

POPULATION AND POLICY IN MARSHALL'S ECONOMICS

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I. INTRODUCTION

The Malthusian population doctrine formed an integral part of both theory and policy in classical economics: “[T]he Malthusian theory lent support to the subsistence theory of wages and prepared the way for the Ricardian preoccupation with the land-using bias of economic progress; by explaining poverty in terms of a simple race between population and the means of subsistence, it provided the touchstone for all classical thinking about economic policy” (Blaug 1997, p. 65). Among historians of economic thought there is probably little in this statement with which to disagree. A variety of interpretations, however, have been given to the subsequent career of the population doctrine, including its place in the economics of Alfred Marshall. Economists after John Stuart Mill, Joseph Schumpeter argued, found the population doctrine to be of little theoretical use to economics: many leading economists of the neoclassical school, including Alfred Marshall, “paid their respects to it, even though they no longer based upon it any part of their analytic structures” (1954, p. 890). Mark Blaug, by contrast, suggests that the analysis of population in Marshall’s *Principles of Economics* indicates an “orthodox classical attitude to population problems” (1997, p. 385). Yet another perspective is offered by John Whitaker who remarks that early in his career Marshall resolved to transform the “old political economy into a new science of economics, open to the progressive intellectual and social movements of the day.” His intent was to leave behind the sterile controversies and pessimistic pronouncements of the old political economy, including those associated with the population doctrine (1996, vol. 1, pp. xvii, xx).

The object of this paper is to consider in what respects Marshall adopted an “orthodox classical attitude” to population analysis while at the same time leaving behind any pessimistic results of the old political economy. His treatment of population theory will be examined as well as his policy recommendations. It will be seen that Marshall’s analysis of population is indeed “classical” in important respects, in particular its similarity to the analysis of Adam Smith and, contrary to Schumpeter’s view, forms an integral part of his analytical structure. Yet, in contrast to classical writers like Malthus, Ricardo, and Mill, and more in keeping with Adam Smith’s approach, his contributions to the subject directed attention away from the population issue as a basis for analyzing poverty and for developing public policy. For Malthus,

Ricardo, and Mill, the principle of population posed an ongoing and permanent problem which could potentially be eased through good policy. In Marshall's analysis, it will be argued in this paper, there was no "population problem" as such and therefore no need for specific policy to address such a problem, at least in civilized countries. Marshall essentially put the population problem to rest for Western countries through an original and insightful demonstration that a benign principle of population was operative in wealthy nations. His formulation, however, did have its limitations, it will be concluded below. Marshall's immediate successors had little interest in or ability in overcoming these limitations or in extending his economic analysis of population dynamics.

II. EARLIER APPROACHES TO POPULATION AND POLICY

Donald Winch observes that Robert Malthus can be treated from the standpoint of a practical demographer wanting to explain population trends with a view towards measures to achieve more desirable rates of population growth. From this viewpoint, the "significance of Malthus's ideas lay primarily in their defeat of a long-standing tradition which had automatically linked a large and growing population with economic progress and national power" (Winch 1997, p. 111). Among mercantilist writers, large and increasing numbers facilitated the goal of keeping wages close to a physical subsistence level. This was thought to be necessary for competitiveness in international trade and to provide effective work incentives. Since no automatic mechanism was evident for accomplishing this, it must be artificially achieved through various laws and incentives to encourage early marriage and large families (Overbeek 1974, p. 31; Furniss 1920, pp. 105–11, 148–69). By the time of Malthus, the "grip of Mercantilism upon the thought of men had been broken . . . the prosperity of the individual—that hypothetical average unit of the population—engaged the thought of writers upon public policy" (Furniss 1920, pp. 29–30). Adam Smith, of course, was instrumental in breaking this grip in his emphasis on the welfare of the worker and in his view of population and policy.

Population in Smith's system, like most other economic variables, had a self-regulating nature and was therefore not made the object of policy. It was a dependent variable which responded to demand factors, "as nearly as possible in the proportion which the demand for labour requires," and was proportioned to the available employment and standards of comfort. This view was the general starting point of Marshall's analysis as well. Smith illustrates the economic and population growth process in relation to real wage improvements and standards of comfort by examining England's experience in the eighteenth century. Improvements in agriculture, manufactures, and commerce raised the demand for labor and wages which encouraged the "marriage and multiplication of labourers."¹ Wage increases, however, had not been exhausted by the population increase. Wages were "more than what is precisely necessary to

¹Behind the desire for marriage, in Smith's view, is a strong investment motive in producing children: "The value of children is the greatest of all encouragements to marriage. We cannot, therefore, wonder that the people in North America should generally marry very young." He observes that "the labour of each child, before it can leave their home, is computed to be worth a hundred pounds clear gain" (1776, pp. 70–71). Marshall recognized

enable the labourer to bring up a family” and permitted a greater quantity and variety of food as well as clothing and household furniture. This led, Smith notes, to the “common complaint that luxury extends itself even to the lowest ranks of the people, and that the labouring poor will not now be contented with the same food, clothing and lodging which satisfied them in former times.” In relation to worker industry, he takes the opposite of the mercantilist view of the utility of low wages: “Where wages are high . . . we shall always find the workmen more active, diligent, and expeditious, than where they are low” (Smith 1776, pp. 76–78, 80–81).

There is thus a strong basis for optimism in Smith’s analysis, as would be the case in Marshall’s thought. The supply of labor adjusts to the growth of labor demand in a way that produces long-term increases in real wages as levels of efficiency rise from the progress of the division of labor and greater conveniences are incorporated into standards of living. There is no concern about under-population, as found in mercantilist writings, nor alarm about excessive population growth, as among the Malthusians, no strictures against propagation among the poor:

It is the sober and industrious poor who generally bring up the most numerous families, and who principally supply the demand for useful labour. All the poor indeed are not sober and industrious . . . Such disorderly persons, however, seldom rear up numerous families; their children generally perishing from neglect, mismanagement, and the scantiness or unwholesomeness of their food (Smith 1776, p. 823).

Though high infant mortality rates among “disorderly persons” are noted, generally the adjustment of the supply of labor to demand is efficient, timely, and beneficial to the common laborer, in Smith’s analysis. Consequently, there is no need for special policy in relation to family creation. Admittedly, this rosy scenario applied primarily to western nations. In stagnant Asian countries, “want, famine, and mortality” were to be found. This is not attributed by Smith to any inherent population mechanism but to defective laws and institutions and bad colonial rule (Smith 1776, pp. 71–73).

