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Measuring Farm Net Income To Better Achieve Policy Objectives

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Measuring Farm Net Income To Better Achieve Policy Objectives[1]

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Abstract:

The farm problem is a longstanding topic in agricultural economics, and farm organizations continue to press claims that they are disadvantaged and deserve public support. While society may choose to support farmers it is clear that existing farm programs to not do an effective job of providing support. Farm income and farm subsidies are highly concentrated and the lowest income farmers receive little support. Moreover most households with low farm income typically manage their farm to achieve this goal. Politically, commercial farms require that hobby farms continue to be recorded as actual farms in order to mask the small number of enterprises that actually benefit from farm programs. Whether this lead to good public policy is another matter.

Key Words: farm problem, income distribution, farm household objective function, farm income, farm policy

1. Preliminary Material

> The benefits of farm price supports should not be measured in the income gained by farmers, but in whatever benefit taxpayers receive from those expenditures: reduced welfare payments, farmers held in agriculture, excess capacity preserved as a hedge against war, or any other, or all these if taxpayers consider them relevant. The desire of taxpayers to purchase these benefits should determine government's level of spending, and taxpayer's preferences and best interests should be the subject of analysis.
>
> Feldman, 1971, pp. 523-524

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Here Feldman provides a useful way to assess the benefits of farm support that goes beyond measuring net income, but while we are moving in this direction we are still largely captives in the world described by Rapp.

> The logic of the agriculture economy insists that if farm program costs must be reduced, then farm income must fall as a direct consequence, unless the costs of these programs can be transferred to the consumer through higher prices. "This is the economic dilemma," wrote economist James T. Bonnen in 1965. "It is also a political dilemma since each of these variables – budget, consumer costs and farm income – involves politically potent interests."
>
> Rapp, 1985, p.13

Discussions of farm income largely occur at two distinct levels. The first is in terms of how the measure is produced and deals with alternative approaches and concepts, sample design, and issues of reliability and consistency over time. These are questions of appropriate methods. The second level is pure politics, where farm income is used to demonstrate that farmers are doing well, or, more often, poorly and that current policy is inadequate. This workshop largely focuses on the former level, but it is important not to forget that numbers are political, and that politics inevitably trumps analysis.

> One of the most remarkable failure stories of all time must be that of economists trying to influence government by demonstrating the efficiency gains or losses from its programs. What makes the story remarkable is not that government has generally failed to act on the evidence produced, but that in the face of that persistent failure economists continue to produce the same kind of evidence, hoping against hope that the politicians will eventually act "rationally" and raise efficiency to the normative status it deserves. One point of this paper is that it is economists who think that efficiency is a normative concept who must change their perspective, not the politicians. That economists *should* change is important, for the economic discipline has much to offer to politicians in helping deal with the great question of how the state should command and allocate resources. But economists cannot command politicians to accept their advice; they must rely for success upon the force of their arguments, and the forceful argument in government deals not with efficiency but with distributive justice.
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> Feldman, 1971, pp. 508-509

This last quote from Feldman provides the most concise statement I have ever found on how to be an effective provider of policy advice. Feldman's lesson is that for analysis to be influential, the political context has to be understood. Because farm income estimates are closely examined it is important to reflect on how the numbers will be used, not just how they will be developed. Ironically, since Feldman wrote his paper, economic analysis has become less effective because issues of equity are now largely defined out of

analysis in the interest of constructing "value-free" theory. Despite the existence of hundreds of professional peer-reviewed arguments that have been constructed and published since the 1960s that show the efficiency losses associated with agricultural support policy, little happened until Ken Cook and the Environmental Working Group obtained the actual distribution of government payments to individual U.S. farmers under Freedom of Information regulations. By showing who received how much money, the terms of the farm policy debate were inexorably changed – in Feldman's terminology distributive justice reemerged as a major issue.

2. The Distributional Consequences of Farm Income Supports

Distributional issues underpinned the development of farm programs, but we do not do a very good job now of reporting distributional consequences. In both Canada and the United States the common practice is to report the aggregate level of support and compare it to aggregate net farm income, In recent years support levels appear to have accounted for the vast majority of net income. *Prima facie* this suggests that without government support conditions in agriculture would be bleak. And, certainly the absence of support would make conditions bleak for a significant number of farmers. However once the data are disaggregated the consequences are less clear.

In both countries a significant number of farmers do not receive any direct support, or receive such a limited amount that it has little bearing on their income. Other farmers, who receive significant amounts of support, would certainly experience a drop in income if support were removed, but would remain viable producers because their market returns are large enough to cover their costs of production. This leaves the group who are still farming because the government currently enables them to do so. From a public policy perspective it would be nice to know how many farmers are in each category. And, whether, as Feldman suggests, society wants to continue to keep all the current farmers in business.

