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CHARLES P. KINDLEBERGER

ECONOMIC LAWS  
AND ECONOMIC HISTORY

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The four *Raffaele Mattioli Lectures* were delivered by Charles P. Kindleberger at the Luigi Bocconi University in Milan, from 12th to 14th May 1980.

## FIRST LECTURE

## Engel's Law

1. *Introduction.* – 2. *Engel's law and growth.* – 3. *Engel's law as a general law of consumption.* – 4. *The Gompertz curve and the law of transformation as generalizations of Engel's law.* – 5. *Limits of the generalizations of Engel's law as explanations of take-off stages in growth processes.*

1. *Introduction*

Engel's law is the first of the explanatory models to be examined in these lectures. Needless to say, the Engel I have in mind is the statistician, Ernst, from Saxony, not the manufacturer-radical, Friedrich Engels of Barmen in the Ruhr; his law, derived from budget studies, states that as income grows, the consumption of food grows less than proportionately per capita. I propose to claim, not on the basis of budget studies, or of archival research, but rather of casual empiricism, that Engel's law is much more general, and intrinsically is related to the Gompertz or S-curve, or the law of material transformation. In its limited form, associated with food, it provides powerful insight into the course of economic history. Generalized, it requires economists and economic historians to be wary of relying upon what Rostow calls the "imperatives of geometric growth". Nothing grows geometrically at a steady rate for very long. Growth begins slowly, picks up speed, rockets along, and then slows down. Discontinuity is endemic, if only in the second derivative. The case of food will be discussed first.

NOTE: Charles Kindleberger introduced his *Lectures with the following remarks*: It is a great honour and pleasure for me to give one in the set of lectures in memory of Raffaele Mattioli. I had the good fortune to meet Dr Mattioli. In 1971 I was on a trip in Italy talking to economists about the outlook for the Italian economy in preparation for an essay that appeared in *Il Caso Italiano*, and learned that he wanted to see me. In a delightful half hour we spent discussing the state of the world, he told me he "collected" economists. It was flattering to be added to his collection, and a relief not to be pinned like a butterfly, or stuffed like a bird. I also often think of Dr Mattioli when I read the distinguished series of economic histories of Italy – the overall study by Gino Luzzatto, of which unhappily only one volume was completed, and the series of regional studies by so many outstanding economic historians. That collection has external economies for us all that make it a fitting monument by the Banca Commerciale Italiana and Dr Mattioli, to celebrate the centenary of Italian independence.

## 2. Engel's law and growth

Engel's law expressed diminishing returns in utility to consumption of food in the 132 Belgian families whose budgets had been gathered by LePlay. The law has the corollary that as productivity increases, resources must be shifted out of agriculture into manufacturing or services, in order to provide the appropriate balance in consumption. Poor countries maintain most of their labour, land and other factors in the production of food in agriculture. In underdeveloped countries there is difficulty in assigning the work of given factors completely to one or another sector, but as a rough approximation, the poorest countries have 80 to 85 per cent of their resources in agriculture, and with continued growth this proportion declines perhaps to as low as 3 per cent. What the lower limit will be depends on the country's position in foreign trade. If it is an exporter of food like the United States, New Zealand or Denmark, the proportion will be higher than if it imports food like the United Kingdom or Belgium. Provided there is growth in the productivity of factors, transformation out of agriculture is inexorable.

It was the Australians, Allan G.B. Fisher and Colin Clark, who proposed the designations of primary, secondary and tertiary sectors, and the laws, deriving from Engel's law, that with economic growth the primary sector shrinks, while the secondary sector (manufacturing and construction, plus, in some definitions, mining) and the tertiary sector (services, including commerce, transport, government and personal services) grow.<sup>1</sup>

When growth and Engel's law are combined with other possibilities in the economy, the explanatory richness of Engel's law increases. John Kenneth Galbraith, for example, has suggested that the owner of a scarce factor in a society tries to exercise a monopoly in it, obtaining rents in income, prestige and political power.<sup>2</sup> Thus, if the generalization is not too sweeping, ownership

1. COLIN CLARK, *The Conditions of Economic Progress*, New York: St. Martin's Press, 1940 (3rd edition, 1957); ALLAN G. B. FISHER, 'Economic Implications of Material Progress', *International Labour Review*, July 1935, pp. 5-18; and 'Production Primary, Secondary and Tertiary', *Economic Record*, vol. xv, No. 28, June 1939, pp. 24-38.