The tenor of population analysis changed with the publication of Malthus’s *Essay*. Marshall explains it in a way which is typical of his historical, evolutionary mode of analysis (1920, p. 177):

The eighteenth century wore on to its close and the next century began; year by year the condition of the working classes in England became more gloomy. An astonishing series of bad harvests, a most exhausting war, and a change in the methods of industry that dislocated old ties, combined with an injudicious poor law to bring the working classes into the greatest misery they have ever suffered, at all events since the beginning of trustworthy records of English social history.

This was crowned, he notes, by the ill-advised proposals of Godwin and others. But soon came a change in outlook: “Thus while the recruiting sergeant and the employer of labour were calling for measures tending to increase the growth of population, more far-seeing men began to inquire whether the race could escape degradation if the

an investment motive in bearing and employing children among the lowest ranks of the working classes. See the text.

numbers continued long to increase as they were then doing.” Chief among these was Malthus, Marshall suggests (1920, p. 178).

In Malthus’s “total population theory” (Spengler 1945), as in Smith’s analysis, the demand for labor is the basic determinant of population growth: “What is essentially necessary to a rapid increase of population is a great and continued demand for labour; and this proportioned to the rate of increase in the quantity and value of those funds, whether arising from capital or revenue, which are actually employed in the maintenance of labour” (Malthus 1836, p. 234). Worker well-being would generally be determined by the response of population relative to the increased labor demand and worker income. J. J. Spengler notes (1958, p. 166): “Malthus at times writes as if population elasticity ordinarily approximated unity and might even for a time exceed it.” Under these circumstances, a growing demand for labor would have few of the favorable aspects on worker well-being described by Adam Smith.

Ricardo, like Malthus, assumed that the demand for labor governed its supply: “Every rise of profits is favourable to the accumulation of capital, and to the further increase of population” (Ricardo 1951, p. 281). However, because of diminishing returns in agriculture, the natural price of labor will rise and the rate of profits will decline, resulting in a decline in the demand for labor. The relatively efficient and balanced adjustment of labor supply to labor demand found in Smith’s account is not as evident in Ricardo’s treatment. Malthus’s various descriptions of a constant effort towards population increase are incorporated into Ricardo’s view of population. Malthus notes, for example: “[T]here are few states in which there is not a constant effort in the population to increase beyond the means of subsistence” (Malthus 1803, p. 25). Ricardo, following this logic, states (1951, p. 57): “In the natural advance of society, the wages of labour will have a tendency to fall, as far as they are regulated by supply and demand, for the supply of labourers will continue to increase at the same rate, whilst the demand for them will increase at a slower rate.”

The tenor of the Malthusian/Ricardian economic and population analysis, then, is considerably different from the sanguine outlook of Smith:

[T]he Malthusian analysis, in spite of its successive qualifications, coupled with the Ricardian theories of rent and the falling rate of profit, leads to a certain pessimism. Stress is placed on the contradiction between the potentially great increase in population in contrast to the potentially limited increase of the means of subsistence. Doubts arise as to whether, without the checks of vice and misery, population can accommodate itself to the niggardliness of nature (Coontz 1968, p. 91).

A “certain pessimism” about population growth can be overcome, perhaps, if state policy is thought to be adequate to the need. In contrast to Adam Smith’s *laissez-faire* attitude towards the question of population growth in relation to the laborer’s well-being, important policy issues follow from the Malthusian/Ricardian analysis. In the first *Essay*, Malthus suggests some “palliatives” which “are all that the nature of the case will admit” to relieve the wants of the lower classes, including the abolition of the parish laws (Malthus 1798, pp. 26–35). In the second edition of the essay, moral restraint was introduced to help relieve the admitted “melancholy hue” that he had imparted to the subject and to “soften some of the harshest conclusions of the first essay” (Malthus 1803, p. 9). Among other things, he advocates that an extensive system of national education be established: “In addition to the usual subjects . . . I

should be disposed to lay considerable stress on the frequent explanation of the real state of the lower classes of society, as affected by the principle of population, and their consequent dependence on themselves, for the chief part of their happiness or misery." The existence of strong incentives for early marriage among the working classes meant that moral restraint was not an automatic or universal check but must be cultivated. Proper education would "have the fairest chance of training up the rising generation in habits of sobriety, industry, independence, and prudence" (Malthus 1803, pp. 274, 278). Malthus is led to this result (1803, p. 331): "On the whole, therefore, though our future prospects respecting the mitigation of the evils arising from the principle of population may not be so bright as we could wish, yet they are far from being entirely disheartening, and by no means preclude that gradual and progressive improvement in human society."

Regarding policy Ricardo drew this conclusion (1951, p. 61): "It is a truth which admits not a doubt, that the comforts and well-being of the poor cannot be permanently secured without some regard on their part, or some effort on the part of the legislature, to regulate the increase of their numbers, and to render less frequent among them early and improvident marriages." Ricardo distinguished between necessities and "comforts and enjoyments" and he observes: "The friends of humanity cannot but wish that in all countries the labouring classes should have a taste for comforts and enjoyments . . . There cannot be a better security against a superabundant population." But in the absence of specific policy such as improved education this was merely a wish rather than a normal expectation. In a period of rising demand for labor, he allowed for a lag of population behind a rise in wages and an upward shift in the standard of living. But "in practice it is invariably found that an increase of population follows the amended condition of the labourer . . . and it is because the number of people is increased, that wages again fall" (Ricardo 1951, p. 207).