Similarly, while we know that current policy in both countries provides very little support to small farms, there are arguably few distributional reasons to worry about those small farms whose off-farm income is large enough to provide an above average standard of living, but good reasons to worry about those small farms whose income is below whatever amount is deemed to be unsatisfactory by public policy. In the first case it is apparent that these farm households have chosen a life style and have the means to support it themselves. In the second case we may find that keeping these persons in agriculture has social value. Whether we can rely upon traditional agricultural policy to fix the latter problem is dubious (Hum, Kraft and Simpson, 1995, pp. 8-13). Broader social programs that are targeted to those with low incomes seem a much better choice. However the rhetoric of advocates for farm income support continues to focus on the limited resource family farm to justify programs that almost intentionally miss the supposed target.

3. The "Farm Problem"

Aggregate, or sector, net income is the single most used summary statistic for describing economic conditions in farming. At a minimum net income is used to assess the well-being of farm households, the productivity of the sector and to evaluate government policy. However it is not a particularly good measure of any of these things. Discussions of the value of farm income as a measure of condition and policy recur every few decades (Galbraith,1969 ; Bawden *et. al.* 1977; Loyns, Freshwater and Beelen, 1983), but generally lead to marginal changes that do not address the major drawbacks. Perhaps this time it will be different, but only if we are able to move beyond a discussion of the mechanics of measurement and come to grips with why we are measuring farm income.

A useful starting place for the discussion of farm income is "the farm problem" which has existed for as long as farm income statistics have been available. At its simplest level the farm problem asks why the economic condition of farmers and their families is inferior to the balance of society (Gardner, 1992). This is an interesting question for a number of reasons. First, one might ask why we focus on the well-being of farm families? Second, we might ask why the appropriate comparison is to the rest of society and not to some specific group, say, forest workers, accountants, or owners of dry cleaning establishments? Third, we might ask, how do we accurately measure the difference in well-being?

The answers to the first two questions clearly lie in our past. The farm problem was first defined when farmers were the majority of the rural population in both Canada and the United States and when conditions in agriculture were clearly inferior to conditions in urban areas in terms of income, housing, access to services and any other social or economic indicator of well-being one might choose. Thus one could reasonably use the farm problem as a proxy for the rural problem, so what we were initially interested in was why urban and rural people had such different conditions. Note that this is as much a question of the distribution of national income as it is a question of levels of return. For if it were simply a question of returns there would be no need for a comparison. Interestingly, in more recent years, the relative well-being of farmers has been less visible as a policy issue.

The last question, of how we actually measure well-being, also has historical antecedents. In the early stages of the farm problem farm families were largely homogeneous in terms of, size of farm, dependence upon agricultural income and specialization of labor. While farm families had a higher degree of self-supply than urban families the cash value of home production could be easily estimated, so it was possible to compare urban and rural incomes. Even then however an important difference was swept under the rug. For urban families wages and salaries provided the main source of income, so what was being measured was a return to labor. By contrast net farm income was, and is, a blend of returns to the labor, capital and land supplied by the farm family. For the farm family their income has to support family consumption, and, it must support the ongoing operation of the farm business.

Most importantly the very phrasing of the farm problem suggests that there are two distinct concerns, one with economic conditions and the second with social conditions. This means that agricultural policy also has two dimensions, economic policy and social policy. While there is a voluminous literature on the economic (efficiency and resource allocation) aspects of agriculture associated with farm income and income policies there has been far less attention given to distributional issues associated with the measurement of farm income.

4. The Politics of Problem Definition

A question that has received too little attention is, why is the farm problem framed in a particular way at any point in time? If we have a better understanding of the policy problem then we may be able to better understand how to construct appropriate indicators. Sheingate observes that farmers were one of the first social groups in the United States to engage in interest group politics. He attributes this to their geographic concentration in rural areas that gave them disproportionate political influence and their lack of market power (2001, p. 6). In essence he argues that farmers recognized their ability to use the political process to frame policy in ways that provided returns they could not get from the market. But to get those returns they had to demonstrate entitlement and this could best be done by pointing to the existence of the farm problem. Showing that farmers were systematically worse off than urban residents provided the justification for government action.

More generally "… public policy making must also be understood as a function of the perceived problems being dealt with, and the qualities that define this nature are never incontestable." (Rochefort and Cobb,1994, p. 4). In particular who owns the problem is important since the owners shape the initial definition and discussion (Rochefort and Cobb, 1994, p. 14). In the case of the farm problem the initial conception was levels of income, then in the 1980s the problem was redefined as variability of income, and now it is increasingly framed as rates of return on investment (Hopkins and Morehart, 2002). Each reformulation provides a new justification for government support. When the income of farm families converged with those of the general public the levels argument was compromised. Income variability provided a new justification for support, but as off-farm income has become increasingly common, the variability of farm family incomes has been greatly reduced. This is mostly because of diversificaation benefits, but also because in Canada agricultural income is weakly negatively correlated across the business cycle with total output (σ = -.05), while for the United States it is virtually uncorrelated (σ = .03) (Da-Rocha and Restuccia, 2002, p.36). Consequently, the farm problem has to be reframed to retain policy relevance, and inadequate rates of return provide the new rationale.

