

# INDUSTRIAL DEVELOPMENT REPORT 2018

## BRIEF NO 2

### A new look at the role of demand in industrialization: the virtuous circle of manufacturing consumption

#### Executive summary

Consumption and industrial development are linked in circular fashion. As demand for goods and services grows and diversifies, so does a country's industrial composition. Under favourable conditions, a 'virtuous circle' of manufacturing consumption and production emerges, simultaneously leading to industrial development and demand diversification through a combination of variety, volume and price effects. As incomes grow, demand for new and better varieties of goods spurs innovation in existing and new industries, gradually enabling the production of greater volumes at lower relative prices. The generation of new incomes in the process enables the further expansion of demand, keeping the circle turning.

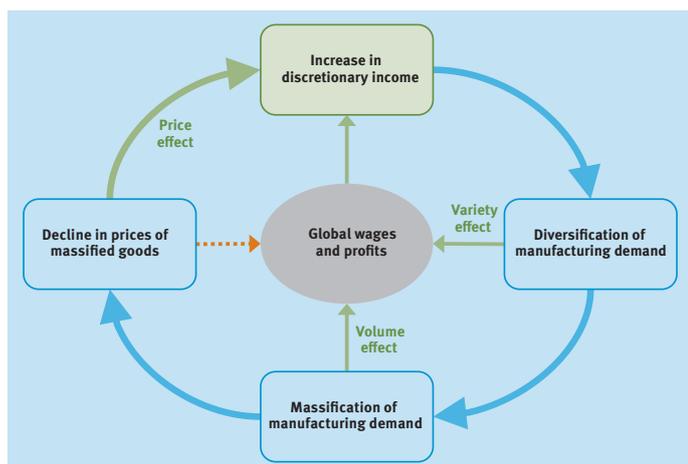
#### Key findings

- Strong aggregate demand is crucial to sustain industrial development, and vice versa. There is a bidirectional causal relationship between the diversification of demand and changes in the industrial composition of an economy.
- As demand diversifies, it drives innovation and investment in manufacturing activities, leading to higher incomes and lower prices. This enables the emergence of mass consumption and the broad-based diffusion of new and better goods.
- From the perspective of demand, the benefits of industrialization are not limited to producers—via increases in employment opportunities and income—but extend to consumers, through relative price reductions and the expansion of affordable variety.



## The virtuous circle of manufacturing consumption

Figure 1 – The virtuous circle of manufacturing consumption

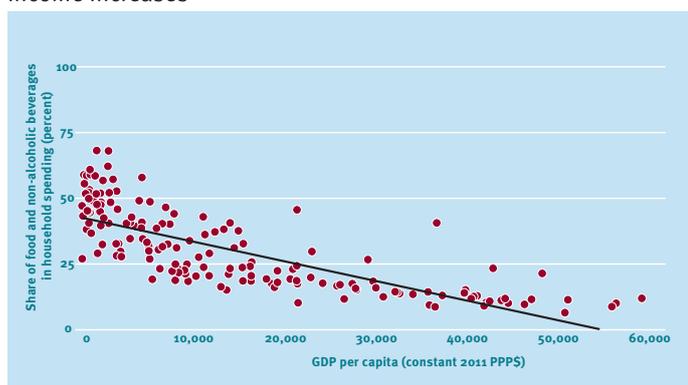


Source: Adapted from UNIDO IDR 2018, Figure 1.7, page 35.

Recent trends in the world economy have brought the issue of demand back under the spotlight. Large emerging industrial economies such as China are emphasizing a ‘rebalancing’ in their development strategies, towards greater reliance on domestic consumption<sup>1</sup>. Meanwhile in the wake of the global financial crisis of 2008, some observers are highlighting weak aggregate demand as one of the factors contributing to feeble productivity growth in industrialized economies<sup>2</sup>.

The economic literature has long recognized that demand and industrialization are interdependent. The IDR 2018 provides a simple conceptual framework to capture this relationship: the virtuous circle of manufacturing consumption, pictured in Figure 1. The framework helps identifying the main mechanisms that link the evolution of consumption patterns to changes in an economy’s industrial composition—and vice versa.

