

Rice Price Fluctuations and Fertility in Late Tokugawa Japan

The population of Japan neither grew nor declined during the last half of the Tokugawa era. This has been interpreted as indicating that the society had reached Malthusian limits of subsistence. Marxist thought transformed the misery that Malthus regarded as an absolute and immutable condition of human existence into the result of exploitation by a feudal elite. This singular marriage of intellectual traditions was sufficiently powerful that for many decades it went unchallenged.

The challenges that have arisen are well known. At the most general level, a society depressed and destitute is an unlikely crucible for Japan's extraordinary and atypical economic development since the late nineteenth century. The principal evidence, however, has come from many detailed and often quantitative studies of Tokugawa society. There were many improvements in agriculture, the level of mortality appears to be lower than one would expect of peasants living on the edge of starvation, and the failure of the population of the country as a whole to grow conceals considerable variations within different regions.⁷

As the evidence against the older view began to be developed, there was perhaps a notion that the older and more speculative approach must eventually bow to the newer and more quantitative one, a sense of progress and inevitability best captured in Hanley and Yamamura's "quiet transformation" paper of 1971.² Time and experience with the difficulties of quantitative work have tempered this view, and the appeal of speculative reasoning has not entirely subsided. Thus Hanley recently expressed sharp pessimism over the available quantitative evidence,³ and a recent review by Totman might be read as indicating a standoff.⁴

In the meantime, studies of the historical demography of Europe have plunged deep into the statistical study of economic and demographic time series. The motivating idea has been that the relation between movements in prices, taken as an indicator of food supply, and subsequent movements in birth and death rates can be used as indicators of the operation of the two Malthusian checks to population growth. If death rates rise following a rise in prices, the positive check (to use the now somewhat quaint Malthusian jargon) is indicated: any tendency to population increase strains food supplies and so leads to a rise in the death rate. If on the other hand birth rates fall following a rise in prices, the preventive check is operating: social mechanisms are restraining population numbers and avoiding the misery of Malthusian subsistence.⁵ This characterization is too pat, but it does indicate the general thrust.

This European work was anticipated in a remarkable but little-noticed paper by Uemura, who studied the relationship for Japan as a whole using Osaka rice prices and birth rates estimated from early Meiji data.⁶ The present paper continues this line of work, exploring the relation between year-to-year fluctuations in rice prices and estimated birth rates in 13 Meiji prefectures. The results confirm Uemura's work for Japan and present remarkable similarities to Galloway's results for Europe.

We are grateful to Professor Shigeo Akashi for supplying us with the numerical values of the famine index plotted in his paper. We gratefully acknowledge comments on an earlier version of this paper from Laurel Cornell, Patrick Galloway, Akira Hayami, Masaru Iwahashi, G. William Skinner, and two anonymous reviewers for the *Journal of Japanese Studies*.

I. Thomas C. Smith, *The Agrarian Origins of Modern Japan* (Stanford: Stanford University Press, 1959). Susan B. Hanley and Kozo Yamamura, *Economic and Demographic Change in Preindustrial Japan, 1600—1868* (Princeton: Princeton University Press, 1977). Hayami Akira, "Population Change," in Marius B. Jansen and Gilbert Rozman, eds., *Japan in Transition* (Princeton: Princeton University Press, 1986). pp. 280—317.

2. Susan B. Hanley and Kozo Yamamura, "A Quiet Transformation in Tokugawa Economic History," *Journal of Asian Studies*, Vol. 30, No. 2 (February 1971), pp. 373—84.
3. Susan B. Hanley, "A High Standard of Living in Nineteenth Century Japan: Fact or Fiction?" *Journal of Economic History*, Vol. XLIII, No. I (March 1983). p. 183.
4. Conrad Totman, "Tokugawa Peasants: Win, Lose, or Draw?" *Monumenta Nipponica*, Vol. 41, No. 4 (1986), pp. 457—76.
5. An extensive and recent review of the literature, as well as highly relevant comparative material, is given in Patrick R. Galloway, "Basic Patterns in Annual Variations in Fertility, Nuptiality, Mortality, and Prices in Pre-industrial Europe," *Population Studies*, Vol. 42, No. 2 (July 1988), pp. 275—302 and insert. See also, by the same author, "Differentials in Demographic Responses to Annual Price Variations in Pre-revolutionary France: A Comparison of Rich and Poor Areas in Rouen, 1681 to 1787," *European Journal of Population*, Vol. 2 (1986), pp. 269—305, and "Population, Prices, and Weather in Preindustrial Europe" (Ph.D. diss., University of California, Berkeley, 1987), pp. 4—9. Without going into much further detail, we may mention for general background Michael W. Flinn, *The European Demographic System* (Baltimore: The Johns Hopkins University Press, 1981), and E. A. Wrigley and R. S. Scofield, *The Population History of England: 1541—1871* (Cambridge, Mass.: Harvard University Press, 1981).
6. Uemura Shōji, "Kinsei ni okeru hokyo-jotai to shussho-su shussho-seihi," *Osaka daigaku keizaigaku*, Vol. 27, No. 4 (1978), pp. 66—85.