While we might know why we were interested in the condition of farm families several decades ago, we should ask why we remain interested today. Farmers are no longer the majority of the rural population. In the United States on average their income is higher than everyone else, while it is relatively close in Canada, and in both countries their wealth is far greater. While they have less access to social services, the arguments for

farm support are almost never framed in terms of compensation for an inability to visit local museums, longer trips to hospitals or the absence of professional sports teams in the community. Further their political influence is greatly diminished. While being Secretary of Agriculture or Minister of Agriculture was once a powerful cabinet position, today it is a minor honor that brings little power. In the legislatures, there are fewer and fewer "farm representatives" whose election is secured by farm family support. In our largely urban societies there are very few opportunities for the general public to connect to agriculture and understand its condition. In principle this should weaken government support for farmers, but this doesn't appear to be the case (Friedman. 1999).

In practice the changes may have made the farm lobby stronger since they have retained control of the problem definition. In a comparison of efforts to reduce government outlays in the 1980s by trimming tax "loop-holes" and farm subsidies, Mucciaroni shows that tax reform was successful because the discussion was shaped as rich people getting special treatment at the expense of the general public, but that in the case of farm subsidies, the farm financial crisis created a situation where farmers were perceived as victims and rather than being cut, farm support was increased. Farmers remain well liked by the general public, not because the public knows anything about them, but because there is a well-established cultural perception of viewing farmers favorably (Hanson, 2000).

While the terms of the farm problem definition had always been contestable, for decades they were seldom contested. As farming slid to the policy periphery it became less subject to outside analysis. In the 1980s high budget outlays and the first succesful efforts to link agricultural and environmental issues changed this situation, as new participants challenged old agrarian values. Since then a series of high profile issues has maintained outside interest; food scares, bio-technology, animal welfare, bio-energy, etc. But, by and large, farmers, farm organizations and the remaining group of farm related legislators still shape their discussion not by appealing to current conditions but by appealing to a more recognizable past. Appeals to the need to support small, full-time, family farms remain the basis for income support policy, despite the virtual irrelvance of this traditional model today. History continues to shape farm policy, because it provides a "better" rationale for current forms of government support. In this process farm income statistics are central, because they are the traditional summary indicator, and because they are an indicator that has consistently been manipulated in farm politics to show pretty much whatever was desired.

5. Issues with Farm Net Income

While net farm income measures are flawed, the fact that they are flawed may be seen by some as positive. If the flaws lead to conclusions that support specific interests than those interests are unlikely to argue for making the data better. At present farm income statistics tend to strengthen the case for government support and consequently those who argue for stronger support are prepared to take them at face value. The situation is not unique to agriculture. Jencks analyzed conflict over the validity of the U.S. Census Bureau Real Family Income (RFI) estimates in the 1970s (Jencks) . It is quite clear that

that the RFI estimates overstated the decline in well being of the average family in that period (Jencks, pp. 110-111). Yet there was a general sense among the public and the Congress, that conditions were deteriorating and the results from the RFI were used as evidence to confirm this sense (Jencks, pp.128-130). “Overall, one must conclude that both ideology and self-interest helped shape the statistical climate of the late 1970s and early 1980s, determining which statistical series would be carefully examined and which series would be accepted at face value.“ (Jencks, p.130). If this selectivity was true in the past, perhaps it remains true today.

Echoing Feldman, Acemoglu and Robinson suggest that even though economists have long recognized current forms of income support for agriculture are inefficient and could be changed to deliver the same level of support at lower cost, there are good political reasons for the persistence of current policies. First there is an issue of commitment where farmers have to worry about the longevity of support. Acemoglu and Robinson argue that current policies are less likely to be overturned by future governments than decoupled lump sum transfers would be. Second, they introduce the idea that current policies tend to maintain farm numbers because they require that farming be undertaken. This not only slows exits but the existence of support provides an incentive for entry (p. 658). Farm groups have a clear interest in maintaining farm numbers to maintain political clout.

5.1 What is a Farm?

The single largest issue is what is meant by a farm. Over the last fifty years the basic unit of analysis has shifted from the household to the establishment and back. Initially households were used when farms were relatively self-continued and had little outside income. By the 1970s, structural change had led to establishments becoming the basic unit of analysis in order to separate farm related activity from other sources and uses of funds (Bawden *et.al.*, 1977). By the turn of the twentieth century the household had returned to being in *vogue*. Why the changes?

My explanation is a shifting sense of what constitutes farm life. Tweeten cites Don Paarlberg’s conception of the classic creed of farming as the context for the initial farm problem. It is:

1. Farmers are good citizens and a high percentage of our population should be on farms.
2. Farming is not only a business, but a way of life.
3. Farming should be a family enterprise
4. The land should be owned by the man who tills it.
5. It is good to make two blades of grass grow where one grew before.
6. Anyone who wants to farm should be free to do so.
7. A farmer should be his own boss.

