

Chapter 8: A Neoclassical Perspective on Ethics and Commerce

Low wages fail even from a purely business point of view wherever it is a question of producing goods which require any sort of skilled labor, or the use of expensive machinery which is easily damaged, or in general wherever any great amount of sharp attention or of initiative is required. **Here low wages do not pay, and their effect is the opposite of what was intended.**

For not only is **a developed sense of responsibility absolutely indispensable**, but in general also an attitude which, at least during working hours, is freed from continual calculations of how the customary wage may be earned with a maximum of comfort and a minimum of exertion. **Labor must, on the contrary, be performed as if it were an absolute end in itself, a calling.** Weber, Max (1905) *The Protestant Ethic and the Spirit of Capitalism* (KL 309-314).

Furthermore, along with clarity of vision and ability, **it is only by virtue of very definite and highly developed ethical qualities that it has been possible for him [a formateur] to command the absolutely indispensable confidence of his customers and workmen.**

Nothing else could have given him the strength to overcome the innumerable obstacles, above all the infinitely more intensive work which is demanded of the modern entrepreneur. **But these are ethical qualities of quite a different sort from those adapted to the traditionalism of the past.** Weber, Max (1905). *The Protestant Ethic and the Spirit of Capitalism* (KL 397-401).

I. Introduction

The game theoretic approach of the last two chapters has shown how ethics can substitute for or complement both civil law and organizational rules of conduct and thereby help to make life in communities more attractive and large organizations more fruitful. This chapter shifts the mode of analysis from elementary game theory to elementary neoclassical economics. It demonstrates how ethics can be integrated into the core tool bag of mainstream microeconomics and explores some of its implications. This chapter is less self contained than the previous ones in that it assumes readers are familiar with the geometric tools taught in elementary economics courses.

The standard text book treatments assume that consumers are able to understand fully the characteristics of all the goods available in their local markets. Both the results of chapter 7 and common sense imply that that is unlikely to be the case unless markets are completely ethical and consumers very well informed. When there is a mix of seller types, the quality of the products sold will vary and known by consumers only probabilistically or within rough limits.

In the standard textbook treatments of production, team production problems are assumed to be solved or ignored. The results of chapter 7 imply that shirking and free rider problems are likely to be less than fully solved. Thus, the extent and mode of production are likely to be affected by the ethical dispositions of a firm's employees. Such dispositions affect both the marginal product of labor and the feasibility (profitability) of alternative methods of production.

The first part of this chapter explores the case in which ethics are ignored by both firm owners and consumers. It shows that the internalized ethics of employees in an industry affect the demand and price paid for its output, even when the ethical dispositions of potential employees are not taken account of. The second part of the chapter assumes that firm owners are aware of the productivity effects of ethical dispositions and profits, and therefore take them into account when assembling their production teams. Given this, individuals (and their families) take account of the economic

advantages of internalized ethical dispositions. In such cases, the average level and distribution of ethical persons among and within firms are partially endogenous. Markets are not likely to be the main determinant of ethical dispositions, but they affect the distribution of internalized ethical dispositions in a given society through effects on the marginal rewards associated with ethical conduct.

The first two parts of the chapter revisit the topics explored by chapter 7 using the tools of neoclassical economics rather than game theory. Changing the tools used to analyze the effects of internalized norms on both demand and supply provides several new insights.

II. The Demand for Products with Uncertain Characteristics

Virtually all products, from automobiles to zucchini, have properties that cannot be perfectly assessed by consumers at the point of sale. Much of this uncertainty is irreducible. The production processes that create and distribute products and services are partly stochastic. Accidents happen. Even the best machines become less reliable through time. Workers may be more or less attentive. As a consequence, defective units are always produced along with normal units.

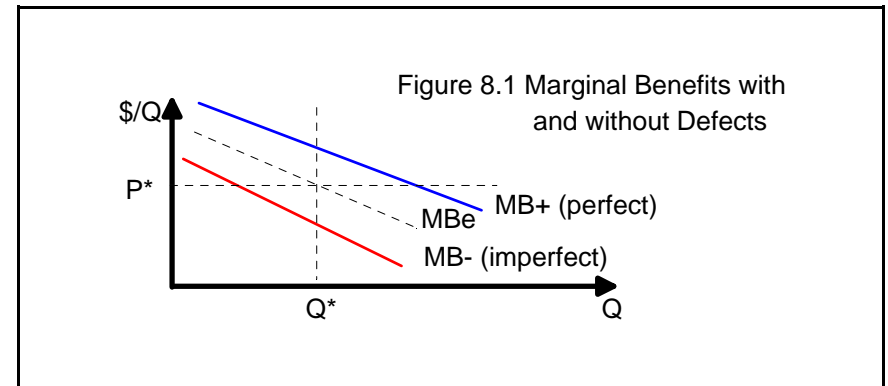
Nonetheless, the rate at which defects are produced can be managed to some degree. Production methods may be more or less reliable, and the persons engaged overseeing the quality of the output can be more or less diligent.

A. Demand for Products of Uncertain Quality

Consider a consumer's decision to purchase products when the probability of a defect is known (or at least reasonably well estimated). The product has a particular marginal benefits associated with it when all of its features are non-defective. The marginal benefit curve is lower when defective units are received. Uncertainty about the quality implies that the average quality and there for marginal benefits from the product lies between the extremes of entirely flawless and entirely flawed units of the product or service.

To simplify, assume that consumers are risk neutral and that the probability of a particular defect is a decreasing function of the average ethics (E_i) of the personnel in the firms (i) manufacturing the product. Initially, we'll assume that consumers regard all firms to be the same ($E_i = E_j$) and treat each successive unit purchased by every firm as an independent draw from the distribution of product quality. To simplify, we'll also assume that there are just two quality levels perfect (+) and defective (-). The average marginal benefit of the N th unit is simply $(1-P)MB^+(N) + (P)MB^-(N)$, where the "+" superscript denotes units without defect and the "-" superscript denotes defective units.

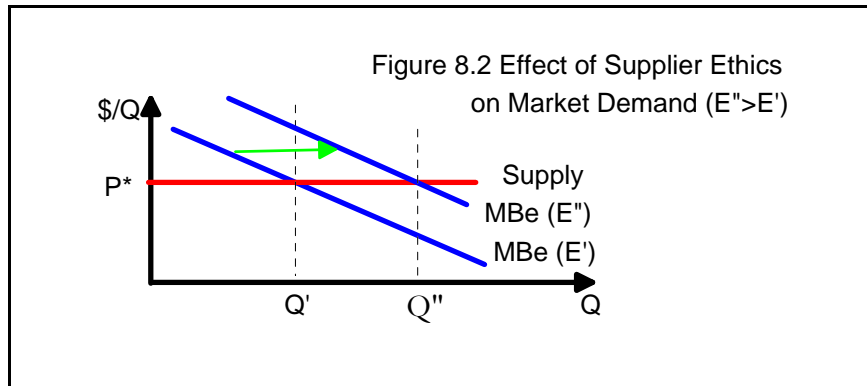
The expected marginal benefit curve (MB^e) lies between the marginal benefit curves of the perfect and defective units of the product. If $P=0.5$, then the expected MB is exactly midway between the two actual MB curves.



At the market price of P^* , an expected consumer surplus maximizing consumer purchases the quantity that equates the expected marginal benefit to its marginal cost. Figure 8.1 illustrates geometry of this choice setting and the quantity purchased, Q^* .

An increase in the average extent of internalized ethics that increase the average quality of the products sold increases the expected marginal benefit from all purchases. As the probability of a defect falls, the MB^e shifts toward the MB^+ curve, and purchases of this consumer increases. Such effects may

be the result of more diligent work effort by production workers ($E'' > E'$) or improved quality control by managers.



