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Discussion paper

ADAM SMITH AND MODERN ECONOMICS

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ADAM SMITH AND MODERN ECONOMICS*

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Abstract

In his *Wealth of Nations* (1776) Adam Smith created an agenda for the study of the economy that is reflected in the structure of modern economics. This paper describes Smith's contributions to four central areas of economic theory: The theory of price formation, the relationship between market outcomes and the public interest, the role of the state in the economy, and the sources of economic growth. In each case, an attempt is made to relate Smith's contribution to the state of contemporary economics, showing both the similarities and contrasts between the respective approaches.

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In his 1776 book *An Inquiry into the Nature and Causes of the Wealth of Nations* (WN for short) Adam Smith created an agenda for economic theory whose outline can still be seen in the structure of modern economics. Some central areas in which this is particularly true are his theory of price formation, his ideas about the relationship between the market economy and the public interest, his reflections on the role of the state, and his analysis of the sources of economic growth. The present essay describes the core of his contributions to these areas and tries to relate them to the state of economics as it has developed in particular over the last fifty years.

Price theory

Smith begins his analysis of the determination of the relative prices of goods and services with a story of price formation in a primitive society of hunters. The point of the example was obviously not to present a theory that could immediately be applied to contemporary economic conditions, but to construct a pedagogical case that would lead the reader to understand more complicated issues. In this society hunters aim to kill beavers and deer, both of which animals are desired by consumers. If it takes twice as many hours to kill a beaver than to kill a deer, it follows, Smith argues, that the price of a beaver will be twice that of a deer. Since the prices are determined exclusively by the labor time of the hunters, this is a clear and simple illustration of what became known as the labor theory of value.

The modern reader, accustomed to think of price formation in terms of the joint effects of supply and demand, may be puzzled by the neglect of the demand side in this example. Is demand irrelevant for the understanding of prices? In fact, demand does play a role in the determination of the market outcome, but given the simple assumptions made about costs, the role of demand is solely that of determining quantities, i.e. the number of beavers and deer

that are actually caught and brought to the market. Costs determine prices, demand determines quantities.

Smith generalized the example to the case where costs have more components than simply labor time. If costs also include necessary expenditure on weapons and the possible costs related to the use of the land, the total costs of production have three components that reflect the payment to the three factors of production, labor, capital and land. When all three factors earn their normal reward, this defines the “natural price” of the commodity in question. With this extension, Smith’s original labor theory of value became a more general cost of production theory of value. However, in the real world the actual market price may deviate from the natural price, as in his celebrated example of a public mourning. The death of a king increases the demand for black cloth, but since the supply of cloth in the short run is a given quantity, the effect of the rise in demand is to push up the price. In the longer run, the fact that the market price is above the natural price may lead to the entry of additional suppliers who are attracted to the market by the prospect of earning more than the normal reward to their resources. Moreover, once the period of public mourning has come to an end, demand diminishes and the price falls back to its normal level. This is the normal operation of a free market. However, there are other reasons why the market price may stay above its normal level, the most important of which is a public monopoly that has been established because the government has combined the privilege of exclusive rights of production with the prohibition of entry by other firms. While the competitive price – the price under “the system of perfect liberty” – is “the lowest which the sellers can commonly afford to take, and at the same time continue their business”, the monopoly price is “the highest that can be squeezed out of the buyers, or which, it is supposed, they will consent to give.” (WN, pp. 78-79.)ⁱ

To a large extent, Smith’s reasoning is well in line with modern analysis of competition and monopoly. The distinction between the natural and market price corresponds to the modern

distinction between the long-run and short-run equilibrium price under perfect competition, where the cost-based constancy of the long-run equilibrium price is the result of the twin assumptions of constant returns to scale for the industry as a whole and free entryⁱⁱ. Thus, the modern notion of the long-run equilibrium price is essentially equivalent to Smith's natural price, and deviations of the market price from its long-run equilibrium are explained by the modern economist in terms that are essentially similar to Smith's discussion of the example of public mourning.

But there are also aspects of Smith's analysis that are unsatisfactory. His characterization of the equilibrium price under monopoly is loose and suffers from the lack of an explicit analysis of profit maximization. There is also a notable lack of a general equilibrium perspective when he seems to consider the natural price as caused by the normal rewards to the factors of production instead of – as in modern theory – regarding both commodity and factor prices as being jointly determined by preferences, technology and market structure.

