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Research Review

Tax Burdens in American Agriculture: An Intersectoral Comparison

Charles Adair Sisson Ames: Iowa State University Press, 1982, 154 pp., $14.40.

Reviewed by Wendy Rome, James Hrubovcak, and Ron Durst*

Major changes in the agricultural sector have prompted many observers to question the necessity and desirability of maintaining specific tax provisions which benefit farmers—for example, cash accounting, expensing capital costs for groves, orchards, and vineyards, and allowing farmers to treat gains on sales of qualifying livestock held for draft, breeding, dairy, or sporting purposes as capital gains Many economists and tax experts believe that farmers no longer need the preferential treatment contained in the Internal Revenue Code Others claim that farming has not changed substantially and that farmers still need these provisions Still others suggest that changes in the agricultural sector and higher land values have created new problems for farmers that warrant additional tax relief

Charles Sisson's book investigates comparative farm and nonfarm burdens It outlines for tax researchers and policymakers the fundamental issues of farm taxation Sisson discusses some important issues of farm taxation and states several hypotheses First, he suggests that the tax burden for the farm population is substantially lower than it is for the U S population as a whole Second, he hypothesizes that this viewpoint is based on the fact that farmers receive preferential treatment under Federal income tax laws Third, he suggests that the difference between farm and nonfarm tax burdens is attributable to the extremely low tax burdens of high-income farmers Finally, he questions whether Federal estate taxes impose a greater tax burden on farmers than on the total population so that these taxes should be considered in the overall analysis of comparative farm and nonfarm tax burdens

Sisson resolves definitional, methodological, and data problems inherent in farm tax research He presents his results and evaluates whether his analysis is valid without recognition of the effects of the estate tax Finally, he recommends areas for tax reform

Potential tax liabilities can significantly affect investment decisions Sisson demonstrates that preferentially taxed farm investments have higher after-tax present values than other investments Thus, tax preferences may significantly affect investment decisions and possibly lead to distortions in the allocation of farm resources Have investors shifted investment in an effort to maximize their after-tax incomes? To what extent are tax preferences in the farm sector encouraging nonfarm investors to enter agriculture? Sisson examines the issue of tax induced capital in agriculture and attempts to determine the significance of tax-loss farming

Two fundamental questions must be resolved before we examine the farm-nonfarm tax burden issue First, what is a farmer? Second, how do we measure tax burdens? "Farmer" is an inherently ambiguous concept Citing the changing nature of the farm sector and the need for a set of farm definitions that policymakers can use for multiple purposes, Sisson concludes that a single definition is no longer sufficient to identify the farm population Sisson uses five definitions of a farmer that are based on economic and socioeconomic criteria These include the Bureau of the Census and the Internal Revenue Service (IRS) definitions as well as those based on income and place of residence Examining the farm-nonfarm tax burden issue for various farm definitions provides valuable information about the farm population and insight into the probable effects of tax reform

The method by which tax burdens should be measured is a somewhat more difficult issue Sisson concludes that the only feasible alternative is the ability-to-pay approach measured by the Haig-Simons concept of income, a concept which he fully develops in the book Sisson uses a simple tax burden index consisting of tax liability divided by Haig-Simons income The tax liability portion of that index was determined on the basis of apparent tax liabilities and of alternative progressive and regressive tax incidence assumptions Sisson's progressive scenario generally assumes a tax is borne by property income whereas his regressive alternative assumes that consumers bear the tax

Sisson's results depend on the data set and his assumptions We have already mentioned many of his assumptions, but have not discussed his use of the Brookings MERGE synthetic data set The MERGE file is a synthetic data set compiled from cross-matching 87,000 records from the IRS tax file for 1966 with 30,000 household records from the 1967 Survey of Economic Opportunity (SEO) Ideally, combining these two data sets would provide a close approximation of the tax returns filed in calendar year 1966 by each of the 30,000 households in the SEO data file If matched properly, the more complete tax information provided by the IRS data combined with the demographic information included in the SEO data file would be a more powerful data base than either data file used alone This file was described in detail in an earlier issue of this journal (*1*) [1] In the MERGE file, less than 2 percent of the SEO data file was not matched with IRS