This result follows regardless of whether firms or consumers realize that internalized ethical dispositions affect the average quality of industry output or not. An increase in the average diligence and care of employees ($E'' > E'$) reduces the probability and/or extent of product defects. This reduces the risks of exchange for consumers and so tends to increase the extent of commerce ($Q'' > Q'$).

The opposite follows in cases in which the internalized norms of employees change in a manner that weakens interests in careful production and handling of goods. A more haphazard production and assembly of the products and services sold tends to increase the probability of defects. Such changes may arise because of changes in the pool of employees themselves or by shifts in the locations of factories from one moral community to another.

B. Ethics and Prices in Competitive Markets without Quality Differentiation

In the usual textbook characterization of competitive markets, no single firm has a reputation that is different from any other, because they are

produced using the same methods with more or less similar personnel and other inputs. In such cases, a profit maximizing firm would take all the steps that it is aware of to reduce the cost of producing the goods or services of interest, but not necessarily pay much attention to quality control.

If cost saving steps tend to reduce average for the industry as well as the firm, a race to be the least costly producer tends to take place. This race reduces average quality and consumer demand for this product.¹ In extreme cases, markets for such products may disappear for reasons similar to those associated with the problem of fraud in the previous chapter. If consumer expects the average seller to sell uniformly defective products with little no marginal benefits, then there is no point in purchasing the goods produced by such markets.²

The extreme lemons problem outcome can be avoided in several ways, but most of these arguably have ethical foundations. For example, there may be cost saving measures that firms refuse to adopt because they reduce average quality below levels acceptable to their own internalized norms of conduct. Minimum quality standards may be adopted through industrial councils or laws. Firms may be required to exchange defective units for others or to offer money back guarantees. Such laws, of course, improve average quality only if government employees tend to be more diligent (ethical) than those of the average firm in the problematic industry. Corrupt enforcement would not have the desired effect.

If the Protestant reformation increased the average diligence of employees, employers and government officials, it would have reduced the extent of the lemons problem in perfectly competitive markets. If so, Weber's explanation for the greater economic development of northern Europe after the Protestant reformation would have occurred even without its other effects on capital formation or direct market rewards for ethical dispositions.

¹ Figure 8.2 can be used to represent markets as well as consumer choices, if one assumes constant returns to scale in production with respect to both defective and perfect units and identical consumers. Note that the market shrinks but does not necessarily disappear unless the marginal benefits associated with defective units of the good also diminish, that is to say the "rejects" come to be more frequent and have even lower quality than initially.

² This is once again a special case of Akerlof's (1970) lemon problem.

III. Ethics and the Emergence of Quality Differentiation in Output and Labor Markets

We now shift to a setting in which consumers can recognize differences in the average quality of the products sold by individual firms. Suppose that employees differ with respect to an ethical disposition that tend to improve average quality at what ever firm they work at. Suppose also that it is impossible for firms to distinguish among their employees and so differences in diligence go unrewarded. In this case, neither the wage nor employment rates of persons with productive ethical predispositions would any be higher than those lacking such dispositions.

A. Distinguishing among Firms

Nonetheless, some firms will get a bit lucky and employ well above average numbers of diligent employees. Others will get unlucky and employ well below average numbers of diligent employees.

If sufficient differences in output quality emerge so that allow consumers can distinguish between the highest and lowest defect firms, the market may separate into two markets even if the products themselves remain indistinguishable from one another. Instead, particular producers or brands may be used as a proxy or estimator for the average quality of the good. This may occur even when differences in average quality emerge entirely through chance.

Such brand or reputation-based estimators for quality are, of course, imperfect. A firm's reputation can be used as to estimate the quality of its outputs only as long as it continues to produce higher quality products. In this case, firm identity (name brands) would be a relatively good estimator for product quality as long as employee turnover is relatively low.

If the good firms cannot satisfy the demand for their product at the preexisting market prices, they may raise prices without losing their customers, because of the lower risk of defects. In this way, prices at "good" and "bad" stores may come to differ, even though the products themselves are indistinguishable from one another. Although, the product remains

homogeneous as far as the consumers are concerned, difference in defect rates have generated two markets.

When some firms become known for producing relatively more of the "good" version of the product and fewer of the "bad" version, such firms may come to be referred to as the "good" firms, where "good" reflects the accidental higher average virtue of the firm's employees. Good firms produce good products and look after their consumers. Bad firms produce bad products and are indifferent to the effects of their products on their consumers. Indeed, the words "goods" and "services" also have ethical connotations.

It is possible that the ethical differences in the personnel of the firms that survive gradually led to these words being used to describe a typical firm's outputs; other words could have been used.

B. Identifying High Quality Suppliers: Ethics and Third Party Assessments

A single consumer will not usually purchase enough of the products of interest from all the firms in the market to be able to distinguish between the high quality and low quality firms. Some method of aggregating the experiences of a large number of buyers across firms is usually necessary.

Markets themselves provide various signals of quality. For example, if individual consumers follow a rule like "only return to stores at which I have received high quality goods and service in my previous purchase, otherwise try a new store," relatively high quality suppliers would have largest numbers of return customers. As more consumers leave the low quality firms and try the high quality ones, the market shares of high quality firms would increase.

As the greater average quality of the large suppliers becomes noticed, size of firm may be used as another quality estimator, although again an imprecise one. Large suppliers with somewhat higher prices would tend to be (and be believed to be) more reliable sources of products than smaller ones--again without necessarily any conscious strategy on the part of the larger store, but simply their initially better than average personnel.

Alternatively, social networks may be relied upon. Consumers may consult with one another and use "word of mouth" to distinguish among

firms.³ To the extent that the information that informs such informal recommendations is reasonably large and honest, it also creates support for high quality firms. Contemporary web vendors often have consumer comment and ranking information on their websites. If however, the information is dishonest or not grounded in experience, little of value would be learned in this way.

Still another method of identifying high quality firms is the use of expert opinion. There are economies of scale in sampling and testing. An honest “recommendation firms” can produce more useful information than can be gathered from one’s friends and neighbors or that can be deduced from the size of a firm’s clientele. Both of these are partly random phenomena in the environment of interest and so “noisy” signals.

Unfortunately, third party information is only as good as the honesty and diligence of the persons providing it. Unethical firms might hire pragmatists to write testimonials about their products. They might create contests in which their products always win prizes. They may create organizations that assess product quality in which their products usually come out on top. Indeed, most firms routinely use such practices in their advertising campaigns.⁴

Consumers might, thus, look for independent expert assessments of quality. However, independent organizations may also sell their quality

assessments to firms. For example, an independent automobile magazine might improve assessments of the cars of manufacturers that purchase the most advertising in them. The testers themselves could be rewarded (bribed) to tout a manufacturer’s cars or to report relatively negative assessments of their rival’s products. The assessments of nonprofit organizations may similarly reflect manufacturer “donations” to the organization’s fundraising campaigns.

As far as consumers are concerned, honest competent assessments tend to look essentially the same as dishonest sloppily conducted assessments. “Expert assessments” are simply another product available with higher and lower defect rates that cannot easily be appraised by consumers at the point of sale. As true of other products, the reliability of third party assessments of quality are more likely to be higher when the person’s undertaking them are honest and diligent, other things being equal.

When consumers believe that particular organizations tend to be staffed by such person and/or have adopted internal rules that tend to encourage honest accurate assessments, the assessment organizations with relatively stronger reputations for diligence and accuracy will tend to supplant those with lesser reputations, other things being equal.⁵

Ethics, thus, plays several roles in the processes through which market forces can increase the average quality of products (or reduce the cost of

³ See Paula Fitzgerald (1995) for evidence that word of mouth accounts of quality are highly influential.

⁴ Nelson (1974) suggest that the size of an advertising campaign can itself be used as a proxy for quality, insofar as it makes the most economic sense to spend one’s advertising dollars on products most likely to sell in the long run.

⁵ In the United States, Consumer Reports, has a reputation for high quality reviews of all sorts of products. Their non profit nature implies that firms cannot bribe them to overrate their merchandise.