The system of perfect liberty and monopoly are the limiting cases of competition. What about the cases in between, referred to by later economists as imperfect competition? On this point, there is some ambivalence in Smith's writing. On the one hand, he sometimes expresses himself as if effective competition simply means the absence of monopoly, and the crucial condition for the existence of effective competition is free entry. If an existing monopoly position can be challenged by new entrants it is simply not viable, and competition will reign in the long run. But he also admits that even a fairly large number of producers may not be a guarantee of effective competition. A famous passage in the *Wealth of Nations* argues that “people of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the publick, or in some contrivance to raise prices.” (WN, p. 145.) The fundamental insight that producers have individual incentives to deviate

from the competitive conditions for their own benefit underlies modern ideas of competition policy, designed to uphold effective competition in the interests of society as a whole.

What is it that makes such conspiracies against the public likely to occur? Smith points to the role played by the number of producers, and his argument, remarkably, is not the simple and mechanistic one that as the number of producers grows large, each of them will take the market price as given. If trade in a town is divided between two grocers instead of being in the hands of just one, this will make both of them sell cheaper. Suppose now that it is divided between twenty. Then “their competition would be just so much the greater, and their *chance of combining together*, in order to raise the price, so much the less” (WN, p. 361, my emphasis). This line of analysis bears a striking resemblance to the modern game-theoretic analysis of the core which points out that as the number of competitors increases, the difficulty of forming coalitions which cannot be challenged by other coalitions increases until the only equilibrium outcome that remains is that of the competitive equilibrium. Thus, Smith’s theoretical insight was confirmed by the analysis of mathematical economists and game theorists during the 1960s and ‘70sⁱⁱⁱ.

The invisible hand

Modern economics can be thought of as divided into two main branches, positive and normative economics, the former being concerned with descriptive analysis of how the economy works, the latter with evaluation of its performance. Smith’s theory of competition as outlined above clearly belongs to the branch of positive economics. Equally clearly, the most famous of all his ideas, his theory of the invisible hand, belongs to normative economics. His central statement of the idea is the following:

“Every individual necessarily labours to render the annual revenue of society as great as he can. He generally, indeed, neither intends to promote the publick interest, nor

knows how much he is promoting it. ... He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.” (WN, p. 456.)

The context in which this quotation appears has caused some difficulties to interpreters of Smith who are sympathetic to the thought that the private pursuit of self-interest is beneficial to society^{iv}. In fact, the passage appears not as part of a general discourse on the benefits of markets but in a much more specific discussion of the benefits of home versus foreign investment. However, there are in fact a number of similar statements in the *Wealth of Nations* that justify the common interpretation that Smith thought that markets and competition were beneficial to the public interest. But this proposition also raises a number of questions. One concerns the nature of the competition that is supposed to have these beneficial effects. Another is the more precise meaning to be attached to the concept of the public interest in order for the statement to be meaningful. These questions are so central for one’s understanding of the market economy that they have engaged the efforts of theoretical economists ever since.

Regarding the nature of competition it seems clear that Smith’s minimum requirement for markets to work in the public interest was the absence of monopoly. This again was based on the assumption of free entry, meaning that anyone could establish a business if a particular industry were to offer a more than normal return on the resources invested. But as the example of the number of grocers in a town shows, competition works better if there are many producers. This provides a check to private efforts to limit competition, and the benefits of the system of perfect liberty may accordingly be realized.

A more intriguing question is raised by Smith's notion of the public interest. His claim is that private entrepreneurs who move their capital from declining to expanding industries act in the interests of society. But this process inevitably means that some individuals, e.g. the workers in the declining industries, lose while others gain. How can we decide whether there is a net gain to society? In his invisible hand statement, Smith refers to the annual revenue of society or the national income, as we would say today. This indicates that society gains if the winners in the process of structural change gain more than the losers lose. But this is not an entirely convincing argument. Suppose that those who gain are already well off while the losers live in poverty. Would we not in this case hesitate to say that the invisible hand of the market works in the interests of society? And if so, what principles should guide our aggregation of individual interests into a measure of the interest of society as a whole?^v