III. THE POPULATION PRINCIPLE IN MARSHALL'S NEW SCIENCE OF ECONOMICS

Chapter 1 of Marshall's *Principles of Economics* is indicative of the purpose noted above by Whitaker that Marshall desired to transform the old political economy into a new science of economics and put behind old controversies and pessimistic pronouncements. He begins his treatise by laying out his principal interest: "Now at last we are setting ourselves seriously to inquire whether it is necessary that there should be any so-called 'lower classes' at all" (1920, p. 3). The disappearance of the lower classes through the processes of economic evolution, and with it the issue of overpopulation, was something that Marshall envisioned early in his career. In "The Future of the Working Classes" written in 1873 he argued that the distinction between working man and gentleman would eventually disappear. To complement this outlook, the danger of overpopulation was disputed: "This is the danger most to be dreaded. But even this danger is not so great as it appears" (Marshall 1925, pp. 102, 114). The technical support for this conclusion is provided in his *Principles of Economics*. To Marshall, a misery and vice view of population pressure had not yet been put to rest and was still an important influence on social thought. Mill had raised the

alarm of population pressures to new heights with a corresponding need for greater policy efforts to reduce marriage and birth rates, even following the sharp criticism by Senior and others of a hard-line principle of population: “When the object is to raise the permanent condition of a people, small means do not merely produce small effects, they produce no effect at all” (Mill 1848, p. 383). Blaug remarks: “In restoring Malthus’ arguments Mill affected something of a counterrevolution” (Blaug 1958, p. 117).

In Marshall’s *Principles*, the need for a new science of economics as well as new policy is rationalized (1920, p. 37): “Though economic analysis and general reasoning are of wide application, yet every age and every country has its own problems; and every change in social conditions is likely to require a new development of economic doctrine.” Marshall saw the need to come to terms with Malthus’s doctrine as an obstacle to informed policy. Few of the practical conclusions of Smith, Ricardo, and Malthus, he wrote in a letter, were “applicable to the modern age of steam, electricity and education of the masses” (Whitaker 1996, vol. 3, p. 270). Alluding to the principle of population, an important objective in reaching new practical conclusions was to “find reasons for believing that if the strength and vigour of the race improves, the increase of numbers will not for a long time to come cause a diminution of the average real income of the people” (Marshall 1920, p. 203). John Maloney (1985, p. 38) makes the point that Marshall’s *Principles* “exerted—and was meant to exert—a radical reforming influence insofar as it destroyed much self-justification among the apathetic. By making the question of poverty central and diagnosing it as avoidable, it barred the way to economics as a court of appeal for the complacent.”

In his treatment of population, due credit is given to Malthus’s reasoning within the context of the times while the need to modify it in view of changed circumstances is emphasized. Marshall’s method was to analyze population from within a supply and demand framework, following earlier writers, and to incorporate within the analysis an historical, evolutionary perspective. This was accomplished by considering the effects of technological change and the growing demand for educated labor, the evolution of the occupation and skill structures of society, the relative contraction of the “lower classes” that were the focus of earlier writers regarding population pressures, the growth of wants and activities influencing patterns of household spending and standards of life, and changes in human nature itself. The result is that Marshall’s formulation of population theory goes well beyond the static, classical framework of analysis and new practical conclusions are reached.

IV. MARSHALL’S SCRUTINY OF EARLIER VIEWS OF POPULATION AND HISTORICAL POPULATION GROWTH

In Marshall’s *Principles of Economics* the question of population change in relation to the laborer’s well-being is a central concern of the volume. He provides a critical examination of the views of earlier writers and in so doing places Malthus’s essay in an historical context to show both its merits and its limitations. He also devotes a chapter (Book IV, chapter IV) to the growth of population from ancient times to the end of the nineteenth century in which the emphasis is on a complex of factors at

work of varying importance in different historical periods. In this chapter, he presents the view that population change has been influenced by individual choices, with a regard for the future and parental duties, as well as by religious, moral, and legal sanctions, sometimes with the object of quickening and sometimes retarding population increase. An emphasis is placed on customs and social policy which limited the ability to marry early, or at all, and thereby restrained the growth of population by limiting the number of births. Marshall's multi-causal treatment of historical population change has the intended effect of undermining any simple misery and vice treatment of the subject.

In his critical examination of the views of earlier writers, the purpose is to make clear the separation of the older political economy from the present and to articulate the policy implications of the change. He observes that Adam Smith accepted the Physiocratic doctrine as his basis, that there was a natural law of population whereby population tended to increase up to the margin of subsistence. Smith, however, corrected it by insisting that the necessaries of life were not a fixed quantity but varied over time and place: "But he did not work out this hint fully." Smith also insisted that the liberal reward of labor increased worker industry. Consequently, his concept of the term "natural rate of wages" did not involve a sharp definition or the notion of a rigidly determined wage: "And yet he sometimes falls back into the old way of speaking, and thus makes careless readers suppose that he believes the mean level of the wages of labour to be fixed by an iron law at the bare necessaries of life" (Marshall 1920, p. 507).

Malthus's reasoning, according to Marshall, consisted of three steps. The first relates to the supply of labor, that the growth of population would have been rapid and continuous in the absence of the positive checks or voluntary restraint. The second relates to the demand for labor: "The produce which Nature returns to the work of man is her effective demand for population: and he shows that up to his time a rapid increase in population when already thick had not led to a proportionate increase in this demand." The third was Malthus's conclusion that "what had been in the past, was likely to be in the future; and the growth of population would be checked by poverty or some other cause of suffering unless it were checked by voluntary restraint" in the form of abstention from early marriages (Marshall 1920, pp. 178–79). Marshall suggests that Malthus's position "remains substantially valid" regarding the first step in his reasoning but is otherwise antiquated.

In Marshall's view, Malthus, Ricardo, and Mill, like Adam Smith, placed undue emphasis on factors tending to reduce wages to a bare subsistence and failed to adequately appreciate the relationships between habits of living, efficiency, and wages. He quotes Malthus as saying that an inferior mode of living may be a cause as well as a consequence of poverty but faults him for tracing this effect almost exclusively to an increase of numbers: "[H]e does not anticipate the stress which economists of our own generation lay on the influence which habits of living exercise on the efficiency, and therefore on the earning power of the labourer." Ricardo did little better and "frequently adopts a mode of speaking similar to that of Turgot and the Physiocrats; and seems to imply that the tendency of population to increase rapidly as soon as wages rise above the bare necessaries of life, causes wages to be fixed by a 'natural law' to the level of these bare necessaries." Mill, Marshall suggests, made no great advance in the theory of wages. He followed Malthus in stressing that a

fall in wages may lead the working classes to lower their standard of comfort which becomes a new minimum that tends to perpetuate itself. This was understandable because “it was only in the last generation that a careful study was begun to be made of the effects that high wages have in increasing the efficiency not only of those who receive them, but also of their children and grandchildren” (Marshall 1920, p. 510).