For profit magazines and websites also undertake product assessments, but somewhat less reliably, because they are open to influence by their advertisers. However they can only bias their assessments within limits without losing their readership and thereby their advertisers. The signal of quality from such sources is thus somewhat unreliable, but can still be useful. Objective information may be honestly produced and provided, as when car magazines provide evidence of noise levels in decibels, standardized acceleration rates, top speeds, gas mileage, etc. Other subjective characteristics may be shaded to favor their advertisers as with style or ease of use assessments. Nonetheless, a reputation for honest, diligent, assessments clearly increases readership and advertising revenues from the most honest firms, albeit at the cost of lower revenues from less honest firms.

When the latter spend more on advertising than the former, such private sources of information tend to be unreliable and the magazines remain in

otherwise equivalent products). And, this is the true even in settings in which ethical dispositions, per se, are not directly rewarded or supported by markets.

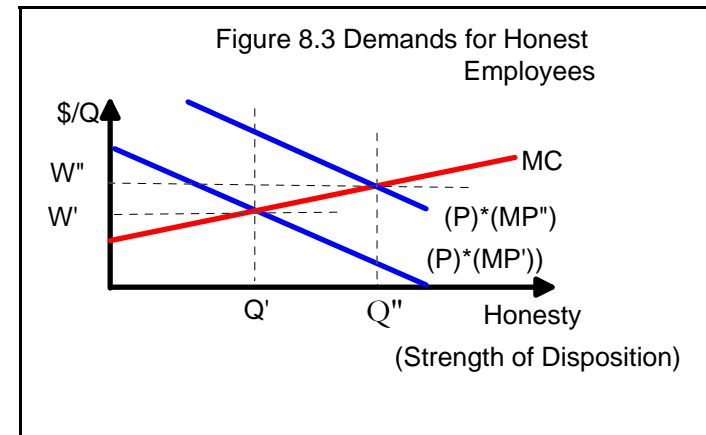
IV. The Demand for and Distribution of Ethical Employees

Of course differences in quality of output are not likely to remain an accident in the long run. When quality pays, pragmatic firm owners will investigate the source of their higher profits and take steps to assure that their relatively high profits continue. In the present context this will induce employers to attempt to distinguish among the ethical dispositions of their existing employees and their new hires.

Markets will tend to economize on virtue if it is relatively scarce. Not every virtue on a philosopher's list is likely to increase production, reduce defect rates, or increase the quality of output, but those that do would be sought and, if necessary paid for. Not all industries benefit equally from honest or diligent employees, because effort and diligence are more easily observed in some production processes than others. Similarly, not all positions within a firm benefit from the same virtues or to the same degree.

A. On the Distribution of Ethical Persons Within an Organization

Figure 8.3 illustrates hiring decisions for two different positions within a single firm. The lower marginal revenue product curve represents a position in which monitoring is relatively easy and so the marginal product of honesty in that position is relatively low. The higher marginal revenue product curve represents a position in which monitoring is difficult or honesty especially important ($MP'' > MP'$). Output prices are the same (P), because both employees are assumed to be members on the same production team. The upward slope of the marginal cost (MC) curve reflects the scarcity of relatively virtuous persons with the skill set necessary for the jobs of interest. To facilitate comparisons across the two positions, assume that the supply of more or less ethical persons available is similar for both positions.



Given a range of potential employees and their costs, the employer is willing to pay for different degrees of virtue for the two positions. For some tasks, honesty is more important than for others ($MP'' > MP'$) and honesty pays ($W'' > W'$).

B. On the Distribution of Ethical Persons Among Industries and Firms

Figure 8.3 can also be used to characterize the demand for honest employees in different industries or markets. Interpreted in this way, the logic of labor markets implies that one industry may outbid another for persons with particular internalized norms. The higher salaries of the “double prime” market would attract the most ethical persons to it.

Difference in regional markets for similar skill-ethics combinations can also be illustrated with the same diagram. Neither firms nor labor are perfectly mobile. Regional differences in supply are possible because of differences in the cultural supports for the ethical dispositions of interest. Regional differences in demand are also possible insofar as ethics are more important for some industries than others and some industries are relatively more important employers in some regions than in others. Both factors tend to affect wage premiums associated with various ethical dispositions.

business for reasons other than their quality assessments such as the quality of their prose and photos. Insofar as magazine subscribers can distinguish between informative and non-informative magazine, a spectrum of more or less informative magazines may be supported by markets.

As true of the output markets, the segmentation of labor markets requires reliable indices of ethical dispositions that employers can easily apply or contractual devices that induce employees to honestly reveal their normative dispositions. Diligence, for example, might be revealed by past employment experience, reference letters from former employers, one's course of study and grades at university, and reference letters from professors. Other evidence might be garnered from criminal records, club membership, and church attendance, as with Weber's Protestantism hypothesis.

That persons involved in scandals and ex-cons are widely reported to have a difficult time finding jobs is, of course, an implication of ethics-based hiring.⁶

V. The Supply of Persons with Market-Supporting Ethical Dispositions

The ethical theories reviewed in part I of the book imply that individuals have many reasons to invest in ethical dispositions. Aristotle suggests that virtuous dispositions tend to increase lifetime happiness and contentment, in part by increasing self esteem. Theology-based theories of ethics argue that internalizing particular rules of conduct increases one's probability of an afterlife or indicates divine favor. Smith suggests that virtue tends to attract praise and approbation from members of one's community, and a subset of virtues tends to be associated with higher income and wealth. Kant argues that performance of one's ethical duties can be a source of sublime satisfaction. Utilitarians suggest that ethics can be a source of long run pleasure which increases social utility as long as it does no harm to others.

Ethics are a means rather than an ultimate end in all of these theories: a means to self esteem and personal happiness, to social status and approbation, and/or to improve society.

Yet there are costs as well as benefits associated with such dispositions. Time and energy are consumed in the process of developing ethical

dispositions. Failures to behave according to one's internalized norms tends to elicit guilt and/or loss of self esteem and disapprobation. Whenever there is a conflict between one's ethical interests and natural inclinations, some pleasures have to be sacrificed, at least in the short run.

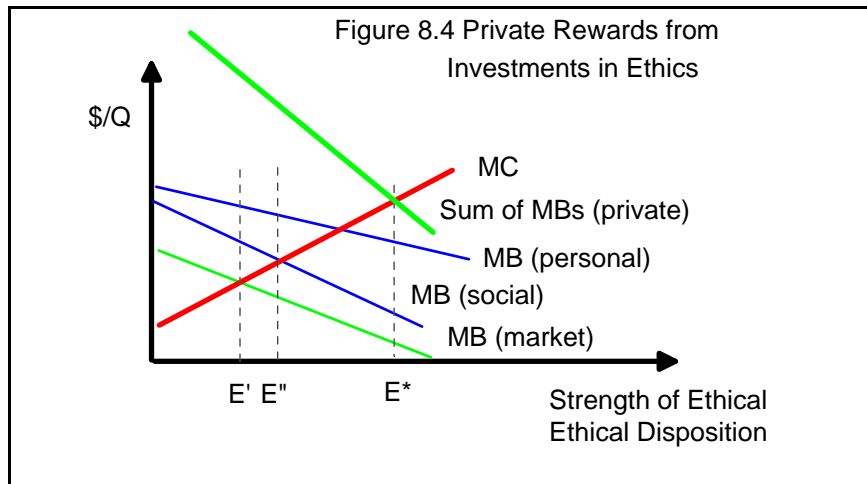
A. Private, Social, and Economic Determinants of Personal Investments in Virtuous Dispositions

The benefits and costs of investments in virtuous dispositions tend to vary somewhat among individuals. Some find virtuous conduct more important for self esteem than others or are more desiring of praise or averse to disesteem than others. Some families and societies reduce the cost of acquiring ethical dispositions more than others, through free advice, assistance, praise, and income. Families and societies also vary in the degree to which particular virtues and skills are praised or otherwise encouraged (or discouraged).