Tweeten, 1979, p.8

The agricultural creed focuses on more than the economic returns of the farm enterprise. It has a strong social context with the family at its core. The farm is a family business, not an operator's business and as such it is the well-being of the family that should be the focus of policy. But since farming was the only significant source of income for the family in this period, the only way to improve the economic well-being of the family is through policies that increase farm income.

In Canada the early distributional basis of the farm problem is made clear by Drummond Anderson and Kerr in their 1966 discussion of the farm income policy. They state that despite falling farm numbers and increasing productivity, that the "… relatively depressed position of agricultural labor income has been an anomaly in the general pattern of rising incomes of the postwar period." (p.74). In the introduction to their monograph they note that the concern with the distribution of income in Canada extends beyond agriculture and is a basic goal of the Nation (p. vi), that has not been achieved by agricultural policy.

By the 1970s the homogeneous nature of farming had broken down. The variance of the size distribution of farms was increasing, and more farms had significant sources of off-farm income. Farm numbers were starting to decline and there was less sympathy for anyone being able to farm, especially by those farmers who were trying to expand. As farmers increased their reliance on purchased inputs and commercial credit it became increasingly important to establish the farm as a business. Recall that at this time the general belief was that off-farm income was the means to either enter farming or to expand the enterprise, and that the main goal of the farm family was still to be full-time farmers. Consequently there was a general acceptance that the establishment provided a much better perspective on the state of agriculture, even though some detail about the household was lost.

At this time the dichotomy between commercial agriculture and "life-style" farming began to emerge. Initially the focus was on encouraging the exit of small farms to allow their land to be more efficiently used by larger commercial enterprises (Jensen, 1977, p. 43). Farming was seen as being a decreasing cost industry with falling average costs of production as farm size increased (Tweeten, 1979, p.185). From an efficiency perspective it made sense to encourage the expansion of larger farms because they could produce at lower cost. Not surprisingly farm policy had this effect, and while farm income increased, the distribution of farm income became increasingly skewed.

By the beginning of the 21st century farm numbers had slowed their decline but concentration of production had steadily increased. In recent years the largest farms (sales greater than $250,000) accounted for about 60 percent of output in the United States and 68 percent in Canada. However the farms that had disappeared over time were not the smallest and least efficient ones, but the mid-size farms that best fit the traditional target of agricultural policy – the "family farm". As a result there was essentially a bimodal structure of agriculture. A small share of farms accounted for the bulk of production and the bulk of farm income, while the largest share of the farm population

produce virtually nothing and mostly reported negative farm income. What does average, or even aggregate, farm income mean in this context?

Clearly establishment based data has little ability to explain the current structure of agriculture. A large share of farms consistently lose money and yet their share of the farm population increases over time. This can only be explained by looking beyond the establishment and back to the household. For the majority of farms in both countries off-farm income is now more important than farm income, and the main reason that farm household income has converged with the average household's income is because of off-farm income. Indeed in recent years the off-farm income of farm households in the United States is now so large that it alone is bigger than the average household's income. In Canada after-tax household income is lower for farm families but as the relative influence of off-farm incmoe has increased the gap has closed. This puts an entirely new face on the farm problem – for now it appears that farmers really are no different than anyone else. When we adopt the household approach to explain the survival and growth of small farms, we implicitly re-accept that farming is a way of life - at least for the majority of the population. A consequence of this is we have to have a broader understanding of their motive for farming than maximizing the profit of the farm enterprise.

This leads to the second part of the question of, who are the farmers. The household approach is certainly necessary to understand the continued existence of small farms, but it adds little to our understanding of commercial farms where standard profit maximizing behavior theories of the firm still work. Large commercial farms rely mainly upon farm income, although most have supplemental off-farm income. The policy and analytical problem largely comes because we have tended to ignore individuals in our analysis of farm conditions and relied upon aggregate statistics that report conditions for the sector. That is we treat agriculture as one very large farm. This may have worked when conditions were more homogeneous, but even then geographic differences in conditions caused problems. Now however if we accept, that small farmers behave very differently than large farmers, and that farm policy has no real effect on small farms, and that small farms, for the most part, are well beyond the farm problem; then what point is served by reporting aggregate farm income?

Current definitions of a farm in both Canada and the United States reflect political strategies to increase the number of farms to a level that is not embarrassing for public policy. Without the farms with gross sales of less than $100,000 farm numbers would decline from 247,000 in Canada to about 85,000, and in the United States from 2 million about to 280,000. If commercial size farms, say those with sales over $250,000, are the only ones counted you only have about 26,000 and 150,000 farms, but they account for 60 and 68 percent of current production. And, the farm income problem would largely disappear once you rebased income levels according to the new definition of a farm. Unfortunately at this point it would become incredibly challenging to make a case for why we need farm policy, even with the current high regard held for farmers. Most likely the public would no longer be able to make the connection between their perception of agriculture and the actual reality, and support would crumble.