V. MARSHALL'S BENIGN THEORY OF POPULATION

In his history of population, Marshall described various ways in which elasticity was eventually introduced into the rigid medieval and mercantilist economy and “population was able to avail itself in some measure of the increased demand for labour” (1920, p. 187). From 1760 onwards, workers were able to easily find employment in the new manufacturing or mining districts. The historical freeing-up of the labor market was significant for Marshall's treatment of population. It meant that population could be treated, as a first approximation, as an economic variable and analyzed within an ordinary supply and demand framework. Assuming “other things being equal,” including the state of knowledge and ethical, social, and domestic habits, he establishes the principle that labor earnings or the demand price of labor determines the supply of labor: “[T]here is a certain level of the demand price which will keep them stationary . . . a higher price would cause them to increase . . . a lower price would cause them to decrease. Thus economic causes play a part in governing the growth of population as a whole as well as the supply of labour in any particular grade. But their influence on the numbers of the population as a whole is largely indirect; and is exerted by way of the ethical, social and domestic habits of life” (Marshall 1920, pp. 217–18).

The demand for labor affects population growth, he argues, by way of the timing of marriage and the birth rate: “The number of births depends chiefly on habits relating to marriage . . . the longer marriages are postponed beyond the age that is natural to the country, the smaller is the birth-rate.” For the most part, like earlier writers, he avoids mention of birth control within marriage. Also like earlier writers, he links the age of marriage in modern civilized countries to standards of comfort: “[T]he average age of marriage depends chiefly on the ease with which young people can establish themselves, and support a family according to the standard of comfort that prevails among their friends and acquaintances; and therefore it is different in different stations of life.” The incomes of the middle and professional classes typically reach a maximum at age forty to fifty and the expenses of bringing up children are great and last for many years, he argues. Artisans earn nearly as much as they ever will at age twenty-one. Among laborers, full wages can be earned at age eighteen and children begin to pay their own expenses very early: “In consequence, the average age at marriage is highest among the middle classes: it is low among the artisans and lower still among the unskilled labourers.” Birth rates, therefore, are lower among the former than the latter (Marshall 1920, pp. 180–86). Marshall has, in effect, disaggregated the population mechanism of Malthus and Ricardo from a class of common laborers to the variety of occupational and professional classes that he saw emerging over the nineteenth century.

A good example of Marshall's approach to population analysis is his account of changes in marriage and birth rates in the nineteenth century. The emphasis is on timely equilibrating processes whereby population is proportioned to the available employment, changes in the affordability of marriage among both the working classes and the well-to-do classes, and standards of comfort, thereby rendering positive checks to population inoperative. Early in the century, he explains, wages were low and a rise in the price of wheat made it economically less feasible for laborers to marry and have a family while maintaining their standard of comfort. It raised the income of many well-to-do and increased their marriage rate but the net effect was to lower the overall rate. Over the century, the price of wheat fell and wages rose. The falling demand for labor during economic downturns, he argues, was about equal in its influence on marriage to the fall in the price of wheat, with little change in the marriage rate. The period from 1829 to 1834 saw both a recovery of prosperity and a decline in the price of wheat, acting together to bring a significant rise in the marriage-rate. After 1873, marriage rates declined. Marshall attributes this to a slowdown in the growth of income and the demand for labor which more than offset the effect of a decline in the price of wheat. He explains that the age of marriage is also affected by the "habits of different nations" and that marriage rates, birth rates, and death rates are falling in almost every nation (Marshall 1920, pp. 189–92).

As noted above, Marshall criticized earlier writers for failing to appreciate the relationship between wages and worker efficiency as well as the efficiency of their children and grandchildren. Consequently, this relationship bulks large in his analysis of wage growth and population growth. In elaborating this relationship, he establishes a distinction between *standard of life* and *standard of comfort* and uses it to implement his critique of the population and wage views of earlier writers. Standard of life refers to activities that develop the higher faculties, prompt new and wholesome wants, and improve efficiency and energy: "A rise in the standard of life for the whole population will much increase the national dividend, and the share of it which accrues to each grade and to each trade. A rise in the standard of life for any one trade or grade will raise their efficiency and therefore their own real wages" and, at the same time, encourage the growth of numbers. A rise in the standard of comfort, by contrast, "may suggest a mere increase of artificial wants, among which perhaps the grosser wants may predominate." This would not provide a basis for an increase in efficiency and wages: "[I]n England now wages are not kept down by extreme pressure of numbers on the resources of agriculture, and can be raised only by increased efficiency" (Marshall 1920, pp. 689–91). He disputes the idea, emphasized by Mill, that a rise in the standard of comfort would increase wages by way of a reduction in population growth:

[W]hile the present good fortune of abundant imported food attends on the English people, a rise in their standard of comfort could not increase their wages, merely by its action on their numbers . . . If on the other hand a rise in the standard of comfort went together with a great increase in efficiency; then—whether it were accompanied by an increase in numbers or not—it would enlarge the national dividend relatively to population, and establish a rise of real wages on an enduring basis (1920, pp. 691–93).

In this manner, by distinguishing between standard of life, with emphasis on the growth of efficiency as a basis for increased wages, and the older concept of standard of comfort, with its presumed relation to population numbers and wages, Marshall has moved a good way towards undoing the policy orientation of Malthus, Ricardo, and Mill whereby policy was judged in terms of its effects on family creation and birth rates.

Carrying the argument further, Marshall, in contrasting his views with those of earlier writers, makes a distinction between the immediate effect on family creation and the effect on the next generation of a rise in labor demand and wages: "It is indeed true that, though a temporary improvement will give a good many young people the opportunity to marry and set up house . . . yet a permanent increase of prosperity is quite as likely to lower as to raise the birth-rate." The specific effect on the birth-rate and population growth depends on the consumption pattern of the labor force. Marshall distinguishes between necessities that are required for the work in each grade to be done efficiently, conventional necessities that are demanded by custom and habit but which could theoretically be dispensed with from an efficiency standpoint, and consumption that consists of habitual comforts which is superfluous regarded as a means of production.