There are several indications in the text of the *Wealth of Nations* that Smith would indeed attach greater weight to the losses of the poor than to the gains of the rich. A reasonable interpretation of his postulate that competition works in the interests of society is that in the long run, everyone would benefit from living in a wealthy society. This interpretation receives support from another use that Smith makes of the metaphor of the invisible hand. This occurs in the other of his two major works, *The Theory of Moral Sentiments* (TMS), which was first published in 1759^{vi}. There he makes the claim that the rich, without intending to do so, promote the interests of the poor. Although the sole end of the rich in employing the poor

“[is] the gratification of their own vain and insatiable desires, they divide with the poor the produce of all their improvements. They are led by an invisible hand to make nearly the same distribution of the necessaries of life, which would have been made, had the earth been divided into equal portions among all its inhabitants, and thus without intending it, without knowing it, advance the interest of the society.” (TMS, pp. 184-185.)

Here the term “the interest of society” obviously refers to all of its members, rich and poor included. The reference to the equal proportions of the earth is not easy to interpret, but in any case the claim is clearly that the rich provide for the necessities of life that the poor need, although the result is not that there is any complete equalization of the standard of living.

The reasonable conclusion to draw from Smith’s references to the invisible hand as well as from other related passages in his books is that the market economy tends to generate a maximum of “the general revenue of society” or the national income. However, there is no guarantee that the distribution of this income will turn out to be fair or equitable, even if one admits that fair and equitable are concepts of which there are no generally accepted definitions.

With his notion of the invisible hand Adam Smith may be regarded as having founded modern normative economics. The claim that the market mechanism tended to promote the public interest led later generations of economists to explore both the concept of competitive markets and measures of the public interest in order to discover the conditions under which Smith’s claim could be justified in more precise analytical terms. The part of economic theory that embodies the results of these explorations is known as welfare economics, and the core of the theory is the establishment of an equivalence between a competitive equilibrium and what is known as a Pareto optimum. A competitive equilibrium is a situation where all firms and consumers take prices as given in the market and where these prices have adjusted so as to bring about equality between demand and supply in all markets. A Pareto optimum – named after the Italian economist Vilfredo Pareto – is essentially a situation where there is no waste in the economy: it is impossible to improve the outcome for one individual without making somebody else worse off. Consequently, the conclusion is that the market economy under ideal conditions generates a situation where there is no waste; society’s resources are used in an efficient manner.

How are we to judge this conclusion seen in the light of Smith's original statement? On the one hand it marks the results of careful theoretical research that resolves the ambiguities contained in the *Wealth of Nations* regarding the concepts of competition and the public interest. On the other hand, it may come as a disappointment to those who have found inspiration in Smith's vision of the market economy as a system working for the common good. For Smith's "system of perfect liberty" modern theorists have substituted a notion of perfect competition which is so abstract and stylized that it is hardly recognizable as a representation of actual markets^{vii}. And instead of the public interest they have introduced the concept of Pareto optimality that avoids the troublesome aggregation of individual interests but at the cost that hardly any institutional or political reform can unequivocally be said to be in the interest of society as a whole.

However, when it comes to the practical applications of economic theory to issues of economic policy, many modern economists would probably adopt a position that is in fact not very far from that of Smith. While acknowledging the result of economic theory that efficiency will only result when competition is "perfect", they would be inclined to believe that actual markets, if reasonably free from unwarranted public regulations and private restraints on competition might in fact offer good approximations to the theoretical ideal. And regarding the public interest, many would subscribe to the opinion that such a system of free markets would be the best guarantee for an economic and social development that in the long run would benefit all classes in society. They would probably also emphasize that this conclusion hinges not on the analysis of the market system alone but also on the nature of the coexistence between markets and government. This is another topic to which Smith contributed important insights.

The role of the state

For a long time a common interpretation of Adam Smith's economics was that he was a propagandist for *laissez-faire*, i.e. for the view that the best policy was to leave the economy to the free play of market forces. It also seemed to follow from this interpretation that the state – at least with respect to its role in the economy - should be as small as possible. To some extent, this reading of the *Wealth of Nations* was inspired by Smith's polemics against the contemporary view of economic policy which he called mercantilism and which was based on detailed economic regulation of the market mechanism. However, when one takes a broader view of his work and distinguishes between his polemics and his theoretical perspectives on the relationship between markets and government, between the roles of the private and public sectors, a more balanced view emerges.