Insofar as the various rewards and costs of ethical dispositions vary among individuals and communities, private investments in ethical dispositions will vary among individuals and communities.

A typical individual's optimal investment in such a virtue is illustrated in figure 8.4. The virtue of interest is assumed to advance all three of the major categories of personal benefits for ethical investments. The private marginal benefits are the sum of the marginal benefits from the effects of increased virtues on self esteem, praise, and income. The diagram makes the usual economic assumption about marginal costs, that they increase with successive sacrifices, although that is not critical to the investment in ethical dispositions being illustrated. The rational person depicted develops ethical disposition E* for this particular area of virtuous conduct.

⁶ Of course, this is not entirely caused by the ethical propensities implied by arrest and conviction. Convicts have often invested less in other forms of human capital as well. An accessible overview of the issues and evidence to the effect of a criminal record is provided at: <https://www.prisonlegalnews.org/news/2011/dec/15/study-shows-ex-offenders-have-greatly-reduced-employment-rates/>.



The same diagram can be used to analyze both short run and long term investments in ethical dispositions although this requires slightly different interpretations of benefits, costs, and the investments made. A short run investment can be regarded as a decision regarding immediate course of action. A long run or lifetime investment is a plan for a series of actions rather than a single course of action. The choice of a plan is based on estimates of discounted costs and benefits associated with anticipated opportunities and choices. A plan commits one to a series of ethically relevant experiences, as with Franklin's list of virtues and records of progress, or taking an ethics course, joining an ethical society, or church.

In either case, one's ethical dispositions are largely the result of the past choices insofar as these produce the habits of mind used to estimate benefits and costs associated with ethically relevant choices. Even without long term commitments, a series of short term decisions ultimately produce one's virtues.

If the virtues are separate, as suggested by Aristotle and Smith and many others, then investments in one will not necessarily affect the others. Some choices may, however, affect more than one virtuous disposition at a time. According to Aristotle, the entirety or vector of a person's dispositions reflect a long series of morally relevant choices similar to those illustrated.

Differences in the marginal benefits and costs associated with investments elicit different mixes of virtues among persons from the same families and communities.⁷ The same logic implies that differences in market settings will also affect investments in virtue at the margin.

For example, suppose that the private and social rewards of two virtues are identical, but that only one of these virtues produced economic rewards as well. The latter would have higher total marginal benefits associated with it than the former. If the costs of acquiring the virtues are similar, the individual will invest relatively more in the economically supported virtue than in the economically neutral virtue.

Similarly, an increase in the economic rewards associated with a particular virtue tends to increase its supply and a decrease tends to reduce its supply. Other virtues may be indirectly affected insofar as the opportunity cost of investments in the other virtues increase somewhat. Time spent on them might to a degree be more profitably devoted to economically rewarding virtues or to simply earning a living. This follows from the logic of rational decision making, even though the personal "supply" of particular virtues is not entirely a response to economic circumstances.

As indicated by the philosophers of part I and figure 8.4, market rewards are only one of the reasons why rational individuals invest in ethics. Indeed only Franklin and Bastiat stressed the financial advantages of ethical dispositions. A person that invests in acquiring an ethical disposition for pecuniary reasons alone tends to invest less than one who is also receives the other two sources of benefits. In Figure 8.4, such economically motivated

⁷ Parental, educative, and religious efforts to inculcate particular values can be regarded as subsidies that encourage children to invest in particular dispositions. The rational choice model implies that the greater are the family and community subsidies (support for particular ethics) the greater is the increase in the ethical dispositions subsidized. That the results differ within families and communities suggests that other private interests and natural abilities vary enough to affect the consequences of social pressures.

investments are the least of all ($E' < E'' < E^*$). Such persons will receive a smaller wage premium, other things being equal, than those who invest in the same virtues for personal and social reasons as well.

The ethical theories of part I and figure 8.4 are thus sufficient to disprove the arguments of economic determinists who claim that personal ethics are entirely determined by markets--rather than markets by ethics--as is sometimes maintained by Marxists and other economic determinists. Any one of the three sources of reward for virtue is sufficient to elicit investments in ethical dispositions, unless the cost is prohibitive. However, the sum is greater than any single motivation. Together they jointly determine the distribution of ethical dispositions within a given community.⁸

B. The Supply of Virtue

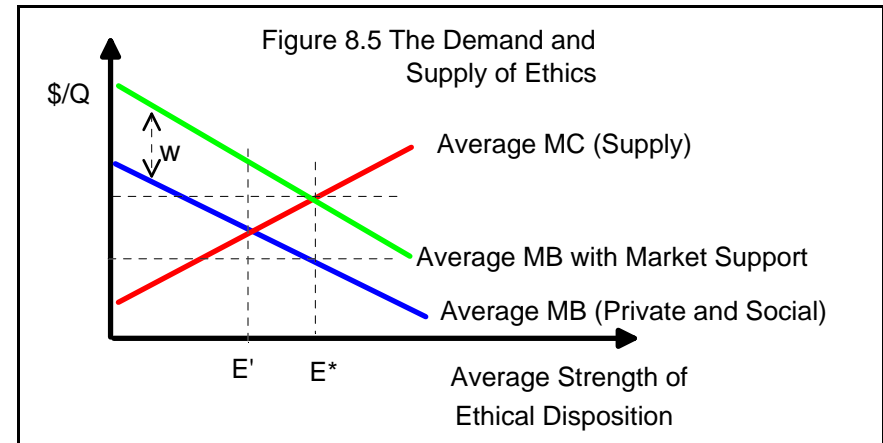
The “aggregate supply” of a particular virtue in a community is the distribution of individual dispositions in the community or market of interest. They are the consequences of a long series of personal choices. This distribution characterizes the number of persons able to resist a particular temptation in the individual domains of virtue. This is one measure of the strength of the various ethical dispositions of an individual and of those that exist in the community.

Both the variation and average of a community’s distribution of dispositions are relevant for markets. If persons with particular ethical dispositions can be identified, then employers will take this into account when choosing the persons to employ. If not, then the average level provides a rough estimate of the ethical propensities of potential employees and of the firms that operate in the community of interest. As noted above, market-supporting norms have effects, whether they are recognized and rewarded or not.

Insofar as the overall “supply” of a particular virtue in a community is the result of past choices and experiences by the individuals making up the

community of interest, the supply of virtue tends to be inelastic in the short run. Marginal investments are affected by economic and other rewards, but only modest increases or decreases are likely in the short run, but larger effects in the long run because of effects of .

Figure 8.5 illustrates how the average virtue in a community tends to be affected by private, social, and market rewards. The particular virtue in question would exist without market support, but tends to increase as markets account for and reward the virtue of interest. In the long run, the average strength of the virtue increases from E' to E^* as a consequence of market rewards such as a wage premium.



When employers recognize and reward the virtue of interest, the average investment in ethics and therefore the average strength of the internalized virtuous disposition tends to increase, albeit slowly. Other virtues that conflict with team production would be discouraged rather than supported. Wage penalties would reduce average MB curves, yielding ones below those associated with private and social rewards alone.

⁸ Both the rewards and costs (pleasure and pain) are also grounded in evolutionary advantages if we accept Spencer’s arguments and those of later evolutionary psychologists. Evolutionary advantages also partly determine one’s innate ability to internalize codes of conduct and the extent to which he or she is inclined to praise others for their virtuous dispositions. Social evolution may also affect the virtues that tend to attract the most praise and vices the most disapprobation.