Figure 2 – The share of household spending on food declines as income increases



Note: All values are for 2011. Household expenditures are in current \$. GDP is gross domestic product and PPP is purchasing power.  
Source: UNIDO IDR 2018 Figure 2.1, page 46

1. See, for instance, Mayer, J. 2016.
2. See, for instance, Adler et al. 2017.
3. See Moneta, A. and E. Stepanova. 2017.

## The circle links consumption to production...

### Demand diversifies and new varieties emerge

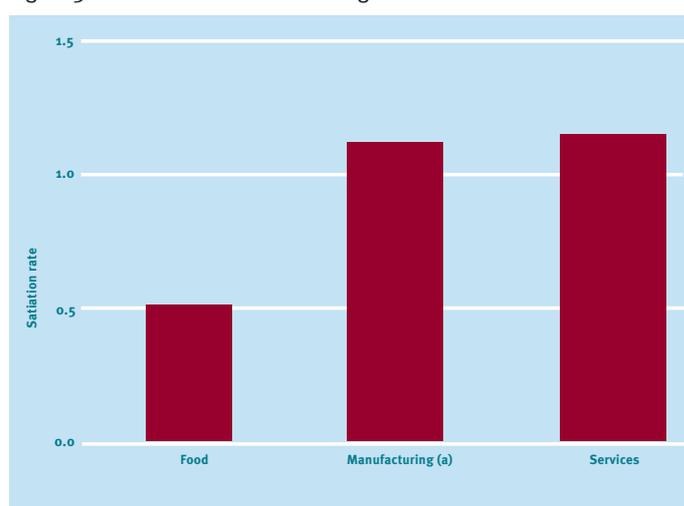
A well-established economic regularity, Engel’s law predicts that as the income at the disposal of consumers increases, the proportion which is spent on food declines. This is because consumption of individual goods and services tends to encounter an upper limit, after which demand starts ‘satiating’ (or saturating).<sup>3</sup> At this point, expenditure on them ceases to rise in response to increases in income. Support for Engel’s law is strong across countries (see Figure 2).

### Box 1. Engel curves and satiation

Engel curves describe how household expenditure on a good varies with income. Both income and product characteristics determine a curve’s shape. In general, positive slopes indicate that consumption increases with income, whereas a negative slopes suggests consumers would substitute the good with a costlier one once their income increases. A curve exhibits satiation—a tendency for expenditure to become indifferent to increases in income—if, at a certain income level, it becomes flat.

The tendency to satiation for different categories of goods across countries can be visualized in the form of a ratio between the slopes of Engel curves at two different income levels, as displayed in Figure 3. A satiation rate of between zero and one suggests that demand—as in the case of food—has a tendency to satiate, across different income groups. By contrast, a rate of above one indicates that demand continues to grow in response to incremental increases in income.

Figure 3 – Demand for manufacturing does not satiate across countries



a. Excludes food and non-alcoholic beverages; alcoholic beverages, tobacco and narcotics and other personal effects.  
Note: There is a tendency to satiation when the satiation rate is lower than 1. Source: UNIDO IDR 2018, Figure 2.7, page 52.

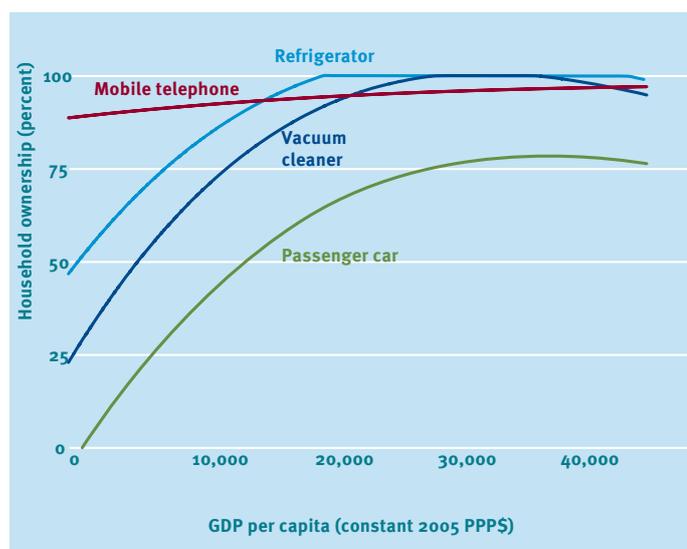
Satiation, however, does not affect all categories of goods in the same way. Whereas demand for food tends to be easily satiated, that for manufacturing products does not (see Figure 3). Hence the notion of demand diversification. When consumers grow richer, the amount of expenditure devoted to food and other necessities remains stable. Meanwhile, the purchase of more sophisticated items—such as manufacturing goods—increases, more than proportionally.