The question of how closely the supply of labor responds to the demand for it, he suggests, is in large measure a question of the relative shares of each type of consumption good: "The early French and English economists . . . classed nearly all the consumption of the working classes under the first head . . . partly for simplicity, and partly because those classes were then poor in England and very poor in France; and they inferred that the supply of labour would correspond to changes in the effective demand for it in the same way." Malthus's analysis, which lay emphasis on a "constant effort towards an increase of population," captured this effect fairly accurately for that period of time, in Marshall's view. Further, "an answer not very different . . . must be given to the question with regard to the less developed countries even now." Few resources go into education and training and other activities which raise the standard of life. Efficiency and wages which are low reach a maximum at a young age and consequently early marriage is customary and birth rates are high: "[A]ny increase in their earnings would result in so great an increase of their numbers as to bring down their earnings quickly to nearly the old level." The population mechanism therefore operates to keep wages "close to the cost of rearing and sustaining a rather inefficient class of labourers" (Marshall 1920, pp. 530–31).

The wages in wealthy countries, by contrast, are higher and allow an efficient class of workers to be reared and sustained. Further, an increase in wages in western countries "almost always increases the strength, efficiency, and wages of the coming generation," via investment in the personal capital of children and rising standards of life (1920, p. 531). Still, he notes: "It remains true that, taking man as he is, and has been hitherto, in the western world the earnings that are got by efficient labour are not much above the lowest that are needed to cover the expenses of rearing and training efficient workers, and of sustaining and bringing into activity their full energies." Though wages are not much above a level which provide for the "necessaries" for life and efficiency in the western world, an increase in wages, following Marshall's logic, does not prompt the same rapid increase in population as in less advanced countries or in England a century ago. The length and expense of education and

training does not permit early marriages and large families while at the same time maintaining the desired standard of life which tends to increase with each generation. The result is that a cycle of growth and prosperity as well as timely population equilibrating processes are built into a modern economy, in Marshall's view.

VI. ANCHORING POPULATION THEORY IN TECHNOLOGICAL CHANGE

Marshall's view that a benign population mechanism is operative in advanced nations, that an increase in numbers poses no threat to living standards, is anchored in his analysis showing that technological change has prompted a growth in demand for educated workers, greater individual spending and time devoted to education, and therefore delayed marriages and fewer births. He argues that business decision-making had fundamentally altered the direction of technological change and the nature of work during the nineteenth century. A historic shift to higher-level work for the laboring classes had occurred via the law of substitution which "tends to make one method of industrial organization supplant another when it offers a direct and immediate service at a lower price" (Marshall 1920, p. 597). The result is a "general rule . . . that any manufacturing operation that can be reduced to uniformity . . . is sure to be taken over sooner or later by machinery . . . if the work to be done by it is on a sufficient scale" (Marshall 1920, p. 255). The effects of this process were to increase the scale of manufactures, make them more complex, and increase the demand for workers capable of doing higher level work: "[T]he growing demand for intelligent work has caused the artisan classes to increase so rapidly that they now outnumber those whose labour is entirely unskilled. A great part of the artisans have ceased to belong to the 'lower classes'" to which excessive population growth was attributed by the classical economists (Marshall 1920, p. 3). His "roughly estimated" numbers show the effects of this process: unskilled labor constituted about a fourth of the population; lower kinds of skilled work, a fourth; and highly skilled or responsible work, one half, whereas a century ago more than half of the population was unfit for any skilled labor, beyond the ordinary routine of agriculture, and less than a sixth fit for highly skilled or responsible work (1920, p. 716).

Earlier writers tended to follow Adam Smith's view that in the "progress of the division of labour" the work of the masses was becoming increasingly simple and repetitive and typically required little more than a few days of on-the-job training (Smith 1776, pp. 123, 134). Smith's analysis, in effect, provided a technological anchor for the common labor supply to which the population principle applied in classical thought. There was minimal demand for educated workers and the masses generally lacked income and motive for investing in education or personal capital. This view of economic development in relation to human capital formation was decisive for classical economics down to John Stuart Mill (see Bowman 1990). Ricardo, for example, made reference to the "different qualities of labor" or "species of manual dexterity," implying that labor skills were easily acquired in the workplace (Ricardo 1951, vol. I, pp. 20–22). Similarly, Mill's analysis of division of labor in the emerging large firm was essentially an extension of Smith's work with the same deductions regarding a

declining demand for educated/trained workers and the development of a common labor supply compensated at a single “general wage” (Mill 1848, pp. 132–44). Because of the simplicity of work tasks for the masses, full wages in classical thought could be earned at an early age and children could be put to work early to augment the family income. The implication for population dynamics was that early marriage was a rational choice of workers, providing benefits and pleasures. The consequence for society was a high birth rate and, in Marshall’s view, Malthus’s analysis roughly captured this effect for the late eighteenth and early nineteenth centuries.

Marshall’s view of technological change implied an evolution of the population mechanism and with it a new view of the need for policy related to the population issue. In the Malthus/Ricardo/Mill view, there was a need to encourage prudential control through state-supported education and other policy because of the strong incentives for early marriage among the working classes. A basis for optimism was provided by Malthus’s view of an endogenous change in behavior: “When the resources of a country are rapidly increasing, and the labourer commands a large portion of necessaries, it is to be expected that if he has the opportunity of exchanging his superfluous food for conveniences and comforts, he will acquire a taste for these conveniences, and his habits will be formed accordingly” (Malthus 1836, pp. 224–25). Still, doubts arise. An example is a letter (1830) by Malthus on the subject of emigration:

But though it would be a contradiction to all theory and all past experience to deny the strong tendency of population to recover lost numbers, and the extreme difficulty of keeping the labouring classes from increasing beyond the effectual demand for labour, yet I think that both policy and humanity require that we make every practical effort to improve their condition (quoted in Hollander 1997, p. 903).

Marshall eases such doubts without the need for specific policy to address the population issue. The common labor that was the focus of earlier writers regarding population pressures was declining as a share of the labor force through ordinary supply and demand processes: “Thus machinery constantly supplants and renders unnecessary that purely manual skill, the attainment of which was, even up to Adam Smith’s time, the chief advantage of division of labour” (1920, p. 256).