It bears noting that some firm owners, just as some employees, may have broader objectives than profits alone and may seek to advance both financial and ethical ends. Such owners might, for example, accept a somewhat lower rate of pecuniary return on their investments if ethical returns were sufficiently increased. They might hire more relatively ethical persons simply because they enjoy having such persons as team members. Such employees might provide higher quality and/or lower defect rates than consumers are aware of (or willing to pay for), but which the owner nonetheless takes pride in.⁹

Figure 8.5 implies that a community-wide change in any of the three main benefits associated with ethical dispositions alters the distribution and average strength of the ethical dispositions in the long run. Broad changes in a community's political, economic, or meteorological climate tend to gradually alter the distribution of moral dispositions through affects on the net benefits of moral dispositions known to families and individuals.

VI. The Codetermination of Ethics and the Extent of Markets

Aristotle, Smith and Kant suggest that it is the personal and social returns from virtue, rather than the economic ones that determine individual investments in virtuous dispositions and actions. Nonetheless, as suggested by Bastiat, Franklin and the analysis of this and the previous chapters, markets also reward virtuous conduct by individuals in their various commercial enterprises and thereby create incentives for personal investments in those dispositions.

When ethical propensities create new market opportunities and market reward for those propensities, then there is at least some degree of codetermination between market and ethical systems. This section shows how one can use neoclassical geometry to model this interdependence. It characterizes an equilibrium or steady state in both market and ethical systems. A mathematical analysis is undertaken in the appendix to this chapter.

A. Simultaneous Equilibria in Virtue and Markets

A stable society is characterized by long run equilibria in both commerce and ethical dispositions. The former is characterized by equilibria in all the input and final goods markets affected by the communities distribution of ethical dispositions. The latter is characterized by equilibrium investments in ethical dispositions given private, social, and economic rewards to those dispositions.

The essential features of such an equilibrium can be illustrated with three diagrams if we limit ourselves to a single final good, single input (labor), and single ethical disposition (diligence).¹⁰ This approach may seem a bit far fetched, given the wide variety of final goods, ethical dispositions, and inputs actually present in a commercial society, but such simplifications are often used in economics to illustrate key relationships. A richer mathematical characterization is undertaken in the appendix.

The demand for final goods is affected by ethics insofar as average product quality increases. The supply of final goods is affected by ethics insofar as production costs are affected. The supply of labor is affected by ethics insofar as the occupation of interest is regarded to be ethical or not and the quality of the work provided varies with the strength of the ethical

⁹ There is not necessarily a tradeoff between ethical and profit objectives in cases in which consumers can detect and are willing to pay a premium for the quality sought by such firm owners. Ethical owners that accept a lower rate of return on their investments might displace pragmatists by offering higher quality products at lower costs than pragmatists are inclined to. Markets that attract such persons could be said to be more ethical than others insofar as they are managed by persons with stronger ethical dispositions, tend to employ more ethical persons, and provide exceptional value for their consumers.

Perhaps surprisingly, social investment portfolios that seek out such firms and industries tend to have relatively high returns. There is some controversy about this, but see Orlitzky, Shmidt, and Rynes (2003) for a convincing meta study of the results of 52 empirical studies.

¹⁰ Diligence was not on any of the lists of virtues discussed in Part I, but combines various aspects of self-discipline (Aristotle), prudence (Smith), and dutiful behavior (Kant). It is also consistent with Franklin's discussion of conduct in his discussion of the way to wealth.

disposition.. The supply of persons seeking employment with the productivity enhancing ethical dispositions, in turn, is determined by the private, social, and economic rewards associate with those dispositions, including economic ones. The demand for persons with ethical dispositions depends on their effects on production costs. The supply of persons with ethical dispositions are affected by the rewards and opportunity cost of ethical investments.

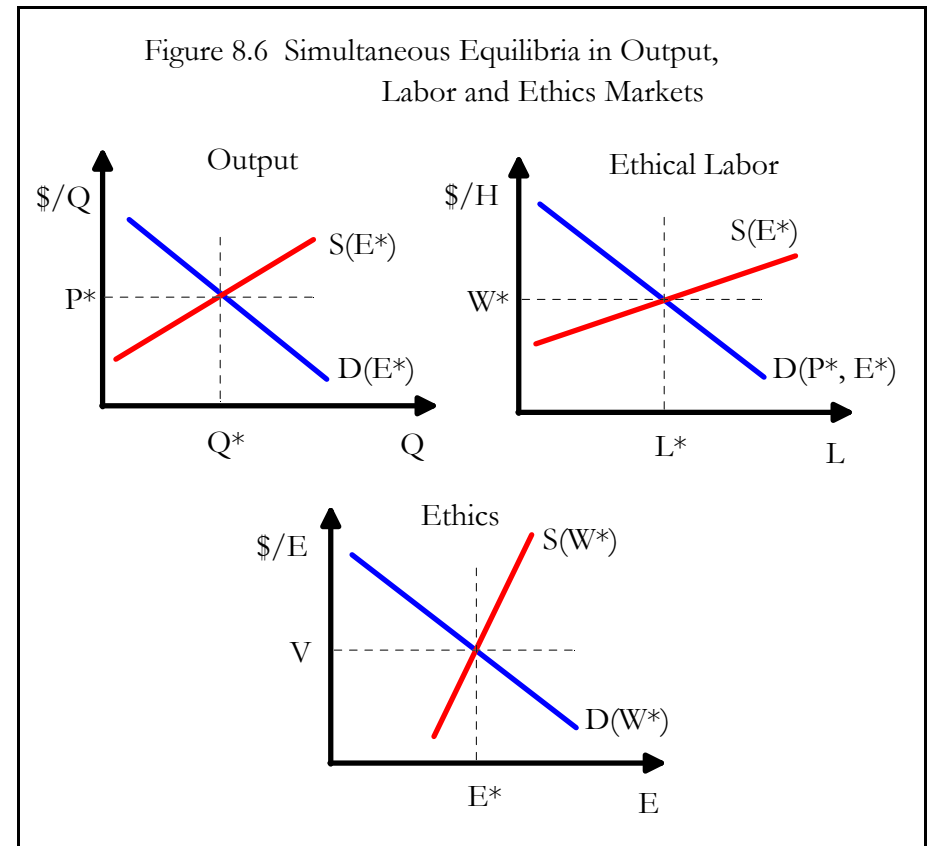
A full equilibrium in the ethics, labor, and output market is illustrated below in figure 8.6. In equilibrium, all three types of “markets” must simultaneously “clear” in the sense that firm owners, employees, and ethical persons are completely satisfied with their own choices given prevailing prices and other factors such as technology, social support, and preferences that determine the shape of the three sets of demand and supply curves.

The existence of such an equilibrium is one explanation for the long term economic and cultural stability of many pre-commercial societies. Gordon (2016) for example reports that prior to 1800 long term growth rates were far less than a percent. Their system of beliefs about the world and the nature of ethics were also very stable for centuries at a time. Such stable or evenly rotating societies were affected by what might be considered political and military shocks (invasions), but the basic pattern of life remained surprisingly stable for generations. Such stability is both an implication and necessity for a community’s distribution of ethical dispositions to fully equilibrate, insofar as the development of ethical and other normative dispositions tends to be a slow process.

A series of major shocks, as noted in chapter 3, undermined the European equilibrium in the sixteenth century, which very gradually produced changes in both markets and ethical systems, rather than returning to the former equilibrium. Such effects can be analyzed with the same three diagrams.