As consumption patterns shift, so does expenditure—towards industries where demand is yet to satiate. Here, the opportunity to cater to new and more sophisticated tastes spurs new investments and innovation. New firms emerge and, with them, entirely new sectors. Satiation thus becomes a driver of structural change—both in manufacturing, and at the aggregate level. Among the most tangible results of this process is greater access to new and often improved varieties of goods for consumption.

### Demand massifies and producers can sell increasing volumes

Not all consumers are immediately able to afford the new varieties that are launched on the market. As the demand grows, however, industries consolidate and—owing to a combination of scale effects, technological innovations and competition—lower their prices. Consumption trickles down to an increasingly large number of households and, gradually, consumers gain access to previously unaffordable goods. Demand ‘massifies’ and products experience broad-based diffusion—although the speed of diffusion remains contingent on income and product characteristics (see Figure 4). Normally, diffusion increases as income rises, but products with high utility relative to price (i.e., mobile phones) can diffuse very quickly, regardless of a country’s income level.

Figure 4 – As income increases, demand massifies



Note: all values are for the period 1980-2016  
Source: UNIDO IDR 2018, Figure 2.10, page 55.

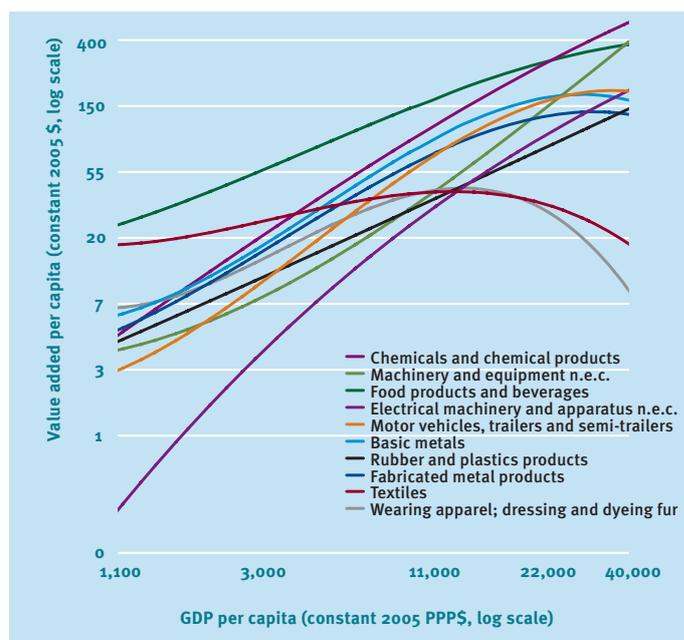
## ...and production to consumption

### Structural change helps sustaining demand

Changes in consumption patterns are closely mirrored, on the supply side, to an economy’s industrial composition. At lower income levels, limited demand gives impetus to the growth of industries producing necessities, such as food and beverages, or garments. As incomes grow, however, the diversification of consumption patterns spurs the emergence of industries, such as the transport or the electrical machinery sectors, which produce more complex goods (see Figure 5).

As industries grow in scale and complexity, countries advance to—or catch up with—the technology frontier. Profits increase and rapid productivity growth allows for wage levels to rise, leading to a process of further demand diversification and market expansion. As entrepreneurs and inventors rush in to capture new consumer markets, a positive feedback loop is established between evolving patterns of demand and structural change.