One important role of the government, according to Smith, was to provide the institutional framework required for competitive markets to function. A legal system that provided a secure framework for private contracts was essential for the market system to work efficiently. More broadly, the role of the state was to protect the members of society, both as participants in market transactions and in their private lives, from violence and invasion from other societies and oppression by other members of society. As we have seen, Smith also acknowledged that, although well-functioning markets were good for society, individual producers might well find it in their individual interests to limit competition by entering into "conspiracies against the publick". Therefore, an important role for government was to design an economic system that as far as possible discouraged the creation of private cartels and monopolies.

A further role of the state is to provide goods and services for which the market system does not provide the right incentives for private producers to supply them. Such goods are known in modern economics as public goods, and in regard to these Adam Smith argues that the role of the state consists in

“erecting and maintaining certain publick works and certain publick institutions which it can never be for the interest of any individual, or small number of individuals, to erect and maintain; because the profit would never repay the expence to any individual or small number of individuals, though it may frequently do much more than repay it to a great society.” (WN, pp. 687-688.)

Just as in the modern theory of public goods, Smith’s emphasis is on the failure of private incentives when it comes to providing public goods at the efficient level^{viii}. The individual producer of a public good will compare his private cost with his private benefit, but he does not take into account the benefits that accrue to other individuals; hence he underestimates the total benefit to society, and too little of these goods will be provided in a pure market economy. In the language of modern economics these are cases of market failure. The economic agent that can overcome these failures is the government; thus we are presented with another positive argument for the role of the state in the economic system. It is together with a well-functioning state that the case for a competitive market system is strongest. Smith also provides a number of examples from different areas of the economy that illustrate the application of this general principle.

Another contribution that Smith makes to the economics of the public sector comes in his analysis of taxation. Taxes are required to finance the provision of public goods and services. But the form of taxation is a matter for public concern since taxes can be more or less harmful for the efficient performance of the private sector. In the design of the overall system of taxation, Smith argues, account should be taken of some general principles that relate both to the equity and efficiency of taxation. Regarding equity he argues that

“[the] subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities; that is, in

proportion to the revenue which they respectively enjoy under the protection of the state.” (WN, p. 825.)

While later economists drew a distinction between taxation according to ability to pay and to benefits received, in Adam Smith’s thought there appears to be no conflict between the two principles. The individual’s income is both a measure of his ability to pay taxes and of the benefits that he receives from the government. The larger is his income, the greater are the benefits that he receives from a safe environment for his economic activities.

Regarding the efficiency of the tax system, Smith’s main proposition is that

“every tax ought to be so contrived as both to take out and to keep out of the pockets of the people as little as possible, over and above what it brings into the publick treasury of the state.” (WN, p. 826.)

What is the difference between the amount of taxes paid by the people and that received by the state? Smith’s statement can be given both a narrow and a broad interpretation. In the narrow interpretation, the difference is simply the costs of tax collection, such as the salaries of the tax inspectors. But in a broader perspective, the costs of taxation should also be taken to include the inefficiencies that arise in the private sector because taxes have adverse effects on individual incentives to work, save and invest. It is clear from the context that Smith had the broader interpretation in mind, and that his thoughts regarding these issues therefore point forward to modern discussions of the social costs of taxation where the cost of these inefficiencies are taken into account in cost-benefit analysis of public projects.

The economic system as an engine of growth

The very title of the *Wealth of Nations* suggests that the main topic of the book is economic growth. But for the modern economist who has been taught economic growth in terms of a series of specialized models of an expanding economy, reading the book may actually be a

puzzling experience, since he may easily conclude that there are hardly any chapters that are explicitly concerned with economic growth, at least not according to modern notions of what growth is about.