Workers with more education and training, paid at higher wages, were being substituted into production processes. From the employer’s perspective, this was a cost-effective measure: “[H]ighly paid labor is generally efficient and therefore not dear labour” (Marshall 1920, p. 510). From the laborer’s perspective, while the demands of modern technology required increasingly costly education and training, the prospects of higher paid work provided strong financial incentives to expend the necessary time and money: “The motives which induce a man and his father to invest capital and labour in preparing him for his work as an artisan, as a professional man, or as a business man, are similar to those which lead to the investment of capital and labour in building up the material plant and the organization of a business” (Marshall 1920, p. 619). This is only to be thought of as a “broad indication of general tendencies” (1920, p. 571) but Marshall argues that it is reinforced by cultural factors. The growth of general enlightenment and responsibility towards the young had “turned a great deal of the increasing wealth of the nation from investment as material

capital to investment as personal capital." Economic incentives and cultural factors therefore combine to induce the postponement of family creation as the demand for skilled labor grows. Subjectively considered, as workers migrate over time from low to high skill occupations, a new standard of living is established in their minds which to them represents a minimum, or something close to it, to cover the expenses of rearing and educating a new generation of efficient workers. The possibility of a threat to this standard of living, or the desire of young people for an even higher standard, leads to the postponement of marriage and declining birthrates. The threat appears realistic because of the income uncertainties in a changing economy and the relatively small earnings "surplus" enjoyed above the earnings needed to cover the expenses of rearing and training efficient workers (Coontz 1968, p. 95).

VII. USE OF THE POPULATION PRINCIPLE TO IMPLEMENT A REFORM PROGRAM

Marshall, like the classical writers, was greatly concerned about the condition of the lower classes. His system of economics, including its scope and method, its analytical apparatus, and its research direction and propagation of results, was oriented towards policy that had a bearing on the condition of the poor and other issues of his time (see Bowman 2004). He breaks with the classical economists in that he makes no use of the population principle to advocate a reform program aimed at achieving more desirable rates of population growth for society. Labor markets tend to operate in ways that ease concerns about excessive population growth. The growth of population is constrained by the relative efficiency of labor supply and demand processes in bringing a shift to higher-level abilities and in maintaining desired and growing standards of life. However, important differences between the labor market and other markets must be taken into account, he argues (1920, p. 504): "[F]ree human beings are not brought up to their work on the same principles as a machine, a horse, or a slave. If they were, there would be very little difference between the distribution and the exchange side of value." From this basis, Marshall generates a reform program and on various occasions the population principle is used in a rhetorical fashion to help implement it.

Marshall identifies several "peculiarities of labor" which "affect not merely the form, but also the substance of the action of the forces of demand and supply" in the labor market. His analysis provides a strong case for believing that there is systematic under-investment in spending on education and training, or personal capital, due to market failure. The most important peculiarity was of the nature of an externality: "[T]hose who bear the expenses of rearing and educating [a child] receive but very little of the price that is paid for his services in later years." The same problem existed regarding technical training of adults. These and other peculiarities meant that skill development lagged by a generation what was warranted by technical change and the growing demand for higher-level abilities (1920, Book VI, chapters IV, V). The concept of personal capital provided Marshall with a foundation for a wide range of policy proposals because of the broad meaning given to it. Any activity, public or private, that improved the physical, mental, and moral

health and strength of people counted as investment in personal capital. It therefore had a direct bearing on policy related to education, housing and town planning, and medical and sanitary factors. To all of these, he argued, public money should “flow freely” (Marshall 1920, pp. 564, 717–18). Marshall’s position in relation to these needs as well as to taxation, trade unions, and income distribution rested on an efficiency argument related to the concept of personal capital and the factors accounting for it in the next generation of workers (see Bowman 2004).² The classical economists are criticized for not recognizing this sufficiently:

The older economists took too little account of the fact that human faculties are as important a means of production as any other kind of capital; and we may conclude, in opposition to them, that any change in the distribution of wealth which gives more to the wages receivers and less to the capitalists is likely, other things being equal, to hasten the increase of material production (Marshall 1920, p. 229).

Marshall’s emphasis on policy led him to engage in a variety of activities to bring the findings of economics to policy processes. The professional economist “desires to influence the public” (quoted in Deane 1990, p. 126) and the need to influence public opinion was growing: “Public opinion, based on sound economics and just morality” will be “ever more and more the arbiter of the conditions of industry” (Marshall 1881, p. 403). Robin Matthews notes (1990, p. 30): “Marshall’s policy recommendations are fired off in all directions—to employers and workers and consumers, as much as to governments.” Though he did not use the population doctrine to argue for a reduction in society’s rate of population growth, nevertheless he frequently brought the population issue into the discussion to promote a reform program rationalized on the theoretical grounds just noted. An example of this is his *Lectures to Women* (Marshall 1995) delivered in 1873. Marshall’s policy recommendations here were aimed at middle-class women. His goals, apparently, were two-fold. He wished to convey what they should know to understand society’s ills and the possibilities of progress. Secondly, he wanted to inspire them with a bold vision of what they could contribute to society outside the home, particularly in relation to the problem of poverty (Tullberg 1995, pp. 47–48). Early in the *Lectures* he addresses the population issue because of its presumed bearing on the question of poverty and quickly confines it to a subset of the working classes where an investment motive might be felt in having children and neglecting their education: “When we speak of the pressure of population on the means of subsistence, of course we must refer to that part which has practically no education; where people are able to apprentice their children to say, a bricklayer’s trade, they obtain much more than is necessary for their support” (Marshall 1995, p. 104).

Marshall proposes a multi-faceted effort to deal with the problem, including mandatory education of children. He introduces the notion of market failure, noted above, that he later was to elaborate in his *Principles of Economics*. Education brings higher productivity and wages but parents reap few of the benefits and therefore neglect their

²Regarding Marshall’s view of the nature of the education process, Tiziano Raffaelli notes (1995, pp. 7–8): “Education, in a broad sense, means not only schools, but also trade unions and cooperatives, a more stimulating environment (green commons, popular museums, playgrounds, etc.) and a plan of charity conceived as part of a wider system of social incentives rewarding merit.”

children's education: "From this point of view the doctrine that we must let things drift would not hold." Education in youth "will make the laborer an efficient man . . . the country can afford to pay for such an education and be sure it will be repaid in the next generation." With the mandatory education of children and the attention of the laboring classes to their responsibilities when they marry, "we shall have put aside the fear of the growth of population and the possibility of the little children being sacrificed to production" (Marshall 1995, pp. 105–107).