5.3 Why Net Income

Net income is a residual that is obtained by subtracting estimates of revenue from estimates of expenditures. Consequently it is subject to a variety of errors, some of which are off-setting, but some of which are reinforcing. This basic fact is well known to those who develop income accounts but is largely unknown by anyone else. Because it is a derived measure, rather than a directly observed value there will always be underlying problems. This means that if there was a better alternative we should adopt it. Unfortunately there doesn't seem to be one, so the problem is how to make it better.

Considerable effort by statistical and economic agencies in both Canada and the United States has gone into improving estimates of the components of receipts and expenditures that underlie net income. However it isn't simply a matter of doing a better job of estimating receipt items and expense items. As agriculture changes some of the underlying concepts that define receipts and expenses are changing. For example, with vertical integration where a broiler producer never owns the chicks or the feed, what do gross sales reflect. If a family member is reported as being paid for farm work that was previously done as part of family chores, has a new expense item really been created? If government payments are triggered in one year, approved in another and distributed in the third, in what year are they part of income? While answers can be developed to any of these questions, they are not generally obvious and any answer may not suit everyone.

Jim Bonnen's AAEA presidential address in 1975 was largely about developing adaptive information systems that evolve as the underlying concepts change (Bonnen, 1975). As he noted, data are not information (p. 758), and if we simply do a better job of collecting data without thinking about whether they are still capable of answering the questions we are interested in, then we have failed.

Perhaps the best alternative to net income is value added since it reflects the amount contributed to national output by the sector. Value added is already calculated as part of National Accounts data so there would be little incremental cost in using it as a performance measure, but it is not a concept that is well understood and it is not compatible with how most farms keep their records.

5.4 Which Net Income?

Net income would seem to be a simple concept but there are multiple definitions. Clearly what is included in cash receipts and cash expenditures will influence net cash income, but even beyond this there are a variety of additional adjustments, each of which is arguably important, but each of which can significantly alter the level of net income. Consequently it is possible for year to year changes in some measures of net income to be positive while others are negative. Moreover Canada and the United States report different versions of net income in their press releases, which makes comparisons tricky, especially in the political arena.

Figure 1 outlines the basic structure of net income measures in each country, but it is important to recognize that underlying receipts and expense items are not identical. Canada uses realized net income as the main performance indicator while the United States uses net income and net cash income. Each measure has specific advantages. Net cash income provides an estimate of the actual cash flows available to the sector. It is the measure that is most directly comparable between Canada and the United States, but there are still minor differences in what is included under receipts and expenditures. In Canada realized net income is obtained by adding a minor amount for income in kind and subtracting a relatively large amount for accrued depreciation charges. Depreciation is a non-cash expenditure that will always reduce reported income and has the biggest percentage effect in years of low income. Inventory changes can either add to, or reduce, measured income. In the United States an additional adjustment is made to reflect the value of the housing service provided to the farm family.

Notably all of these measures are typically reported for the sector as a whole. Simple inspection suggests that different measures will provide radically different outcomes for different types of farm. In the United States the imputed value of housing is a major adjustment for life-style farms where the dwelling is more likely to be a large part of the total value of the farm. Similarly those farms that receive government payments will start off with much higher receipts, *ceteris paribus*. This means that as the sector is decomposed to look at either different size class farms, or farms producing different commodities, the choice of a net income measure can influence the relative performance of each group.

Figure 1: Simplified Schematic of Net Income Measures:
Canada and United States

Canada		**USA**
	Market Revenue	
	+ Government Payments	
	- Cash Expenditures	
= **Net Cash Income**		= **Net Cash Income**
	+ Income In Kind	
	- Depreciation	
= **Realized Net Income**		
	+ Change in Inventory Value	
= **Total Net Income**		
	+ Imputed Value of House	
		= **Net Farm Income**

Proponents of farm income supports clearly have a vested interest in choosing net income measures that make a stronger case for government intervention. Payments are triggered when income conditions are perceived as being bad and the worse conditions appear to be, the better the chances of a payment. In particular if a period of weak income follows an extended period of high income then farmers are likely to have built up a large backlog of depreciation charges because they will have purchased new equipment during the high income interval. This means that gap between cash income and the other measures will increase markedly.