*The reviewers are agricultural economists with the National Economics Division, ERS

[1] Italicized numbers in parentheses refer to items in the References at the end of this review

data, and these records were generally concentrated in the highest income classes Sisson evaluated his results, excluding the unmatched data in the demographic data set (limited to families with less than $80,000 in adjusted gross income) and including the unmatched data in the income data set Sisson believed that the comparison of the results from the demographic and income data sets could provide information on the tax treatment of various components of the farm population and on their distribution

Sisson compares the tax burden by adjusted family income of the total population to the tax burdens under the five alternative definitions of a farmer and under varying progressive and regressive tax-incidence assumptions Except for the lowest income classes, farm families have a significantly lower tax burden than the total population irrespective of the definition of farm or the incidence assumption Sisson concludes that the benefits of preferential tax treatment for farmers are fairly evenly distributed across the rural sector

Sisson compares GINI ratios based on adjusted family income before taxes to measure the inequality of the income distribution within the farm sector in comparison with the total population [2] He concludes that the income distribution is much more evenly distributed in the total population He next calculates GINI ratios based on after-tax adjusted family income and concludes that, because the GINI ratios fall for both the total population and the alternative definitions of a farmer, the tax system does improve distributional equality Sisson also calculates GINI ratios based on after-tax income with the capital gains exclusion eliminated He concludes that, as the GINI ratios are not significantly affected, the repeal of the capital gains provisions would do little to improve distributional equality The benefits of the capital gains provisions are broadly used across all income classes within the farm sector

Sisson addresses the question of tax-loss farming by analyzing the distribution of farm losses of those individuals whom he considers more dependent on farming as a primary occupation than others who are only marginally involved farming Although he acknowledges the definitional problems encountered in dividing these subgroups, he nonetheless makes two important conclusions First, the great bulk of farm losses are incurred by individuals who depend heavily on farming for income Second, "while tax-loss farming is not pervasive in agriculture, neither is it rare " Therefore, he concludes that tax preferences for the agricultural sector provide a strong incentive for high-income taxpayers to invest in agriculture

Sisson attempts to determine whether the effects of the estate tax on farmers and nonfarmers warrant any changes If estate tax burdens in 1966 varied significantly between farm estates and nonfarm estates, then the comparative tax burden analysis would have to be modified Until 1977, all estates faced the same estate tax laws In 1976, however, the Congress enacted two special provisions for estate taxes that benefit farmers Farmers used two basic arguments in 1976 to convince the Congress that they needed preferential estate tax treatment First, they argued that the estate tax was based largely on land values which were unrealistically high relative to the land's income-generating ability Second, they argued that farm liquidity was lower than that in other types of estates and that the estate tax was, therefore, hard to pay

Sisson suggests that if farmers needed this special assistance in 1976, then perhaps they needed it in 1966, the year on which he based his analysis He attempts to determine whether or not the estate tax burden for farmers was higher than it was for nonfarmers in 1966

Using the MERGE file for 1966, Sisson compares liquidity-to-estate ratios to determine relative farm-nonfarm estate tax burdens Whereas low liquidity was certainly a fundamental argument supporting the enactment of preferential estate tax provisions for the farm sector, it is not the appropriate measure for determining relative estate tax burdens between farm and nonfarm sectors Rather, Sisson seems to be measuring a ratio of "undue hardship" as manifested in insufficient or barely sufficient liquid assets available to pay the estate tax at the time the tax is imposed

Sisson concludes that the relative estate tax burden in 1966 in the farm sector vis-a-vis the total population was not sufficiently different to warrant adjusting his original analysis to include the estate tax Although his findings do not actually support this assertion, because of his failure to measure actual estate tax burdens, this conclusion may, nevertheless, have been true in 1966