However, the modern reader has to adopt a different perspective on growth than the one he has been taught in current textbooks, in which economic growth is typically studied in terms of a few macroeconomic aggregates such as saving, investment and technical progress, and with few references to markets and institutions^{ix}. Smith does acknowledge the importance of capital accumulation for economic progress. But it must also be kept in mind that he saw his theory of the market mechanism and the invisible hand as an integral part of a theory of social and economic progress. Institutional and political reforms that made markets function more efficiently meant that the return on capital investment for society as a whole would become higher; consequently, national income would expand. Well-functioning markets, free international trade and a wisely designed public sector were all elements that would contribute to economic growth. However, in the long run there must clearly be a limit to how much growth can be achieved through institutional and political reform without increasing the amount of productive resources in the economy.

In a prominent place in the introductory chapter of the *Wealth of Nations* Adam Smith discusses the division of labor, and the example that he uses for this purpose is that of a pin factory. The production of a pin is a complicated task, and a single worker with little experience would find it a demanding task to produce a single pin in the course of a day's work. But in the pin factory where the production of pins has been broken down into a number of separate operations, specialized workers are able to produce several thousand times as many pins as an individual worker could do if operating on his own. So division of labor is an important source of productivity growth and economic development.

The question then becomes: What determines the extent of division of labor? Smith's famous answer was that the division of labor is determined by the extent of the market. In the thinly populated regions of the Scottish highlands, every farmer has to be his own slaughterer, baker and blacksmith. With increasing density of population the conditions for division of labor improves, and society is able to reap the benefits from the use of more efficient technologies. This theory of economic progress also throws an interesting light on Smith's price theory. As noted above, this was essentially a cost theory; natural prices were determined by the cost of production, independent of demand. But the theory has to be modified to take account of the gains from the division of labor. An expanding market will improve the scope for specialization in industrial production, so that there is a feedback on costs from the demand side. Production will expand, and goods – especially industrial products – can be provided at lower prices.

This is of course not the whole story of economic growth according to Smith. Workers, both in pin factories and in other sectors of the economy, cannot exploit more specialized technologies without having more real capital available to assist them. The source of real capital accumulation is individual saving. Savers will both invest in real capital on their own and lend to others who in turn will make capital investments. Together with population growth, the accumulation of capital leads to more division of labor and thereby to improved productivity and increasing prosperity.

Perspectives

In 1971 Kenneth Boulding^x posed the interesting question “After Samuelson, who needs Adam Smith?” No doubt, some will find the question provocative because it seems obvious to them that we need to be acquainted with the work of one of the greatest economists in history, just like philosophers need to study the work of Smith's great contemporary and friend David Hume. Others may react differently, arguing that all that is of lasting value in Smith's work

has been incorporated into modern economics, which – unlike philosophy - is a cumulative science, built up by gradually substituting better theories and more substantive empirical knowledge for the less solid insights of the economists of earlier centuries. Who is right?

It is impossible to argue that there is not much truth in the view of economics as a cumulative science. Moreover, it is a fact of life that there are many contemporary economists who do excellent work in research, teaching, public administration and private business with only a very superficial knowledge of the contributions of Adam Smith and the other great figures in the history of economics. Indeed, the time may come when modern economists no longer have much first hand acquaintance with the work of Paul Samuelson, a giant of economics in the 20th century, whom Boulding used as the embodiment of modern economics as seen from the perspective of 1971. For someone who aspires to be a leading economist in the 21st century or to acquire a good understanding of the frontiers of economic knowledge, reading Adam Smith is no substitute for studying contemporary textbooks and journal articles. But in the economic theory of consumption, goods are classified as substitutes and complements; two goods are complements if the consumption of one increases the benefits from consuming the other. Perhaps this is a fruitful way to regard the study of the history of economic thought in general and Adam Smith in particular: It increases the benefits from learning modern economics.

These increased benefits are of several kinds. On the one hand, it is instructive to see how Smith develops concepts and ideas that still form central elements of contemporary economics. In witnessing this early struggle to formulate a consistent theoretical framework for the study of economic life, we learn how ideas and abstractions that we now take for granted were once problems at the research frontier of economics.

During the almost two and a half centuries that have passed since the publication of the *Wealth of Nations* economics has become a very different discipline. Theories of markets and

competition, of the invisible hand and economic growth have been reformulated in terms of mathematical models, and the study of empirical data utilizes advanced statistical methods. A modern economist who wishes to be at the top of his subject needs to master the new analytical tools. But the mastery of techniques is not sufficient to make a good economist. He or she must also be able to develop a more intuitive grasp of the connection between the abstract models and the real economy. In this respect Adam Smith is still a good role model. Of course, the society that was his frame of reference is a very different one from today's world. But his combination of theoretical analysis and broad perspectives on history, institutions and politics is still capable of inspiring his colleagues in the 21st century.