Another example of Marshall's approach to policy is represented by his *Lectures on Progress and Poverty* (Stigler 1969). George Stigler notes (1969, pp. 181–82) that most economists of the 1880s paid little attention to Henry George's criticisms of private property in land but Marshall was a conspicuous exception. He delivered three lectures on the subject in 1883. In countering George's proposals for the elimination of poverty, Marshall expounded some themes that had become characteristic of his thinking. Economic change had resulted in relatively less poverty. Legislation such as the Factory Acts and the new Poor Law had reduced many evils. Technological change combined with education would further reduce the class of unskilled workers and degrading work and raise wages. Manufacturing was subject to increasing returns and land to diminishing returns but the latter was offset by improvements in the arts of production and easy importation of raw produce.

Marshall's policy recommendations in the *Lectures* bear directly on the population question and are a good example of the remark by Matthews that they are fired off in all directions. The working classes are encouraged not to marry so early and to save money before marriage so that "children could be better brought up, and so more easily pushed into the highest ranks of industry." If they married as late in life as the middle classes, "population should become nearly stationary." The wages of children should be dispensed with until a late age and the State should in return give a good general and technical education to all and a first-rate education to even poor children who showed promise. The working classes and their organizations are encouraged to "take an active part in putting down the imposture of lazy and vicious paupers" so that "public and private charity might be given to the upright, industrious, and thrifty working-man without fear of doing more harm than good." The State should "increase the vigour of its factory and sanitary inspection." Everyone should get a higher sense of duty and strengthen the family bond (Stigler 1969, pp. 205, 209–10).

In short, in the *Lectures on Progress and Poverty* Marshall developed themes that are common in his work, including the view that policy could bolster the forces of evolutionary progress. His conception of man allows that policy, in the broadest sense, can alter the behavior of individuals and the organizations that they participate in. In the *Principles of Economics* he observes that economics, and by implication policy, deals with "man as he is: not with an abstract or 'economic' man; but a man of flesh and blood," a man who is "neither above vanity and recklessness, nor below delight in doing his work well for its own sake, or in sacrificing himself for the good of his family, his neighbours, or his country; a man who is not below the love of a virtuous life for its own sake" (1920, 26–27). Regarding population change specifically, Marshall's counsel to the working classes, here and elsewhere, to put off marriage is aimed at strengthening the benign population mechanism already leading to this result that he elaborates in his *Principles of Economics*.

Two years after delivering the *Lectures on Progress and Poverty* Marshall gave a public lecture on “The Pressure of Population on the Means of Subsistence.” The *Malthusian*, the journal of the Malthusian League, viewed the lecture as something of an endorsement of the principles of Malthus but was disappointed that nothing was said in favor of limitation of births. The writer reached this amusing conclusion: “We had a clergyman in the chair, and Toynbee Hall is next door to the church, which may possibly have had something to do with the lame conclusion arrived at” (Marshall 1975, p. 386). The lame conclusion included an argument against any need for policy to reduce population growth: “Since the whole English people, except the residuum, is a long way above the average of the world, it is scarcely possible to suppose any curtailment of English population which would not lower the average quality of the inhabitants of the world, their average wealth and average well being.” Marshall also provided an argument in support of his reform agenda by broadening the concept of subsistence to include urban amenities. Beyond raw and manufactured commodities, “there is a third set of physical needs—pure air and pure water and space for recreation.” Lack of these “caused by close packing” in large towns had debilitating effects on both adults and children: “This is I think the most important side of the pressure of population growth. It is the chief cause of progress being slower than at first sight we should expect . . . If there is any expenditure of national money on behalf of the working classes of large towns that is justifiable it is in the direction of diminishing the evils which life there is bringing on the rising generation” (1975, pp. 391–93). He also urged people to give up the attractions of London life in the interests of healthier living elsewhere.

Marshall again dealt with the population issue and its policy implications in testimony before the Royal Commission on the Aged Poor (1893) which met to consider the adequacy of the system of 1834. In 1892, he had written two articles in *The Economic Journal* on the subject of Poor Law reform. These articles formed the basis of his testimony before the commission. In the first he appealed to “ethico-economic facts” to dispute some of the older maxims regarding poor law relief that had been “fostered by legislators, by economists and others, and by the action of the stern school of Poor-law reformers” (1992a, p. 187). In the second article he responded to criticism by a Mr. Bosanquet of the views presented in the first article: “He says it is ‘nothing short of a public misfortune’ that a writer on economics should not ‘grasp the essential sameness of the conditions under which Poor-relief is still carried on, and, so far as we can judge, always must be carried on, with those pointed out by the Report of 1834.’ But are they really the same?” (1992b, p. 876). Marshall provides reasons for believing they are not.

Marshall’s intention in his testimony before the Commission was two-fold, to persuade it that the assumptions underlying the system of 1834, which expressed a Malthusian fear of excessive population creation, were no longer valid and to submit a plan of action adapted to the present time:

You see all these statements about wages are repetitions of doctrines that were universal among the economists of the beginning of the century; you have the same phrases, the same tone of thought . . . that if you tax the rich, and give money to the working classes, the result will be that the working classes will increase in number, and the result will be you will have lowered wages in the next generation

... As regards this a change has come, which separates the economics of this generation from the economics of the past; but it seems to me not to have penetrated the Poor Law literature yet ... it is reasonable to hope that instead of a mere reckless increase of population, which would have been the inevitable consequence early in the century, there would be a rise in the standard of living, and wages would rise (Marshall 1926, p. 225).

Marshall's plan of action contained a variety of elements with at least two core ideas. Working class organizations and their leaders, he argued, must participate in the process of reforming the law and in the administration of the system of relief works. In addition, relief must be dispensed with consideration of the complicated nature of individual cases of poverty. Consequently, he favored a "mixed administration of assistance through semi-public bodies open to representatives of the working classes" which would conduct detailed investigations such as those done by the Charity Organisation Society (Raffaelli 1995, pp. 16–17).