In his final chapter, Sisson discusses the limitations of his analysis At least two of these are significant enough to cast doubt on his conclusions Our most serious concern is his failure to differentiate between personal income earned as wages or professional fees and personal income earned from the ownership of a business The Internal Revenue Code is saturated with tax provisions designed to stimulate business investment and activities Such provisions are generally not available to wage earners Thus, farmers and other business owners would be expected to incur lower tax burdens than the total population, especially in the Federal tax area to which Sisson attributes a significant portion of the tax burden differential Sisson does not compare the tax burden of farmers with the burden of other business owners

Another limitation is the relative inability of the MERGE data file to depict current economic conditions Sisson concludes that "the observations regarding farm-nonfarm tax

[2] The GINI coefficient is an index used to measure inequality in the distribution of income The GINI coefficient ranges from zero (perfect equality) to 1 (absolute inequality)

burdens are nearly as valid today as they were for 1966 " He cites a statement by Joseph Pechman in 1975 regarding the continued validity of the 1966 MERGE file as support If Sisson means the year 1975 when he uses the word "today," then his conclusion is less subject to question However, if he is speaking of the early eighties, serious doubts arise both because of extensive Federal, State, and local tax reform and because of changing economic conditions in the farm sector We, therefore, must agree with the author's statement that his tax differential estimates "must be regarded as upper bounds for the effects of these special tax rules rather than unbiased estimates of their amounts "

Despite the limitations of Sisson's study, it is useful to tax researchers primarily because of its contributions to the use of synthetic microdata files in tax research and its discussions on fundamental farm tax research issues For researchers less familiar with farm tax issues but who have some interest in these issues, the book provides substantial insight into those areas which, in the past decade, have dominated research on farm taxes

Reference

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Asian Village Economy at the Crossroads: An Economic Approach to Institutional Change

Yujiro Hayami and Masao Kikuchi. Baltimore: The Johns Hopkins University Press, 1982, 275 pp., $25.00.

Reviewed by Ray W. Nightingale*

The introduction of modern cereal varieties (MVs) into rural Asian communities with rapid population growth produces economic and social change The authors examine the thesis that MVs cause economic polarization, they also examine Ruttan's thesis that altered resource availabilities induce institutional change (*1*) [1] The authors ultimately absolve MVs of blame for polarization They find that changes in returns to resources are brought about by institutional change induced by failures in factor markets Although the evidence for this conclusion is drawn principally from four village case studies, they argue that these findings hold widely in Asia (as the title suggests)

To draw an Asian conclusion from four village case studies, Hayami and Kikuchi take an advocate's approach They thoroughly acquaint themselves not only with these villages but also with the body of evidence on rural institutional change in Asia They informally, but rigorously, build their case They do this in a thoroughly professional manner, treating the reader to a highly rewarding exploration of critical agricultural development issues and the down-to-the-village facts

In chapter 2, Hayami and Kikuchi describe their economic approach to examining institutional change, defined as "an attempt to analyze, by the logic of economics, the process by which institutional change was dictated by noneconomic as well as economic forces " Economic determinism is specifically disavowed They argue that the distribution of income among various resource contributers (landlords, tenants, and laborers) responds to changes in resource endowments and technology through adjustments in institutions governing the use of land and labor The following are some examples of the application of economic logic to these problems

> A person is altruistic to the extent that the return to altruism exceeds the cost of behaving as an altruist villagers will violate the village institutions if gains exceed costs
>
> If the [enterprising village leader] senses that the outcome will be more efficient if each member of the group pays a share of the mar ginal cost of additional units of the collective good equal to his share of the benefits and others do not sense this, the leader will be able to suggest arrangements which can leave everyone in the group better off

In chapter 3, Hayami and Kikuchi give a macro and micro overview of agrarian change in Asia They present the economics of income distribution among laborers and asset holders under increasing population and changing technology They map two Asian roads of change (1) polarization of peasant communities into commercial farmers and landless wage-workers, and (2) stratification of communities into a continuous spectrum of social arrangements for organizing labor and assets—from landless laborers and noncultivating landlords, to sharecropper, to peasant proprietors With polarization, traditional patron-client mechanisms are replaced by impersonal market relations With stratification, the personal mechanisms are sustained The basic principle supporting the author's economic approach is that scarce resources result in a tight community structure which fixes economic roles, whereas informal markets require informal social structures