B. The Comparative Statics of Virtue and Market Equilibria

A variety of shocks can disrupt a stationary equilibrium. For example a philosophical innovation may change the cultural support for various ethical dispositions. A technological innovation may affect the relative marginal

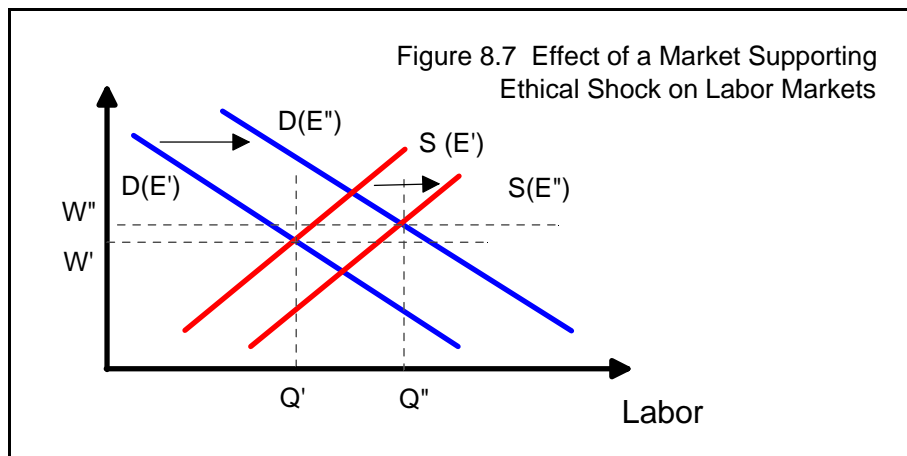


products of high and low ethic persons. Such innovations would effect the manner in which team production is organized within firms and industries, the wage premiums associated with virtuous dispositions, and the distribution of ethical dispositions in the society of interest. All these are codetermined at the margin.

Innovation in ethical systems and other cultural shocks such as the Protestant reformation may alter the distribution of ethical propensities available in the community of interest in a manner that changes the hiring and organizational possibilities of firms. Such innovations may thus indirectly affect the organization of production and thereby the mix of products that can be profitably sold in output markets and the wage premiums associated

with various ethical dispositions. Causal links do not run unidirectionally from markets to ethics or from ethics to markets.

Figure 8.7 illustrates how a cultural shock that increases support for particular norms (ones valued by markets such as diligence) affects the extent and scope of commerce in labor markets. An increase in social support for diligence or honesty, increases the supply of trustworthy persons, would tend to diminishing their wage premiums in the absence of other effects. However, an increase in average diligence increases the marginal product of labor, which increases the demand for labor as well. The higher quality of labor reduces the marginal cost and increases the average quality of outputs in the final goods market. Prices would tend to fall offsetting part of the increased demand for labor generated by their increased marginal product. In equilibrium these effects must balance out, because everything produced is sold. In the illustration, real wages ultimately increase because of the productivity effect of a more diligent work force.



In this manner, a general shift in market supporting norms as suggested by Weber (1905), McKloskey (2006), and the analysis of part II of the present volume can simultaneously increase the extent of commerce and wage rates, much as innovations in an industry's production technologies do.

In a broader characterization with many output markets, many types of labor, and many variations in ethical dispositions, the effects of ethical innovations that increase the productivity of labor are further reinforced by increased specialization.

The analysis also suggests that normative innovations can also reduce the effective supply or productivity of labor. A system of norms that regards diligence as a fools errand or material comfort as an illusion, and supports meditation over an active life, would tend to have the opposite effect on the extent of commerce.

Market support for ethical dispositions are also affected by technology. For example, an technological innovation that reduces the marginal revenue product of labor with relatively trustworthy dispositions relative to those of pragmatists tends to reduce wage premiums associated with ethical dispositions. This reduces the market component of the personal (or family) demand for such dispositions and reduces the average investments in them. The introduction of assembly lines in the late nineteenth century with standardized parts and assembly operations arguably had this effect. Assembly lines reduced the scope for individual initiative and tended to reduce the cost of monitoring individual performance insofar as individuals were responsible for a very narrow range of tasks. Both effects would tend to reduce the demand for trustworthy persons in manufacturing.¹¹

¹¹ Of course the opposite effect is also possible. The ability of a single shirker to affect the performance of an entirely assembly line suggests that timeliness and a predisposition to work hard--a work ethic--might well be more important rather than less important after such production methods were introduced. Smith argues that assembly lines may encourage a work ethic. "The habit of sauntering, and of indolent careless application, which is naturally, or rather necessarily, acquired by every country workman who is obliged to change his work and his tools every half hour, and to apply his hand in twenty different ways almost every day of his life, renders him almost always slothful and lazy ..." [Smith, 1776, p. 4]. Ultimately, this is an empirical question.

VII. Conclusions: Ethics and the Extent of Markets

Incorporating internalized rules of conduct directly into neoclassical economics does not require abandoning the textbook tools of economics, although it does require a broader scope of analysis. Such expansions of the scope of analysis have occurred many times in the past. For example, they were also required to incorporate the effects of taxes, laws, and law enforcement into economic models. In all those cases, expanding the scope of analysis lead to a more complete understanding of the manner in which economic systems operate.

The analysis of this chapter and the previous one demonstrates that internalized norms can have effects on the extent on markets for both final goods and inputs. The effects extend beyond labor markets through effects on the cost of production and the quality of the goods and services produced. Ethical dispositions thus partly determine the mode of production and the types of goods produced, and thereby the extent of commerce.

Although the causal links from ethics to economics are somewhat stronger than those from economics to ethical dispositions, it is clear that there are many interdependencies. For example, premiums for high quality intermediate and final goods tend to produce premiums for diligent skilled labor, which in turn provides economic support for a subset of virtuous dispositions.

As true of the regulatory and tax environment, little is lost by neglecting ethical dispositions in settings in which they are stable, as in short run market analysis in a single community or region. However, as the period of interest expands or regional variation in relevant ethical dispositions exists, ignoring the roles played by ethical dispositions can lead to significant errors, both in modeling causation and interdependencies, and in characterizations of the underlying determinants of market outputs and wage rates.

A. Ethical Dispositions and the Quality of Markets

The direct economic effects of virtuous dispositions are similar to other skills and technologies that tend to make one a more productive member of organizational teams. Persons with particular virtues can be trusted to resist opportunities for shirking, theft, and fraud. They may invest more of their time and energy in perfecting products and production methods. They may take more complete account of the interests of other persons in their organizations and their customers.

A shop owner who cannot find a trustworthy manager to run his or her shop, can be open only limited hours and deal with limited number of customers, namely those attended to by employees that the owner, him- or herself can manage directly during his or her productive hours. When trustworthy employees are also difficult to find, the size of his or her business is clearly constrained. If a shopkeeper one cannot identify reasonably honest employees to run a firm's cash registers, the business is limited to a single checkout run by the owner him or herself or by his or her system of monitoring.¹²

This is not to say that ethical communities provide firms with an endless supply of trustworthy hardworking "angels" to employ, but it is to say that persons with stronger productive dispositions can be trusted to more dutifully perform his or her assigned tasks than persons without such habits of thought and action. This makes some types of markets and some forms of organization possible that would not otherwise be.

B. The Extent of Ethical Dispositions and the Extent of Markets

Market rewards, of course, are not the only reason why individuals and families invest in virtuous habits of mind and action. Virtue as argued by philosophers from Aristotle to Mill create benefits in the form of self esteem, contentment, and praise. Fulfilling one's internalized duties can itself be a direct source of personal satisfaction, as argued by Smith and implied by

¹² Of course there are many technologies for monitoring cash registers, including bells that ring with the opening a cash drawer, but a bit of theft is always possible in cash transactions. Payments may be collected but not "rung" up, or unobservant customer short changed. Credit card limit such opportunities, but create new ones for double charging and falsified returns. On a larger scale, embezzlement remains a common crime even in the computer age.

Kant. Insofar as these non-market supports for ethical conduct vary among persons and communities, so will the distribution of ethical dispositions.

Markets are not required for ethical dispositions to exist. However, to the extent that virtue is a means to an end, rather than an end in itself, as argued by Aristotle, Smith, and Mill, investments in them will reflect their contribution to an individual's ultimate ends. Insofar as material comforts are also means to one's ultimate ends, market rewards will also be taken into account both when allocating time and energy to gainful employment and to developing and perfecting virtuous dispositions. Dispositions that advance both personal ends and are rewarded by markets are especially attractive.

