovation (pp. 266-293). United Kingdom: Palgrave Macmillan

Theil, H., and Finke, R. (1983). The Consumers Demand for Diversity. European Economic Review, 23(395-400).

Thomas, D., and Strauss, J. (1997). Health and Wages: Evidence on Men and Women in Urban Brazil. Journal of Econometrics, 77(1), 159-185. doi: 10.1016/S0304-4076(96)01811-8

Torvik, R. (2002). Natural Resources, Rent Seeking and Welfare. Journal of Development Economics, 67(2), 455-470. doi: 10.1016/S0304-3878(01)00195-X

Trefler, D. (1995). The Case of the Missing Trade and Other Mysteries. The American Economic Review, 85(5), 1029-1046.

US Department of Labor. (2006). 100 Years of US Consumer Expenditure (Vol. Report 991). Washington, DC: US Department of Labor.

Van Raaij, W. F., & Gianotten, H. J. (1990). Consumer confidence, expenditure, saving, and credit. Journal of Economic Psychology, 11(2), 269-290.

Volland, B. (2012). The History of an Inferior Good: Beer Consumption in Germany Papers on Economics and Evolution (Vol. 1219). Marburg: Philipps University Marburg.

Vollrath, T. L., Hallahan, C. B., and Gehlhar, M. J. (2006). Consumer Demand and Cost Factors Shape the Global Trade Network in Commodity and Manufactured Foods. Canadian Journal of Agricultural Economics, 54(4), 497-511. doi: 10.1111/j.1744-7976.2006.00063.x

Von Hippel, E. (2005). Democratizing Innovation. Cambridge, Mass: MIT Press.

Wadman, W. M. (2000). Variable quality in consumer theory. Sharpe, Armonk, NY.

Wang, Q. (2014). Effects of urbanisation on energy consumption in China. Energy Policy, 65, 332-339.

Wedel, M., and Kamakura, W. A. (2012). Market segmentation: Conceptual and methodological foundations (Vol. 8): Springer Science & Business Media.

Weder, R. (2003). Comparative Home-Market Advantage: An Empirical Analysis of British and American Exports. Review of World Economics / Weltwirtschaftliches Archiv, 139(2), 220-247. doi: 10.1007/BF02659744

Windrum, P. (2005). Heterogeneous Preferences and New Innovation Cycles in Mature Industries: The Amateur Camera Industry 1955-1974. Industrial and Corporate Change 14(6), 1043-1074. doi: 10.1093/icc/dth089

Witt, U. (2001). Learning to Consume – A Theory of Wants and the Growth of Demand. Journal of Evolutionary Economics, 11(1), 23-36. doi: 10.1007/PL00003851

Woersdorfer, J. S. (2010). Consumer Needs and their Satiation Properties as Drivers of the Rebound Effect:The Case of Energy-EfficientWashing Machines Papers on Economics and Evolution Max Planck Institute of Economics, Evolutionary Economics Group.

World Bank. (2013). China 2030 : Building a Modern, Harmonious, and Creative High-Income Society. Washington,DC: World Bank.

Wu, Y. (1999). China's Consumer Revolution: The Emerging Patterns of Wealth and Expenditure. Northampton, MA;Cheltenham, UK;: Edward Elgar.

Young, A. (1928). Increasing Returns and Economic Progress The Economic Journal 38, 527-542.

Young, A. A. (2009). Increasing Returns and Economic Progress. Revista de economía institucional, 11(21), 227-246.

Young, A. (2012). The African Growth Miracle. *Journal of Political Economy*, *120*(4), 696-739.

Yu, Z. (2005). Trade, Market Size, and Industrial Structure: Revisiting the Home-Market Effect. The Canadian Journal of Economics / Revue canadienne d'Economique, 38(1), 255-272. doi: 10.1111/j.0008-4085.2005.00279.x

Zhou, Z.-Y., and Ebooks, C. (2014). Food Consumption in China: The Revolution Continues (Vol. 1). Cheltenham, UK: Edward Elgar.

Zitter, M. (1988). Older Population Most Diverse of All AmericanAge Groups. Healthcare Financial Management, 42(12), 38-42.

**Figure 10** **UK real equivalized weekly non-housing expenditure by gender and age**
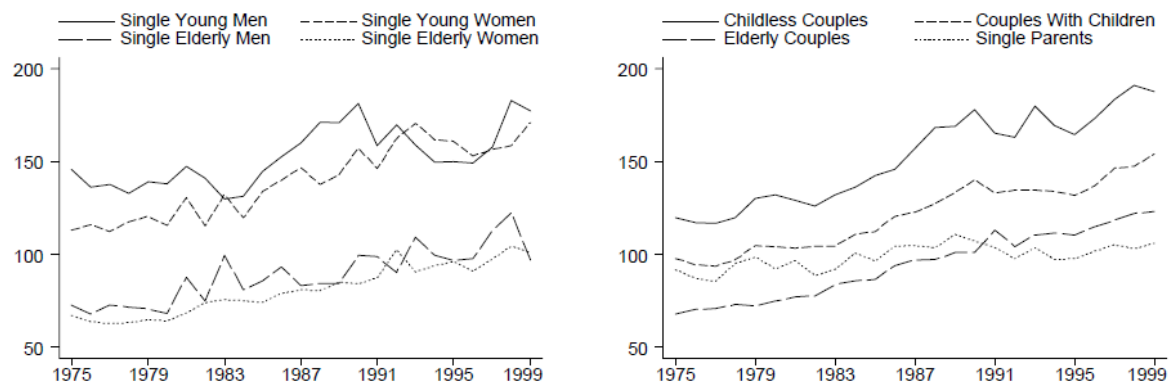


The vertical axis reports real equivalized weekly expenditure in pounds.

*Source*: Blow et al. (2004).