6. Farm Family Economic Well-Being

The initial concern of the farm problem was the relative well-being of the farm family. Restoring the focus to the household is clearly a movement back to considering the welfare of the farm family. It is generally recognized that to fully measure economic well-being both income and wealth have to be considered (IWG.AgRI, 2005, p.1). Income can be easily converted to wealth and *vice versa*, making the consideration of only the flow or the stock element an imperfect measure of total consumption power. In the case of farming the income/wealth conversion process is particularly powerful. Farmers have considerable control over the timing of their outlays and receipts, and a significant portion of farm outlays are capital assets and so contribute to wealth. This allows farmers to manipulate income across time and to convert income to wealth through a capital expenditure. For example, a farmer buys a herd of cows at the end of one year. This reduces income in that year and at the same time creates a new asset on the balance sheet. In the subsequent year the cows are sold, the asset is liquidated and income is recorded. Had the farmer chosen a different time period for the transactions, reported income could have been quite different.

While inventory changes and equipment purchases can be important aspects of additions or reductions to wealth, the major component of farm wealth is land. Land creates a major valuation problem for wealth accounts. To a great extent the value of farmland is arbitrary. Since most farmland has limited alternative uses its value is determined by the amount that farmers are prepared to pay. Whether the price is high or low the use of land is unchanged, which makes any payment an “economic rent.” Thus while farmland is almost always the largest component of farm household wealth, it is an asset that has an essentially arbitrary value. Moreover farmland is illiquid in two senses. First, land markets tend to be thin so it may be difficult to sell land at any given point in time and recover its hypothetical value, and second, a significant sale of farmland may greatly reduce the viability of the farm enterprise as an ongoing business.

This suggests that the level of total economic well-being of farmers may in reality be less than it appears, because much of farm wealth cannot be readily liquidated for its nominal value and because liquidation would end the ongoing nature of the business. Thus both dimensions of economic well-being are difficult to fairly value. Reported levels of wealth overstate the current consumption equivalent and farm income represents a hybrid return to labor, land and capital.

A second important issue in measuring economic well-being concerns the linkage between farmland value and net income. Farmland value is generally held to reflect expectations about the size and variability of the future stream of farm net income[3]. The crucial point is that for most farm households there is a very strong link between income and wealth. Changes in farmland values should in principle be a good indicator of expectations about future trends in farm income. While short term shocks may not play a large role in land values, beliefs about long run structural changes in agriculture and net farm income should change land values.

However, in Canada in the last few years a persistent drop in realized net farm income appears to have not been associated with a decline in farmland values. This leads to several possible explanations. First, it may be the case that farmland values are not determined by expected future earnings. Second, it may be the case that the decline in net income is widely held to be transitory and expected future earnings are large enough to support land values. Third the decline in realized net income is an artifact and overstates the actual level of income. Any or all of these hypotheses could be partially true, but we don't seem to know which is most important.

7. Opportunities for Collaboration

Since this is a joint workshop, there must be some underlying belief that AAFC/Stat Can and ERS/NASS have an opportunity to collaborate on farm income concepts and measurement to provide better information. I think this is a wonderful idea because not only are agricultural conditions in each country significantly influenced by what happens in the other, but because each country has some unique strengths that can complement the other. As a general statement, Canada has better longitudinal data, while the U.S. has better cross-sectional data. Both are important for getting a better understanding of how financial conditions in agriculture are evolving.

Canada

- Longitudinal data analysis through tax-filer data and the integrated statistics of Statistics Canada
- Potentially rich data set of farm level administrative data that comes from whole farm income stabilization programs

United States

- ARMS data that provides a rich annual cross-section of farm and a farm household information, as well as cost of production data
- History of spatial data analysis that is based upon real political and social units of analysis – counties as opposed to Canadian census districts that are somewhat arbitrary administrative units.

[3] Certainly farmland in close proximity to urban areas has a significant opportunity cost and a value that reflects more than its use in farming. Similarly, parcels in rural areas may have unique attributes, but in many cases there are no real alternative uses for farmland.

8. The Future Demand for Income Statistics

The overwhelmingly most important issue in farm income has now shifted from the aggregate level of farmers' income relative to the rest of society, to, how is that aggregate income distributed among farms? There is now overwhelming evidence that farm families on average are far better off economically than the average American or Canadian household With this change there is no longer a legitimate public policy purpose in simply subsidizing agriculture in general. The terms of the debate are shifting to ask:

- which farmers should be supported by public funds,
- why should this group of farmers get these funds,
- what level of support is appropriate,
- how should the funds be distributed, and,
- what will society get in return for supporting these farmers?

For those who supply farm income data the relevant questions are, can existing data sources address these questions, and if not, how do we have to modify the data system to allow it to provide better information to policy makers and the public?

A second major policy shift that has important implications for income data is the reorientation of policy away from subsidizing the production of commodities to including the production of non-commodity outputs. Whether one accepts the term multifunctionality or not, it is clear that that there is a growing concern with the impacts of agricultural production on the environment. It is equally clear that current policy favors farms that produce large mounts of commodities and their income is higher to a great extent because they are the main recipients of farm program payments. But if non-commodity outputs have a high value to society and farm support is shifted to the production of these outputs, then what are the consequences for economic well-being of different types of farm? How might the distribution of income and wealth shift if we expand "green payments" and reduce the financial commitment to current policies?