The remainder of the text (200 pages) is devoted to examining whether polarization or stratification predominates and, on finding that stratification does, to exploring whether peasant polarization can be forestalled under increasing population pressure The conclusion is that polarization can be avoided if efforts to generate scale-neutral technological progress (such as MVs) continue

The polarization/stratification conclusions are based on a review of evolving agrarian institutions in Luzon (the Philippines), a survey of rice harvesting methods in 100 villages, and two village case studies The authors base their conclusion on prospects for continued adjustment to population pressure through peasant stratification on a review of agrarian change in Java, a survey of rice harvesting methods in 48 villages, and two village case studies (one technologically stagnant and the other technologically progressive)

This book is a major step forward It brings the insights of various disciplines to bear on the forces governing village change The authors, both agricultural economists, enter the terrain of other disciplines and extend their own precepts into new realms There is always a risk that in doing so one will lose or misrepresent the contribution of others, building up rather than tearing down barriers to understanding It is clear that they took great care to avoid this, with solid success They demonstrate a wealth of understanding of village society and institutions, and they clearly demonstrate how provision is made for resource organization and management

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[1] Italicized numbers in parentheses refer to items in the References at the end of this review

Through their research approach and their demonstrated depth of understanding, the authors have broken new ground and have produced a thoroughly readable book It is enlivened by a common theme that runs throughout Marxian prophecy of the violent course of human events as population presses on land and its nonfulfillment in this case According to Marx, "At a certain stage of development, the material forces of production in society come into conflict with the property relations within which they had been at work before" The authors share with Marx an awareness of this conflict, but not his notion of an abrupt and complete transformation of the entire institutional framework Village stratification is the revealed mechanism for resolving that conflict Radical political economists are identified as perpetrators of the notion that new technologies (such as MVs) are major factors in promoting inequality and class differentiation

I find the authors' verdict of the MV's absolute innocence of this charge welcome news indeed, however, they might have avoided highlighting the implications for radical economic doctrine and prophecy Doctrines long held succumb only to overwhelming evidence to the contrary The authors' building-block approach is the right one at this stage for advancing understanding of a complex and challenging problem But their approach is inadequate to the task of challenging doctrine, because it also employs the method of advocacy The authors conclude that villages "do change in response to changes in the relative scarcity of resources, but the change takes a very long time, often generations " Rival purveyors of doctrine have little appreciation for that fact, as their interventions sometimes grossly demonstrate I think the fundamental development assistance policy prescription which flows from this book is to proceed with caution and to check your assumptions Village polarization increases social instability Rapid development of markets may enhance this instability But, greater mobility of resources and the consequent specialization of production and exchange of goods which accompanies market development is everywhere a fundamental characteristic of economic growth

Reference

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The Agrarian Question and Reformism in Latin America

Alain de Janvry. Baltimore: The Johns Hopkins University Press, 1981, 311 pp., $27.50 (cloth), $8.95 (paper).

Reviewed by O. P. Blaich*

Economic development over the last three decades has been undertaken largely as a collection of disconnected projects Therefore, the need for an integrative theory that deals with the fundamental causes of the distribution of income, wealth, and rights is one of the two major premises on which this book is based The other is that the integrative concepts were extremely general and abstract This situation left the practitioners of economic development in a vacuum, and they could only approach a global framework in a rather remote fashion