Figure 5 – The diversification of demand is an important driver of changes in a country’s industrial composition

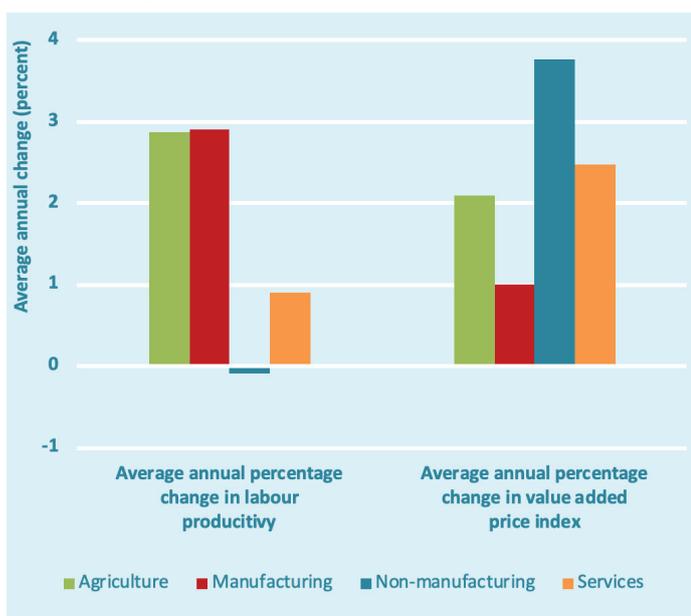


Note: Fitted curves describe how manufacturing sectors evolve alongside income. All values are for the period 1963-2013.  
Source: UNIDO IDR 2018, Figure 2.12, page 57.

## Innovation and competition re-ignite the circle

During the process of industrial consolidation, a combination of new investments—in new machinery but also, increasingly, in research activities—, scale effects, and learning efforts, all enable manufacturing firms to grow more productive. If competitive conditions are in place, productivity translates in slower price growth for manufacturing (see Figure 6). Lower relative prices boost consumers' purchasing power and, by so doing, further stimulate demand, thus re-igniting the circle.

Figure 6 – Manufacturing displays higher labour productivity and slower price growth relative to other sectors



Note: Values for the period 1970-2012 for the world.  
Source: Adapted from UNIDO IDR 2018, Figure 2.13, page 57.

## Conclusions

- » Aggregate demand is a key driver of industrial development and income creation. Countries seeking to industrialize should therefore take demand and its determinants—particularly income and its distribution—into careful consideration when drafting policy.
- » The study of Engel curves indicates that demand for manufacturing tends to satiate at higher levels of income relative to other sectors in the economy. From a demand-side perspective, industrial development remains a key strategy to generate broad-based growth and raise incomes.
- » Under favourable conditions, the consolidation of new industries unleashes productivity growth, which translates into lower prices. This, in turn, brings about a positive real income effect for consumers.

## References and suggestions for further reading

- Adler et al. 2017. 'Gone with the Headwinds: Global Productivity'. IMF Staff Discussion Note, 17/04.
- Lewis, P. and F. Peng. 2017. 'Manufacturing Productivity and Real Consumption Wages'. IDR Background Paper. United Nations Industrial Development Organization (UNIDO). Vienna.
- Matsuyama, K. 2002. 'The Rise of Mass Consumption Societies'. Journal of Political Economy, 110(5), pp. 1035-1070.
- Mayer, J. 2016. 'Towards a New Normal Growth Strategy: China in Comparative Perspective'. Journal of Chinese Economic and Business Studies, 14(2), pp. 107-128.
- Moneta, A. and E. Stepanova. 2017. 'Characterizing Manufacturing Engel Curves Around the World'. IDR Background Paper. United Nations Industrial Development Organization (UNIDO). Vienna.
- Pasinetti, L. L. 1981. Structural Change and Economic Growth: A Theoretical Essay on the Dynamics of the Wealth of Nations. Cambridge University Press. New York.
- Saviotti, P.P. and A. Pyka. 2013. 'The Co-evolution of Innovation, Demand and Growth'. Economics of Innovation and New Technology, 22(5), pp. 461-482.
- UNIDO, 2017. Industrial Development Report 2018. Demand for Manufacturing: Driving Inclusive and Sustainable Industrial Development. United Nations Industrial Development Organization (UNIDO). Vienna.

## Contacts

For further information, contact: [IDR2018@unido.org](mailto:IDR2018@unido.org) or [a.lavopa@unido.org](mailto:a.lavopa@unido.org)