Most of the debate on farm well-being has focused on income levels. Agricultural economists and statisticians who work in agriculture have long known that even when farm income was low, farm wealth was high. However because farm wealth was largely illiquid and dependent upon the level of farm income the interest in developing measures of economic well-being that incorporated both income and wealth was low. However it now seems that land values seem less closely coupled to current levels of farm income than had been supposed. If farm wealth and farm income are not highly correlated, then it becomes more important to incorporate measures of income and wealth into any discussion of economic well-being. This is even more true once you recognize that farmers have considerable flexibility in converting current income into wealth.

Several years ago Ray Bollman produced some interesting papers on entry and exit of farmers that showed the gross flows in and out of agriculture were much higher than the net flows. If we are interested in the distribution of farm income then this work should be revived so that we can say something substantive about the financial condition of those

who enter and those who leave. In both countries there is an ongoing concern with young and beginning farmers, but we know little about their characteristics upon entry, nor their income characteristics in the first decade of their activity. This makes it hard to develop effective programs to support entry.

While there is much to say in favor of adopting the farm household as the basic unit for analysis we should also reflect on its limitations. Recall that when farm income statistics were first developed they measured household income, but the establishment was substituted in mid-century. There is always a tension between looking a the well-being of the people engaged in agriculture and looking at the output of agriculture, and unfortunately to get better information on one seems to require less perfect information on the other. Something we should ask ourselves is whether we are really telling the whole truth about agriculture when we say that farm families have higher incomes than non-farm families, if the reason they do so is because the vast majority have high levels of off-farm income.

Given the tensions between establishment and household measures of income we probably have to do a better job of decomposing net income into the returns to labor, the returns to capital and the returns to land. Farm income is not equivalent to wage income and we should be more careful in how we make these comparisons. In making this decomposition we must also be mindful of the ability of farmers to add to wealth instead of earning income. The old adage of farmers living poor and dieing rich is, to a considerable extent, the choice of the farmer, and is largely driven by tax management concerns as well as efforts to expand the enterprise.

My belief is that it is important to think about the choice of specific measures of net income that we focus upon in our reports. Why is that specific measure chosen ,and what are the implications of the choice relative to some other measure? In particular I think it is important to analyze whether specific measures are biased up or down in different phases of the farm business cycle. We know that pressure for increased support comes during cyclical lows, so a measure that tends to overstate low income will have the effect of increasing political pressure for more support.

Related to this last point I think we should have better information on how income conditions vary over time within the various distributions of farms. For example, how does income vary over time by size class, within each size class, or by commodity. Agency reports provide lots of information on averages and means, but little on variances. We know that people can be happier with a lower mean income if variability is greatly reduced, but without a sense for the level of variability it is hard to get a sense for how much increases or decreases in income alter levels of well-being.

Finally, I see little chance that we will ever replace net income as the summary performance measure for farming. This means that we have to do a much better job of figuring out how to report this highly politically charged number so that it is clearer to legislators, the press and to farm groups what it really means. It is too much to expect that interest groups will not try to twist the number to best reflect their specific values and

agendas, but there should be ways to make their twisting harder. To simply say we report the number and we let other interpret it as they wish is not truly serving the public purpose when you know from experience that the numbers you report can be readily manipulated.

9. Conclusions

In both Canada and the United States there has been a significant effort over the last twenty years to improve how we measure farm income. By any technical standard the data that is now collected is far superior to that which was collected in the past. We should be proud of these improvements. The problems now are not data inadequacies in the sense that we collect bad numbers. Rather the problems are more conceptual. The nature of farming has changed rapidly over the last twenty years, the dependence of farmers on government policy has increased, the integration of farm households with the rest of the economy is almost complete, and our two societies now want more from farming than a stable supply of food, feed and fiber.

My perspective is that we have still not completely learned the lessons Jim Bonnen put forward thirty years ago. The data system has to be truly integrated into an information system and this means that we first have to determine what problems we are interested in, then identify concepts to measure aspects of the problems and then assemble data in a form that can be used to analyze conditions and policy effectiveness. Clearly it is not up to statistical agencies, nor economists to undertake this task. However we should be trying to use existing data to develop information that can help inform the political process. Doing this will have consequences. As Jencks pointed out in his discussion of U.S. Real Family Income controversies in the 1970s, there are interests who use existing reports and concepts to advance their cause and who can be expected to oppose change. It is easy for someone in a university to argue that special intersts should be ignored, and the broader public interest should prevail. But for those inside government reality dictates that battles should only be engaged in when there is a reasonable chance of success.

In the case of farm income measurement perhaps we are there. The old concepts no longer make sense, but more importantly the public appears to want more from farm policy that it has received in the past. The obvious starting point is to rethink what we mean by a farm, at least for policy purposes. While there is strong public support for “real farmers” my sense is that there would be little public concern if those with only marginal engagement in commodity production were explicitly excluded as targets for farm programs.