The author is a professor of agriculture and resource economics at the University of California His book draws on an extensive bibliography and is supported by his own experience and observation from extended stays in Argentina, Chile, Colombia, and Peru, as well as frequent visits to Ecuador, Mexico, Brazil, and the Dominican Republic He examines and builds numerous theories and postulates of Marx, Ricardo, Keynes, Lenin, Kautzky, and others, and he draws on the thoughts of contemporary analysts including Prebish, Schultz, Ruttan, and Schuh His analysis is developed from a broad base of observation and theory, which leads him to conclude that any proposal to eliminate poverty and improve the distribution of income within and among nations needs to originate in a positive analysis of the multiple sources of unequal development He fails to find satisfaction in neoclassical economics and chooses the perspective of political economy to integrate social, political, and economic thought—an essential element in understanding the multiple forces that underlie the demand for agragrian reform De Janvry uses this comprehensive framework to analyze the underlying cause of change in the interdependence between large landowners and peasants, mechanization and the shift to capitalism, land reform in its various aspects, urbanization and labor availability, economic growth and the unequal distribution of income and wealth, the persistence of poverty, and other changes in the structure and performance of agriculture in Latin America

Based on this integrated theory, de Janvry distinguishes and examines in detail the changes in agriculture during two recent periods of transformation in Latin America—the fifties, which were marked by import-substitution in industry at a time when strong vestiges of noncapitalistic or feudalistic social relations in agriculture resisted agrarian reform, and the sixties and seventies, when capitalistic modes of production were introduced to agriculture, thereby redefining the role of the peasantry in bringing about shifts in political power and changes in social interdependence

Within this integrative framework, de Janvry describes and analyzes these areas

- The forces underlying the agrarian crises in several Latin American countries,
- The stagnation of food production prior to the sixties and the uneven development of capitalist and peasant agriculture in the ensuing period,
- The instability of the position of the peasant class and the dynamics of its transformation,
- The conflicts during the transition to capitalism between rents and profits, between cheap food and foreign exchange, and between peasant labor and mechanization,
- The varied nature of land reform and the transition from precapitalist to capitalist agriculture, and
- The political and economic purposes underlying some of the rural development programs and their often contradictory nature

De Janvry concludes with a critical examination of several current policies of world agencies which purport to stimulate equitable agrarian growth These policies include

- The International Labor Organization proposal for labor-intensive development
- The World Bank and the U S Agency for International Development's promotion of integrated rural development with emphasis on small farmers
- The Overseas Development Council's suggestion that calls for national governments to provide an improved standard of welfare for the poor

The author finds that each of these proposals has shortcomings as an agrarian reform strategy because it fails to deal with the fundamental causes of poverty and maldistribution of income He subscribes to a strategy of "basic needs," but not one that would act as an income constraint on growth Instead, he emphasizes one that would achieve those political, social, and economic structural changes needed not only to reconcile growth and distribution but also make the satisfaction of basic needs the essential purpose of economic growth As economic growth occurs and personal income increases, the basic needs would be redefined beyond mere subsistence and would be met with rising productivity of labor

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Although one may agree or disagree with de Janvry's final prescription for economic development, the book is well written and succeeds in developing a framework for an analysis of agrarian issues Whether or not it persuades the practitioners will depend on their agreement with the author's fundamental values and views

On the Misuse of Theil's Inequality Coefficient

By Raymond M. Leuthold*

In a recent article, "The Food and Agricultural Policy Simulator," by Salathe, Price, and Gadson in this journal (*4*),[1] the authors use a Theil inequality coefficient (p 7, equation (12)) to validate the performance of their model They used actual values of Y_t and Y_{t-1} when computing this statistic The statistic was never intended to be used in this way because it is sensitive to additive transformations That is, if one moves the decimal point to the right for each variable, one can generate lower coefficients Theil (*5*) pointed out that instead of actual values, only changes in the variables should be used A thorough discussion of the appropriateness of Theil coefficients is contained in Leuthold (*2*)

Salathe, Price, and Gadson cite two references Pindyck and Rubinfeld (*3*) and Kost (*1*) The former never mentions this problem, but the latter goes so far as to prove the additive feature A U in actual values will always be less than a U when data are measured in changes Kost went on to compute U, U_1, and U_2, and as expected, $U < U_1 < U_2$ in all but three cases No explanation is offered for these exceptions