2. JOHN KENNETH GALBRAITH, *The New Industrial State*, Boston: Houghton Mifflin; London: Hamish Hamilton, 1967.

## ENGEL'S LAW AND GROWTH

of good land is prized in a poor economy, and gives rise to an aristocracy. Note the limitation about good land. Where land is poor, and there is no surplus to be guarded, or appropriated by the aristocracy, political organization takes the form of a weak nobility, as for example in Norway, or even republics, as in the mountainous regions of Switzerland. (I have some difficulty in fitting Italy, Spain and Portugal, with poor land and powerful aristocracies into this generalization; these cases may be due to erosion which destroyed a once rich land, while the nobility retained power, or to other factors not taken into account in the present model). In an economy in which factors are leaving agriculture for commerce and industry, capital tends to be the scarce resource, with its owners asserting their right to rents, and to access to the seats of government. Bourgeois society is thus republican, or if monarchy is retained, it is a constitutional one. Somewhat narcissistically, Galbraith holds that in a post-industrial society brains are the scarce resource, the intelligentsia is entitled to claim big rewards, and the bureaucracy, both in business and government, is increasingly likely to obtain control over the course of affairs. Extend the analysis still further from Engel's law – and we are getting remote I shall admit – and we observe that success in commerce, banking and industry in many societies leads back to ownership of land, to country estates, and pride in improving agriculture. This is presumably a reflection of cultural lag, in which the bourgeois still ape the aristocrats after economic and political power has to a degree shifted into their hands. The merchant is the best of improvers, said Adam Smith in discussing farming, but as a rule this occurred only after the merchant had built a great house, or extended an old one, as a form of income-elastic conspicuous consumption.

If the reluctance of any group to yield political power is added to growth and Engel's law, one obtains the result that agriculture tends to be overrepresented in parliamentary governments. In the United States, this effect was initially thought to have been brought under control by the constitutional requirement that the House of Representatives be redistricted, and the seats redistributed, following each decennial census. The method of allocating seats within the separate states, after redistricting,

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however, was left to state legislatures, and these in turn suffered from political lag and overrepresentation of agricultural interests. Not until the Supreme Court decreed that state legislatures were constitutionally bound to give equal access to power to urban and rural voters, with one man, one vote, did the domination of farm interests come under control, and with it farm-representative seniority on Congressional committees. As a footnote of some interest, perhaps mainly to those with a detailed knowledge of American geography, James Phinney Baxter, the late historian in the Turner frontier tradition, reacted to these propositions by hypothesizing that one of the last acts of the farm sector when its power in state legislatures was slipping in the 19th century, was to transfer the capital of the state from the major urban centre to a modest city on the fall line, where the plains give way to hills. Thus in Maine, Portland yielded place to Augusta as the capital; in New Hampshire, Portsmouth to Concord; in New York, New York City to Albany; in Pennsylvania, Philadelphia to Harrisburg; in South Carolina, Charleston to Columbia; in Georgia, Milledgeville to Atlanta. There are exceptions to the rule, as in Massachusetts, where the capital stayed in Boston, so the generalization is unsafe for accurate predictions.