This would leave two groups to deal with. The first would be low income limited resource producers who have never benefited significantly from current policy. However this is the group for which the traditional farm problem remains real. While we know some things about these individuals we do not know a lot, in part because we have not collected very much data on them.

The other group are commercial farmers. While these individuals rely on farm earnings to a great extent, their dependence on government payments is highly variable across, commodities produced, geography and time. For these farmers in aggregate the farm problem seems to be resolved. Their economic well-being is well above the average households. However we do not know, but we should, whether aggregates and averages are as poor a descriptor for this sub-group of the current farm population as they are for the entire category. Some of the existing analysis of farm income data for commercial size farms in both countries suggests that conditions are more diverse than the average suggests, and so before we declare the farm problem to be resolved for commercial farms, we should look a little deeper into the distributions.

References

Acemoglu, Daron and James Robinson. 2001. Inefficient Redistribution. *American Political Science Review*. 93:3 pp. 649-661.

Bonnen, James. 1975. Improving Information on Agriculture and Rural Life. *American Journal of Agricultural Economics*. 57:5, pp. 753-763.

Bawden, Lee, *et. al.* 1977. *Income and Wealth Data as Indicators of Well-Being for People Engaged in Agriculture.: Series B,* unpublished mimeo. USDA, ESCS: Washington:D.C.

Da-Rocha, Jose and Diego Restuccia. 2002. The Role of Agriculture in Aggregate Business Cycle Fluctuation. Working Paper diegor-02-02. Department of Economics, University of Toronto. http://ideas.repec.org/p/tor/tecipa/diegor-02-02.html

Drummond. W., W. Anderson and T. Kerr. 1966. *A Review of Agricultural Policy in Canada*. Publication 1. The Agricultural Economics Research Council of Canada:: Ottawa, ON.

Feldman, Paul. 1971. Efficiency, Distribution and the Role of Government in a Market Economy. *Journal of Political Economy*. 79:3 pp. 508-526.

Friedman, Lee. 1999. Presidential Address: Peanuts Envy? *Journal of Policy Analysis and Managemesnt*. 8:2 pp. 211-225.

Galbraith, J.K. 1969. Economic Preconceptions and the Farm Policy. reprinted in Karl Fox and D. Gale Johnson eds. *Readings in the Economics of Agriculture*. Richard D. Irwin: Homewood, IL.

Gardner, Bruce. 1992. Changing Perspectives on the Farm Problem. *Journal of Economic Literature* 30:1 pp. 62-101.

Hanson, Victor. 2000. Democracy Without Farmers. *Wilson Quarterly* XXIV:2 pp. 68-79.

Hopkins, Jeffrey and Mitch Morehart. 2002. An Empirical Analysis of the Farm Problem: Comparability in Rates of Return. in L.Tweeten and S. Johnson eds. *Agricultural Policy for the 21st Century*. Iowa State Press: Ames IA.

Hum, Derek, Daryl Kraft and Wayne Simpson. 1995. A Framework to Analyze Income Support and Income Stabilization Policies In Canadian Agriculture. Technical paper 3/95. AAFC, Policy Branch: Ottawa, ON. available: www.agr.gc.ca/pol/pub/frame-cadre/pdf/framecadre_e.pdfs

Intersecretariat Working Group on Agriculture Statistics and Rural Indicators (IWG.AgRI). 2005. Chapter XII Measurement and Composition of Farm Household Wealth in *Handbook on Rural Households' Livelihood and Well-being*. available: http://www.unece.org/stats/rural/contents.pdf

Jencks, Christopher. 1987. The Politics of Income Measurement. in William Alonso and Paul Starr eds. *The Politics of Numbers*. Russell sage Foundation: New York, NY.

Jensen, Harold. 1977. Farm Management and Produciton Economics, 1946-1970. in Lee Martin ed. *A Survey of Agricutural Economics Literature, Volume 1*. University of Minnesota Press, Minneapolis:MN.

Loyns, Al, David Freshwater and George Beelen. 1983. *Procedings of the Seminar on Revisions to Farm Income and Financial Statistics for Canada*. Occasional Series No. 14, Department of Agricultural Economics and Farm Management, University of Manitoba, Winnipeg.

Rapp, David. 1985. *How the U.S. Got Into Agriculture and Why It Can't Get Out.* Congressional Quarterly Press: Washington, D.C.

Rochefort, David and Roger Cobb. 1994. Problem Definition: an Emerging Agenda. in David Rochefort and Roger Cobb eds. *The Politics of Problem Definition*. Unversity Press of Kansas: Lawrence, KS.

Sheingate, Adam. 2001. *The Rise of the Agricultural Welfare State*. Princeton University Press:Princeton, NJ.

Tweeten, Luther. 1979. *Foundations of Farm Policy* 2nd edition. University of Nebraska Press: Lincoln NE.
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