Notes

ⁱ All page references are to the Glasgow Bicentenary Edition, R. H. Campbell and A. S. Skinner eds. (Oxford 1976).

ⁱⁱ The distinction between the short-run and long-run equilibrium price under perfect competition received its first analytical formulation by Knut Wicksell in a book published in Swedish in 1901; this has been translated as *Lectures on Political Economy, Vol. 1: General Theory* (London 1934). The essence of his theory can be found in any modern textbook on microeconomic theory.

ⁱⁱⁱ A pioneering contribution was that by Gerard Debreu and Herbert Scarf, "A limit theorem on the core of an economy." *International Economic Review*, 4 (1963), pp. 235-246. The essential idea can also be found, however, in F. Y. Edgeworth, *Mathematical Psychics* (London 1881).

^{iv} See Sandmo, *Economics Evolving* (Princeton 2011), Chapter 3, for a discussion of alternative interpretations and further references.

^v In modern welfare economics, this aggregation takes place through the theoretical notion of a social welfare function that weighs the utility functions of individuals together to arrive at a measure of aggregate welfare. A special case of this is utilitarianism, where social welfare is taken to be the sum of individual utilities. But this analytical approach was foreign to Smith's way of thinking.

^{vi} Here too, page references are to the Glasgow Bicentenary Edition, D. D. Raphael and A. L. Macfie eds. (Oxford 1976).

^{vii} This model of the competitive economy is usually referred to as the Arrow-Debreu model after its two originators. For a compact statement of it see Gerard Debreu, *Theory of Value* (New York 1959).

^{viii} The modern theory of public goods was founded by Paul Samuelson in his article "The pure theory of public expenditure," *Review of Economics and Statistics*, 36 (1954), pp. 387-389 which has been a major influence on all later discussions. In this and later contributions Samuelson emphasizes, just like Smith, the failure of individual incentives to provide public goods at an efficient level.

^{ix} The seminal contribution to modern growth theory is Robert Solow's article, «A contribution to the theory of economic growth," *Quarterly Journal of Economics*, 70 (1956), 65-94. The present discussion should not be interpreted as a criticism of the literature that stems from Solow's work, which has taught us a lot about the process of growth. But formal model building inevitably involves some narrowing of vision, and it is useful to keep in mind the broader view of Adam Smith.

^x Kenneth E. Boulding, «After Samuelson, who needs Adam Smith?» *History of Political Economy*, 3 (1971), pp. 225-237.

Further reading

A broader presentation of Adam Smith's economic theories as well as his views on public policy is contained in Agnar Sandmo, *Economics Evolving. A History of Economic Thought* (Princeton 2011). While Smith for a long time was regarded as an unqualified spokesman for market liberalism, this view of him has in more recent times been much modified. The modern reevaluation of Smith's and the other classical economists' opinions regarding economic policy and the role of government in a market economy began with the book by Lionel Robbins, *The Theory of Economic Policy in English Classical Political Economy* (London 1952). A more recent study is Emma Rothschild, *Economic Sentiments. Adam Smith, Condorcet, and the Enlightenment* (Cambridge 2001). This book discusses Smith's theories as part of the general body of thought in the period of the Enlightenment. Amartya Sen's "Uses and abuses of Adam Smith," *History of Political Economy*, vol. 43 (2011), pp. 257-271, considers both Smith's economics and his wider views on social institutions and justice.

The Glasgow Bicentenary Edition of the *Wealth of Nations* includes a very informative Introduction by the editors Richard H. Campbell and Andrew S. Skinner. A companion volume of articles on Smith's economics is Thomas Wilson and Skinner eds., *The Market and the State. Essays in Honour of Adam Smith* (Oxford 1976). This contains essays on various aspects of Smith's economic thought, including some that have not been touched upon in the present essay. Another volume, Skinner and Wilson eds., *Essays on Adam Smith* (Oxford 1975), also includes some articles on economics in addition to contributions on more philosophical topics.

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2014

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