### 3. *Engel's law as a general law of consumption*

Engel's law applies to more than food, and by extension to agriculture. It is a general law of consumption. With growth, demand for some one or more products – but only a few at a time – starts off with high income elasticity, and then declines as income rises much more. Increasing returns in consumption are followed by stable and then diminishing returns. Often in a modern economy, there is some one or more items of consumption – automobile, television set, colour television, holiday cottage – which is very much sought after. In 1955, when I was teaching at Harvard Summer School, a Japanese sociologist confirmed this generalization about consumption patterns, and said that in Japan at that time, the crucial item of consumption was the mixmaster: an electric kitchen device for stirring and blending food. Conversations were dominated by discussion of the mixmaster: “Do you have one yet? How do you like yours? We hope to get one by the end of the year.” It is ironic to think that in twenty-five years Japan's spectacular rise in income has left the mixmaster far behind.

A given item may go through the Engel's consumption cycle of a luxury, with high income elasticity, to a necessity with low elasticity, more than once. On the first time through, the society is relatively poor, and the item is critical to the level of living of the family, perhaps a bicycle in a family in Asia, a Topolino in an Italian household of the 1930s, a radio in Europe or the United States in the 1920s. In due course when the item has been fully incorporated in the standard of living of the average family as a necessity, with low income elasticity, it comes around again as an income-elastic luxury, but as a bicycle for a child, rather than for the wage-earner, or the second car, the second or third radio or television set. The income elasticity of demand in a multi-car family is different for each vehicle. A sort of product cycle applies to demand as well as to the supply side, as the taste for products is diffused, along with the production technology, and income rises.

At the bottom of the cycle the good may become an inferior one, with negative income elasticity, because consumption ac-

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tually declines as income rises. The potato and cheap sausages are the classic examples, to which one can add the first bicycle when the household buys a car, or the Volkswagen Beetle before the family trades up to an Opel or Mercedes. Historically one could trace in France in the 18th and 19th centuries, a number of grades of woollen textiles, each of which started out when developed in being sold to the upper classes, and in Paris, and which were then diffused to the provinces, to all classes, and finally, replaced in the home market by superior goods that had been introduced, ending up exported to the West Indies for use by slaves.<sup>1</sup>

In consumer theory, some analysts contemplate a “bliss point” where demand for all goods and services is sated, and all income elasticities apart from replacements have sunk to zero on the average. There may be some positive income elasticities for quality goods, but these would be offset by negative elasticities for the inferior ones. Some very small parts of some societies may be approaching this point, but clearly no nations as a whole, and not the world. And even at the bliss point, an economic problem remains. Staffan Burenstam Linder observes in *The Harried Leisure Class*, that affluence, which Adam Smith used to call opulence, leaves the consumer too little time to consume his abundant goods and services.<sup>2</sup> The need will remain to economize time. From another point of view opulence for all, when private goods are readily acquired in copious quantities, will still leave problems of congestion – a public bad – and a scarcity of privacy, a private intangible good.

Having quoted him with approval earlier, I may quarrel with Galbraith now.<sup>3</sup> Diffusion of tastes for private goods takes place only partly through advertising. The distinction between goods that are necessary (called by Adam Smith those of “use of necessity”) and those that are wasteful (Smith’s “fashion and fancy”)

1. See FRANÇOIS DORNIC, *L'industrie textile dans le Maine et ses débouchés internationales (1630-1815)*, Le Mans: Editions Pierre-Belon, 1955, p. 40 and Chapter v; and PIERRE GOUBERT, *Familles marchands sous l'Ancien Régime: Danse et les Motte, de Beauvais*, Paris: S.E.V.P.E.N., 1959, p. 174.

2. STAFFAN BURENSTAM LINDER, *The Harried Leisure Class*, New York: Columbia University Press, 1970.

3. JOHN KENNETH GALBRAITH, *The New Industrial State*, *op. cit.*



## AS A GENERAL LAW OF CONSUMPTION

is quite unacceptable.<sup>1</sup> Demand for all but a minimum of food, clothing and shelter at a primitive level is determined socially, or perhaps sociologically, by emulation of other consumers, a peer group chosen by some social process that economists are not required to understand. Advertising certainly plays a role in many of these, but demand spreads as fast for many goods that are not advertised – symphony music, art museums and the like, and for activities such as skiing, sailing, and more recently jogging, roller skating and disco music. David Riesman's *The Lonely Crowd* asserts not only that much of American society is outer-directed, deriving its notions of good and bad from the peer group it chooses to emulate, but also that inner-directed persons, who appear to be independent in their judgments and tastes, have derived their mind-sets at an early age and simply become fixed in their ways.<sup>2</sup> We teach in our classes consumer sovereignty and independent utility functions. In actuality the position is more nearly that the consumer is ruled by his peer group and his utility functions interact with those of his kind.