VIII. SUBSEQUENT THEORIZING ON POPULATION

D. A. Walker observes (1974, p. 540): "Marshall's analysis of the long-run supply of labor marks an important stage in the history of the subject. He refined the classical doctrines, synthesized them with his own original contributions, and produced a formulation that became the new starting point of a subsequent rich line of development." It was a starting point but the line of development, arguably, suffered from the inadequacies of Marshall's own formulation. Marshall's views, like those of earlier writers including Malthus, lacked relevance in the sense that declining birth rates were thought to occur primarily through the postponement of marriage. He did not apply his economic analysis, which attempted to account for the timing of marriage and consequent child-bearing, to fertility within marriage. In fact, declining birth rates have frequently occurred with little change in the age of marriage. Fertility rates have declined dramatically in the U.S. since its founding but the average age of marriage in New England during the colonial period—21 for women and 24 for men—differed little from the average age of Americans in the 1970s (Hughes and Cain 2003, p. 47). The following criticism of Malthus applies importantly to Marshall as well:

The greatest failure of Malthus's Theory of Population is in explaining the fertility transition from high, mostly uncontrolled fertility within marriage to modern low fertility. The process began first in France at the time Malthus was writing. Parts of the United States and Hungary also began at about that time. The rest of Europe followed sometime between 1870 and 1914. In no case was the long-run downward trend in fertility caused by a downward trend in national income [or demand for labor] (Weir 1989, p. 230).

In addition, Marshall's own neoclassical framework of economics set limitations on further development of an economic explanation of population dynamics. In his history of population, he recognizes that "variations of commercial prosperity" (Marshall 1920, p. 190) have an affect on the demand for labor and marriage rates. Nevertheless, a strong tendency toward full employment was postulated by his

economic theory. A mere three pages in his *Principles* is devoted to “unemployment caused by fluctuations of credit” (1920, pp. 709–11):

In short, Marshall was barred from further progress in his study of population along the lines suggested by his own analysis . . . Neither the contemporaries nor the successors of Marshall made any further advance. The Malthusian analysis was retained as a theoretical framework, but no attempt was made to develop an economic interpretation of population dynamics. Rather, it was tacitly assumed that the demand for labour had been maintained but that somehow or other in civilized countries the causal nexus between demand for labour and its supply had been broken (Coontz 1968, p. 97).

After Marshall, including Keynesian analysis, population became an independent variable in economic theory. Only recently has a neoclassical framework of analysis been brought to bear on fertility questions. As David Weir notes (1989, p. 230): “Neo-classical theories of fertility, as in the work of Becker (1981), salvage Malthus’s theory as an income effect in a model of the demand for children. Substitution effects from a rising price of children relative to other consumption goods may be a more important determinant of fertility trends during development, overwhelming the income effect.”

IX. CONCLUSIONS

Marshall took as his starting point for the analysis of population the classical view that demand for labor is the basic determinant of population growth. His approach is more akin to Adam Smith’s than that of later writers because of Smith’s description of relatively strong self-regulating properties of population and his *laissez-faire* attitude towards the question of population growth in relation to worker well-being. Population is a dependent variable which responds to demand factors and is proportioned to the available employment and standards of life, a generally beneficial process to the working classes in the thought of both Smith and Marshall. There is no “population problem” as such and therefore no need for special policy to address such a problem. Marshall alleviates any doubts that, without the positive checks of vice and misery operating on the death rate, population can accommodate itself to resource scarcities.

Marshall’s analysis of technological change and the growing demand for educated labor, the evolution of the occupation structure of society, and the distinction between standards of comfort and standards of life, put a distinctive historical, evolutionary stamp on his formulation of population theory and took him well beyond Smith’s simple supply and demand analysis or the “orthodox classical attitude to population problems” (presumably of Malthus, Ricardo, and Mill) attributed to him by Mark Blaug. The Malthus/Ricardo/Mill stress on a potentially great increase in population in contrast to a potentially limited increase in the means of subsistence was not a relevant frame of reference for understanding population change in a modern economy because of its static, unhistorical nature, in Marshall’s view. The current generation of economists had “learnt to take a larger and more

hopeful view of the possibilities of human progress," particularly in view of the effectiveness of policy in strengthening the forces of social and economic evolution (Marshall 1920, p. 48).³

Marshall could perhaps be criticized for giving such sparse attention in his *Principles* to Malthus's introduction of moral restraint and the subsequent discussion in his *Essay and Principles of Political Economy* of the real possibilities for the "gradual and progressive improvement in human society." In a footnote he notes merely that in the second edition of the essay Malthus "took a less despondent view of the future of the human race; and dwelt on the hope that moral restraint might hold population in check, and that 'vice and misery,' the old checks, might thus be kept in abeyance" (Marshall 1920, p. 179). However, even if Marshall had taken greater account of Malthus's evolved argument, the tenor of his analysis would have remained significantly different. In the Malthus/Ricardo/Mill view, active policy was essential to give effect to prudential restraint among the lower classes. The masses of common labor did simple and routine production tasks, with little prospect of a change in the nature of work for either the current or the next generation of workers, and had little or no incentive to postpone marriage and spend on education and training. Improvements in the condition of the laboring classes could not "in the nature of things" be permanent without the exercise of prudential habits given effect by state support of education and civil and political liberty for the working classes (Malthus 1836, pp. 226–27, 260). In Marshall's system, by contrast, the population mechanism was disaggregated from the mass of common labor in classical thought to the various grades of labor and occupations/professions characteristic of a modern economy. Market forces and technological change were automatically creating demand for more highly skilled and educated labor and providing strong incentives to the individual worker to spend on personal capital and to postpone marriage. The effects varied by labor grade.

The population principle, with orientation toward the need to reduce marriage/birth rates among the masses of the working classes, was not among the analytic tools featured in Marshall's bag of tools for addressing the problem of poverty and other social issues. This did not imply non-intervention policy, however. Marshall fashioned a critique of the market that rested on both efficiency and equity arguments. Because of market failure, the State could help ensure efficient levels of investment in personal and social capital with the desired effects of speeding economic evolution, elevating wages, and facilitating the historic shift to higher-level work for the laboring classes. In the process, the "common laborer" who did routine, manual work requiring little education or skill—and whose alleged short-sighted behavior accounted for the "population problem" in classical economics—would largely disappear and, with it, the population issue.

³Marshall does note, however, in relation to the whole world: "It remains true that unless the checks on the growth of population in force at the end of the nineteenth century are on the whole increased (they are certain to change their form in places that are as yet imperfectly civilized) it will be impossible for the habits of comfort prevailing in Western Europe to spread themselves over the whole world and maintain themselves for many hundred years" (1920, p. 180). Limits on worldwide land resources may eventually be felt on worldwide income levels.

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