The results of this chapter and the previous one imply that markets will provide additional reasons to invest in ethical dispositions. This is not to claim that commercial societies are necessarily more ethical per se than other societies. Societies with relatively undeveloped market networks also reward virtuous dispositions in various ways. However, it is to say that commercial societies will exhibit systematic differences in the mix and strength of ethical dispositions. Some internalized codes of conduct are more supportive of markets and production than others. These tend to be rewarded by in commercial societies.

C. Ethics and the Commercial Society

All this suggests that differences in distribution of ethical dispositions can account both for part of the differences in the extent of commerce at a moment in time and through time. Some societies evidently have more persons with internalized market-supporting norms than others. That supply is not fixed and changes through time, albeit slowly, as societies and markets evolve.

When internalized norms denigrate commerce, the supply of labor tends to be smaller for a given population. Ethical persons would in such societies would ignore or resist taking advantage of market opportunities, as would the residents of More's utopian society. When commerce is deemed to be meritorious, the labor supply tends to be greater than it would otherwise have been. In such cases, ethical persons will favor rather than disfavor careers in commerce.

This is not to say that a commercial society emerges. Commerce may become relatively more important without becoming the center of life. It becomes a more important part of a good life, as in the world views of Bentham, Bastiat, and Mill, rather than one to be minimized as in the world view of More.

D. Changes in Norms and Urbanization in the Nineteenth Century

There is a good deal of evidence that supports the "ethics hypothesis." Weber's explanation for the industrial revolution is an instance of that hypothesis, and one that is supported by a historical analysis of north European history with respect to ideas about the good life, prospects for salvation and their effects on lifestyles. One need not accept the theological basis of his argument to support it. Secular ideas about the good life and good society were also changing during this period.

The urbanization and commercialization of society in the nineteenth and twentieth century is arguably partly a consequence of technological innovations. Innovations in metallurgy and steam-based technologies reduced transportation costs, increased the power of pumps for water and sewage, and better central heating. These changes made life in cities more comfortable, imports and exports to and from cities less expensive to undertake, and large scale production more profitable. The same technological advances created new economies of scale in production and specialization that attracted large number of persons to communities surrounding new manufacturing complexes.

However, the use of these innovations varied widely around the world and not for just a decade or two, but in most instances for many decades. Thus technology is not itself a sufficient explanation. Technology is portable, but was nonetheless not widely applied outside northern Europe and places with cultural ties to Northern Europe. Societies that were not linked to the ethical innovations of what came to be called the Enlightenment and utilitarianism were less likely to develop commercial societies (or democracies) in the late nineteenth century.

In societies with the greatest cultural ties to northern Europe, increased normative supports for commerce together with technological innovations,

standardization and the increased use of assembly line methods tended to extend the extent of the commercial society. Families tended to substitute store-bought cloth, clothing and food for home made and home grown. Store-bought clothing, bread, or pasta, need not be as good as home made to be a good value. Specialization tended to increase and the market demand for all sorts of labor and products increased.

The extent to which changes in norms played a role in the urbanization of the nineteenth century is evident in the philosophical work reviewed in Part I and also in the policy debates that took place within cities and national parliaments during that time. Utilitarians, for example, lobbied for a broad cross section of policies that tended to make life in cities more attractive and more feasible. Policy debates in the nineteenth century took place with respect to public education, sanitation, and economic regulation. As a rule of thumb, right of center liberals believed that relatively few of the secondary and tertiary problems should be addressed by urban or national governments (as with Spencer) and left of center liberals thought many of them should be (as with Mill).

Urban water and sewer systems were expanded and the use of trash cans introduced. This was partly in response to lobbying by sanitation lobbies who insisted that public health would be improved through improved water supply, trash disposal, and sewage systems.¹³ During the second half of the nineteenth century, a variety of steps were taken to improve urban sanitation, including improved trash removal, cess pools, better water supplies, and smoke stack regulations. A variety of steps were also taken to increase the practical size of markets as well, as with improved highways, rail networks, and canal systems, and reduced tariffs.

The ethics that made all this possible were largely produced through non-market channels and may have been undermined to some extent by mass production, but together a long series of ethical and technological

innovations greatly extended the commercial sphere of life. This was not a centrally managed process, although public policies did help, but reflected changes in ideas about the good life and good society that gradually produced a materially more comfortable life. Shifts in norms that resolved problems associated with team production and fraud, they also encourage savings and investment, and public policy reforms.

That the rise of utilitarianism in the nineteenth century played a role in all of these public policy debates is a subject that we'll more fully explore in part III of the book.

E. Ethical Dispositions and Market Supporting Institutions: Quis Custodiet Ipsos Custodes?

Although ethics are not the only method of reducing problems with life in community, market exchange and team production, it is an important one, and arguably a prerequisite for most of the others. A variety of civil laws, contractual devices and monitoring methods can also reduce transactions costs and increase diligence. For example, Becker (1974) argues that family firms are less dependent on ethics than non-family firms, because even “bad boys” expect to profit from the family business in the long run. The Becker rotten kid hypothesis implies that inheritance law (keeping a business in the family) is a method for reducing the need for ethical employees.

Technological and organizational innovations can also reduce transactions costs and uncertainty as emphasized by persons following North's (1981, 1990) line of research. There is, for example, some evidence that written numbers and language emerged in part to address such monitoring problems associated with long distance trade. Written contracts, money back guarantees, and double entry book keeping were also significant innovations that reduced the need for trustworthy employees. Technological advances in quality control and fraud detection clearly help produce extended

¹³ See Melosi (2005) for a history of the sanitation movement in England and the United States in the late nineteenth century, and of changes in urban sanitation policies. Of course, sanitation was not invented in the nineteenth century. The old testament of the Bible includes several passages with recommendations for cleanliness. Aristotle's *Politics* also includes recommendations for water supplies and house placement. Sophisticated sewage systems can be found in ancient Greek and Roman cities. However, concern for public sanitation in the West became relatively more important in the new urban centers of the West in the nineteenth century, because they were expanding rapidly.

markets for reasons similar to those associated with internalized rules of conduct.

It bears noting, however, that in the absence of internalized norms that are aligned with the organization's mission, its rules will be followed less diligently, and the organization will perform less well. If employees with inclinations to be honest and work diligently can be found, clearly an organization's productive rules are more likely to be followed from top to bottom. Governments as organization are also ultimately dependent on the internalized ethical dispositions of their leaders and employees. Most governmental agencies are more lawful and effective than they would be without such persons on their staffs. That culture matters for governance is clearly indicated by national and international indices of corruption and trust and studies of the economic impact of corruption.¹⁴

The need for ethical conduct by government officials is arguably greater than that for private organizations, because the opportunities for predation are greater. If a law can be enforced in a discretionary manner, court officials may threaten to arrest innocent persons for uncommitted crimes in order to elicit bribes or other services from such persons. Or, a proper universal law may only weakly enforced, because some persons are able to escape punishment because of family, friendship, or through bribery. Either form of discretionary law enforcement tends to weaken the beneficial effects of law enforcement on crime rates such as fraud and theft.

Risks of predation are also associated with the tax authority necessary to fund the provision of government services. A corrupt tax collector may exaggerate tax obligations of persons disliked or be open to bribes. A taxing authority can also threaten persons with audit, new taxes, or false charges of tax evasion to elicit payments to the agency's employees and top officials. All this suggests that the existence of formal institutions does not eliminate the

need for and productivity of internalized codes of conduct. Governmental solutions also have ethical prerequisites.

Predation is less likely in market transactions because the transactions are voluntary and consumers have more discretion to end their relationships with specific firms than citizens have to end their relationships with poorly functioning national and regional governments. As a consequence, the consumer-oriented behavior induced by competition among firms is less dependent on internalized employee and manager norms than are government-citizen relationships. (Even in democracies, the feedback between citizens and bureaucrats is very limited.)