New products expand rapidly, spread widely to the extent that they become mass-consumed, and then must slow down in rate of growth. This is Engel's law in extension and means that the geometric growth for any product must slow down. Some years ago John Meyer ascribed the Climacteric in Britain's growth at the end of the 19th century to the failure of exports to continue their rapid expansion of the third quarter of the century.<sup>3</sup> But the income elasticity of demand for such products as cotton textiles, iron and steel rails, galvanized iron sheets, was bound to fall as the world demand became saturated. Part of the growth in cotton textiles had been the result of competition with hand-woven textiles – woollens, linen and cotton produced by cottage indus-

1. ADAM SMITH, *An Inquiry into the Nature and Causes of the Wealth of Nations*, two volumes, London: Printed for W. Strahan and T. Cadell, 1766. The edition quoted is the text edited by Edwin CANNAN and published by Methuen and Co., London: Fourth edition, 1935. (Book I, Chapter x, Section b, para. 42), pp. 114-5.

2. DAVID RIESMAN, *The Lonely Crowd. A Study of the Changing American Character*, New Haven: Yale University Press, 1950.

3. JOHN R. MEYER, 'An Input-Output Approach to Evaluating the Influence of Exports on British Industrial Production in the late 19th Century', *Explorations in Entrepreneurial History*, vol. VIII, October 1955, pp. 12-34.

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tries – first at home and then abroad. British industrial growth ultimately shrank for two reasons: Engel's law requiring re-allocation into new industries, combined with British incapacity to transform rapidly into the new industries of chemicals, electrical equipment, and automobiles, on the one hand, and the competition of other countries in the old goods on the other. This competitive effect was noted by Tyszynski in his critique of the studies of the Institut für Weltwirtschaft und Seeverkehr in the *Enquête Ausschuss* which laid primary emphasis in relative rates of growth of exports on income elasticities for various products, which were thought to be fixed and ubiquitous, whereas on our showing, income elasticities for a given product will differ depending upon the level of income of a given society, and the distribution of income within it.<sup>1</sup> Thus for a country, income elasticities for particular products will change over time on average as income changes, and in cross-section, a given product will have different income elasticities in given countries, regions, social classes and the like, depending upon tastes and the income of the group in question. Nurkse's demonstration effect and cheap and easy communication appear to lead to the convergence of tastes internationally. Differences in income remain.

The competitive effect just discussed is distinct of course from Engel's law, and linked rather to the diffusion of technology on the output side of the product cycle. But the two effects work in conjunction to speed up the aging process in economies. Old goods have low income elasticities in rich societies, and import substitution works in poorer countries where the demand is higher and more income elastic, to reduce the export prospects of the pioneers. To sustain growth, the old economies must move on to new goods, with high income elasticities and with technologies not yet in process of adoption in importing countries. The process is endless, for in due course, the technology of these new products

1. INSTITUT FÜR WELTWIRTSCHAFT UND SEEVERKEHR AN DER UNIVERSITÄT KIEL, *Der deutsche Aussenhandel unter der Einwirkung weltwirtschaftlicher Strukturwandlungen*, (vol. 20 of the *Ausschuss zur Untersuchung der Erzeugungs- und Absatzbedingungen der deutschen Wirtschaft*), Berlin: E. S. Mittler & Sohn, 1932, pp. 156-7; H. TYSZYNSKI, 'World Trade in Manufactured Commodities, 1899-1950', *Manchester School of Economic and Social Studies*, vol. XIX, No. 3, September 1951, pp. 272-304.