Salathe, Price, and Gadson do correctly point out their statistic MARE is independent of the units of measure of Y They go on to imply they want another statistic bounded from above by 1, but the question is Why impose this restriction? One suspects the prime reason is to generate low U coefficients (Again, see (*3*) on this point) Their results seem to reflect the unit problem With the exception of oats, note that the U cofficients for prices of grains (wheat, corn, barley, sorghum, soybeans, and cotton) are all higher than those for prices of meat products (barrows and gilts, steers, cows, broilers, turkeys, eggs, and milk) I suspect this occurs because all the products in the latter group are priced in units that are roughly 10 times the units of price for the former group The U statistic would generally predict those relationships (Milk seems to be another odd case here) Also, the authors point out that U statistics are higher for prices than for corresponding production variables Could that again be simply a reflection of units and not relative performance? (Perplexing here is that MARE had a similar tendency, and it is not unit-sensitive)

Salathe, Price, and Gadson have defined and used a U coefficient in a manner that Theil never intended Theil defined it differently from the very beginning in terms of the type of data inputs Kost used this coefficent in 1980, but he covered himself by also computing U_1 and U_2 The U's reported by Salathe, Price, and Gadson are probably much too low, reflecting greater accuracy than is really the case Were they to publish an addendum to their paper where they also show U_1 and U_2, I would expect some changes in relative results among commodities, and I would expect higher coefficients reflecting the true performance errors

References

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(5) Theil, H *Economic Forecasts and Policy* Amsterdam North-Holland Publishing Co , 1958

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[1] Italicized numbers in parentheses refer to items in the References at the end of this note

Comment on the Misuse of Theil's Inequality Coefficient

By William E. Kost*

The unexplained inconsistency in U, U_1, and U_2 mentioned by Leuthold in the validation results for my net trade model was due to arithmetic errors The original calculations were done by hand because no computer programs were then available in ERS for making this calculation When the errors were corrected, $U<U_1<U_2$ —as Leuthold predicted

However, there is another way an inconsistency may show up It involves the definitions of the inequality coefficients [1] U_1 and U_2 use lagged values of the variable U does not When using all possible data in calculating Theil inequality coefficients, the U calculation, therefore, uses one more observation than U_1 and U_2 Depending on the magnitude of the error in this first observation, the $U \leq U_1 \leq U_2$ relationship may not hold

The emphasis Leuthold places on the cross comparison of the three coefficients appears too strong Although similar, these three coefficients measure different things Their value is in pointing to ways to improve a model Does the revised model generate a better U (or U_1, or U_2)? The coefficients give users some idea of how good a model is No one measure of goodness of fit is satisfactory All measures normally used provide some useful information The conclusion a user (or model builder) draws from the information is subjective Though it has an additive bias, the U statistic is still a useful measure, particularly when one is comparing two versions of the same model In that case, no scale problem exists To use it, of course, one must know how to interpret it But, the same is true for all other measures of goodness of fit

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[1] The Theil inequality coefficients are defined as

$$U = \sqrt{\frac{1}{T}\sum_{t=1}^{T}(\hat{Y}_t - Y_t)^2} \Big/ \sqrt{\frac{1}{T}\sum_{t=1}^{T}\hat{Y}_t^2} + \sqrt{\frac{1}{T}\sum_{t=1}^{T}Y_t^2}$$

$$U_1 = \sqrt{\frac{1}{T}\sum_{t=1}^{T}((\hat{Y}_t - Y_{t-1}) - (Y_t - Y_{t-1}))^2} \Big/ \sqrt{\frac{1}{T}\sum_{t=1}^{T}(\hat{Y}_t - Y_{t-1})^2} + \sqrt{\frac{1}{T}\sum_{t=1}^{T}(Y_t - Y_{t-1})^2}$$

$$U_2 = \sqrt{\frac{1}{T}\sum_{t=1}^{T}((\hat{Y}_t - Y_{t-1}) - (Y_t - Y_{t-1}))^2} \Big/ \sqrt{\frac{1}{T}\sum_{t=1}^{T}(Y_t - Y_{t-1})^2}$$

where Y is the actual value, $\hat{Y}$ is the estimated value, and T is the number of periods