Introducing more market-like relationships between governments and their citizens is not likely to solve such problems. For example, if court decisions are for sale, side payments of various kinds would determine trial outcomes rather than whether a defendant's behavior violated the law or not. If it were well known that the wealthier side of a case always prevailed, few persons would bother bringing suits or pressing criminal charges against persons or organizations wealthier than themselves. As a consequence, the courts would not be relied on by others to assure that contracts are performed or fraud was punished. Wealthy and well connected persons and larger corporations would be essentially above the law.¹⁵

Moreover, the law itself may or may not satisfy Kantian norms for universalism, support Aristotelian ideas about virtue, or be consistent with rule utilitarianism.

The significance of ethical systems for the legal and political institutions of a commercial society are explored in the next part of this book.¹⁶

¹⁴ See, for example, Rose-Ackerman (1999) or Mauro (1995).

¹⁵ Note that anticipating this, persons would not engage in market transactions with such persons if they could avoid it, thus reducing the sphere of commerce. A corrupt legal system provides at best only very weak foundations for a commercial society.

¹⁶ That virtues similar to market supporting ones also tend to make governments more effective and less predatory suggest that markets may also provide support for the norms required for effective governance.

References

- Akerlof, G. A. (1970) "The Market for Lemons: Quality Uncertainty and the Market Mechanism," *Quarterly Journal of Economics* 84: 488-500.
- Becker, G. S. (1974) "A Theory of Social Interactions," *Journal of Political Economy* 82: 1063–1093.
- Fitzgerald, Paula (1995) "Word-of-Mouth Effects on Short-Term and Long-Term Product Judgment," *Journal of Business Research* 32: 213-23.
- Franklin, B. (1734/2012-12-18). "Self Denial Is Not the Essence of Virtue." *Memoirs of Benjamin Franklin; Written by Himself*, Volume II (of 2), Digitized and Distributed by Amazon.
- Gordon, R. J. (2016) *The Rise and Fall of American Growth: The U. S. Standard of Living Since the Civil War*. Princeton: Princeton University Press.
- McKloskey D. N. (2006) *The Bourgeois Virtues, Ethics for an Age of Commerce*. Chicago: University of Chicago Press.
- Melosi, M. V. (2005) *Garbage in the Cities: Refuse Reform and the Environment*. Pittsburgh: University of Pittsburgh Press.
- Mauro, P. (1995) "Corruption and Growth," *Quarterly Journal of Economics* 110: 681-712.
- Nelson, P. (1974) "Advertising as Information," *Journal of Political Economy* 82: 729-54.
- North, D. C. (1981) *Structure and Change in Economic History*. New York: Norton.
- North, D. C. (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- Orlitzky, M., Schmidt, F. L. and Rynes, S. L. (2003) "Corporate Social and Financial Performance: A Meta-Analysis," *Organization Studies* 24: 403-441.
- Rose-Ackerman, S. (1999) *Corruption and Government: Causes, Consequences, and Reform*. Cambridge: Cambridge University Press.
- Smith A. (1776/2002) *An Inquiry into the Nature and Causes of the Wealth of Nations*. Public Domain Books. Kindle Edition.
- Weber, M. (1905/2012) *The Protestant Ethic and the Spirit of Capitalism*. Vook, Inc.. Kindle Edition.

VIII. Appendix: On the Mathematics of Ethical-Economic Equilibrium

Appendix: On the Mathematics of Ethical-Economic Equilibrium

The geometry of a simple homogeneous community that produces and consumes a single universal good was illustrated above. In this appendix a simple mathematical representation of a steady state society is developed. To

illustrate some of the key relationships, it is assumed that relevant utility and production functions are exponential functions, of which the Cobb-Douglas is a special case.

Suppose that the virtue of interest contributes to both human happiness and productivity. Let the typical individual's utility function be: $U = aY^bV^c$. The production of the universal good can be modeled as $Y = dW^eV^f$ where $d = gT^hK^i$. W is the time spent working, V is the worker's virtue, and $d, e, f, g, h,$ and i are constants for the period of interest, where d includes the effects of other inputs such as capital and technology, which are taken to be parameters of this individual's choice. Virtue is also produced with labor, with $V = mM^j$ where m and j are constants and M is the time devoted to moral training. The individual divides his time, T , between moral training, M , and productive effort, W . Unproductive leisure is left out of the model, but could easily be added, but is left out to simplify the mathematics. In production, shirking is simply the counterpoint to the effect of V , it falls as V increases.

The individual maximizes utility by dividing his productive time between moral training and the production of the universal good Y . That is to say he or she maximizes:

$$U = aY^bV^c \quad (8.1)$$

subject to

$$Y = dW^eV^f \quad (8.2)$$

$$V = mM^j \quad (8.3)$$

$$\text{and } T = W+M \quad (8.4)$$

Note that one can use a bit of substitution to account for the three constraints and reduce the two dimensional choice problem to a single dimensional maximization problem.

$$U = a \{d[T-M]^e [mM^j]^f\}^b \{mM^j\}^c = a \{d^b [T-M]^{be} [m^{bf} M^{bj}]\} \{m^c M^c\} \\ = ad^b m^{bf+c} [T-M]^{be} [M]^{bj+c}$$

Differentiating with respect to M yields a first order condition describing the ideal investment in ethical dispositions:

$$ad^b m^{bf+c} \{-be[T-M]^{be-1} M^{bj+c} + (fbj+c)[T-M]^{be} [M]^{bj+c-1}\} = 0 \quad (8.5)$$

which implies that:

$$be[T-M]^{be-1} M^{bj+c} = (fbj+c)[T-M]^{be} [M]^{bj+c-1} \quad (8.6)$$

dividing both sides by $[T-M]^{be-1}$ and $[M]^{bj+c-1}$ yields:

$$be M = (fbj+c)(T-M) \quad (8.7)$$

or

$$(be+fbj+c)M = (fbj+c)(T) \quad (8.8)$$

which implies that the ideal investment in moral training, M^* , for ethical disposition V is:

$$M^* = [(fbj+c)/(be+fbj+c)](T) \quad (8.9)$$

Given that result, the level of virtue and work effort are:

$$V^* = m[M^*]^j \quad (8.10)$$

$$W^* = T-M^* \quad (8.11)$$

which implies an average output per worker in equilibrium of:

$$Y = d[W^*]^e [V^*]^f \quad (8.12)$$

In a Walrasian market, this equilibrium would be induced through adjustments in wage rates which would reflect the average worker's marginal product, $de[W^*]^{e-1} [V^*]^f$, which rises as the virtue of interest increases. Note also that a technological shock that increase e without affecting any of the other model parameters tends to decrease investments in moral training, because e appears on the denominator of equation 8.9, but not in the numerator. More time, however, is consequently devoted to work, with the increase in income generated (the universal good) being sufficient to increase utility, even given somewhat lower productivity and satisfaction from virtue.

The effect of increased cultural support for an ethical disposition can be represented in several ways. First, it can be regarded as a change in m , which has no effect on the individual allocation of time between moral training and work. Second, it can be regarded as an increase in exponent j which makes virtue less costly for individuals to obtain or in exponent ϵ which makes acquiring virtue more personally satisfying. These changes affect both the numerator and denominator of equation 8.9. However, since the denominator is larger than the numerator, the effect on the numerator is relatively greater than that on the denominator and so an increase in ϵ or j tends to increase investments in moral training. Average income may rise or fall depending on whether the reduction in output generated by working fewer hours is more than offset by increases in productivity generated by the increased virtue, which varies with the relative size of the two exponents in the production function. If the productivity effect of the virtue of interest is relatively large, income will raise as well as virtue. In other cases, income may fall, although utility nonetheless increases.

This model can be generalized in a number of way, other virtues can be added by regarding V to be a vector of moral dispositions and the mathematics above to be that associated with the individual elements of that vector. Leisure could also be added, and saving taken into account. As long as the exponential functional form is retained, the above results would still follow, although some terms would be a bit more complex.