

Canadian Support for Agriculture: The Evolution of Income Stabilization as a Basis for Policy

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Introduction

In the paper we examine the nature and origins of current agricultural support policy in Canada. Canadian policy has evolved in the last twenty years from a focus on stabilizing commodity prices and compensating farmers for yield losses, to a focus on stabilizing farm income. The evolution has not followed a smooth path, nor has it been uniformly endorsed by all the stakeholders in the process. Indeed, there have been multiple efforts in the last ten years to design a net income stabilization program that provides adequate stability to farmers across Canada without (or with limited) income supplement, in a form that is operationally tractable, and fiscally responsible.

Our particular focus is to examine why, and how, Canada shifted national agricultural policy from the more conventional approach in OECD countries of providing income support through direct payments for commodity production, to an almost unique approach of relying upon a series of whole-farm income stabilization programs. In the analysis we raise general points about the changing nature of agriculture and what this means for any form of government support. But our main interest is how these forces shaped the specific set of Canadian policies. We also provide an assessment of how effective the more than 10 year Canadian experiment in income stabilization has been.

As is the case in other countries Canadian agricultural policy and programs are primarily driven by changing domestic conditions inside and outside the farm sector. Other important forces such as technological change and a changing international trade environment also play an important role. Over time, three major forces can be seen as shaping the particular way Canadian farm policy has responded. They are: large regional differences in the nature of agriculture across Canada, especially between eastern and western Canada; an explicit commitment to “fairness” as a basis for public policy; and the pervasive influence of the United States – both as a market opportunity and as a limiting factor on Canadian agricultural development.

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Policy can be usefully thought of as an exercise in constrained optimization. At any point in time there is a policy goal, or goals, and a set of factors that constrain how the goal can be achieved. These constraints can be economic, social, legal, institutional or political in nature. For example: federal-provincial agreements can limit the actions by one or both of the parties to the agreement; WTO trade rules place limits on selected expenditures for farm support; the threat of countervail can modify the nature of programming; broad government policy guidelines or expenditure rules within Canada can prevent certain program designs (e.g., “non-stacking rule” on subsidies); and even though a program may call for certain expenditures, the funding must still be appropriated by Parliament. Further, social values may favour the use of one type of policy over another, while the relative cost of different policies may make some impractical. Most importantly, the set of binding constraints and the goals of agricultural policy can change over time as domestic and international conditions change. As a result, policies that may have been appropriate at the time they were introduced can rapidly become ineffective, or even dysfunctional. When these policies have failed, it is not necessarily because the initial choice was poor, but because the environment or the objectives changed. There are, however, instances of policies that fail because they were poorly designed or poorly implemented.

It is particularly important to assess current policies in the context of the past. Path dependency is a significant factor in policy development. The past not only constrains actual policy options, it also limits the set of options that are considered to be feasible. This makes it difficult to transfer policy experience from one country to another, despite apparent similarities. However, while the past may constrain current policy, there is always a need for policy evolution. The introduction of new policies offers the opportunity to use these new approaches to better fit government objectives and a changing policy milieu.

Paper Organization

The balance of the paper is organized as follows. We first discuss the nature of the farm income problem, or farm problem. This is followed by a discussion of a major policy challenge facing Agriculture and Agri-Food Canada at the present time – how can falling levels of farm income in recent years be reconciled with steadily increasing government outlays to support farm income? We then provide an historical overview of the evolution of those aspects of Canadian farm policy that have a major bearing on farm income as a way to establish the context for the current income stabilization approach. This is followed by a description of the major forces that currently shape agricultural policy. We then review reasons why policies might fail, with a brief discussion in Annex II of the problems of insurance type (stabilization) programs. Concluding observations and possible policy directions are the last section.

The Farm Problem

The origins of farm policy in North America can be found in a belief, first advanced in the 1800s but widely accepted by the 1930s, that the income of farmers and farm families was less than was socially desirable (Cochrane, Fowke). Further, there was the additional belief that it is in the interests of society at large to find ways to raise farmers' and farm family income. In the first half of the twentieth century, evidence of a large gap between farm and non-farm incomes was easy to find, and farm families as well as being a large share of the total population also constituted the vast majority of the rural population. Thus the farm income problem was a synonym for a rural income or rural development problem. Given this context, for decades the primary justification for any form of farm support was an effort to enhance farmers' income. More recently gaps between farm and non-farm income have closed, and by some measures reversed, yet perceptions continue that a farm problem exists, and calls for additional government support for agriculture are common. But, is the farm problem of today the same as that of the past?

Aspects of “the Farm Problem”

What is the farm problem? Initially, it was conceived as a level of income problem, with most farm families having incomes well below the national average. However the income of other occupational groups also falls well below the national average but there are few cries regarding “the restaurant worker problem”, or “the car wash worker problem”. By contrast, the farm problem has always included a perception that there is a social welfare aspect in raising farm income that is important to the larger society. For over fifty years, farmers have been seen as “more deserving” of public support than other occupational groups – perhaps because they are seen as the stewards of important natural resources.

Another part of the difference comes from the way income is earned. For the restaurant worker example, low incomes stem from low wage rates that reflect low skill requirements and low opportunity costs. In agriculture the return to the operator is a residual from a small business; that is, gross income on the farm, minus direct and indirect expenses. Thus the farmer faces significant income instability compared to a wage worker. But even so, we do not worry about the returns to other small business owners in the same way.

Farm family income now typically includes a combination of these two types of labour return: the residual after expenses from the farm operation plus payments to the household for work off the farm. Even though low farm household incomes may be the result of either low wage or low residual income, society has the persistent notion that it must share in raising the farm household income by direct support of the farm component, but only offer wage and benefit regulations for other income sources.

Over time, the farm problem has been modified to include two additional issues (Gardner, 1992). These are variability in farm income and the rate of return on farm investments. These two changes have become more important in recent decades as farm income levels have increased so that the gap between farm and non-farm incomes closed.

Variability is raised as an issue because even if average farm incomes are comparable to those of other households, large year to year fluctuations in income could still result in a significantly worse standard of living for farm families. If farm incomes are unstable then a higher average return may be needed than in situations where income does not fluctuate from year to year. Conceivably high variability of farm income could negate some portion of the narrower level of income gap between farm and non-farm households.

The question of farm income providing an inadequate return on investment has become more important as the level of capital investment in agriculture has increased. Because farming is a business, the capital invested in agriculture should at least cover its opportunity cost. Rates of return on agricultural capital are often seen as being too low, especially on a risk adjusted basis. Advocates for additional support argue that unless these rates of return can be improved, there will be under-investment in agriculture and this will soon lead to reduced international competitiveness, falling output and higher food prices. However arguments of this type seldom recognize the opportunity cost of either additional government support for farmers or the additional investment that is induced into agriculture. Both supplemental aspects of the farm problem add complexity to the issue.

Variability

Low level of income arguments are about the underlying trend in farm income, while stability concerns deal with variability of income about a trend. Thus a concern with levels is more of a long term focus, while variability deals with the short to medium term. It should be recognized that persistent low levels of farm income suggest some combination of: excess resources are present in the sector, resources in the sector have low opportunity costs, and/or, resources in the sector are motivated by factors other than current income.

It is also important to recognize that levels and variability are not independent. Because of underlying risk return relationships we would expect activities that have higher variability of return to have higher expected rates of return in order to attract investment. Thus in any reasonably efficient capital market if a stabilization policy is effective in lowering the variability of the return on an investment, it will have the consequence of lowering the required rate of return. In the case of agriculture asset values, primarily farmland, will be driven up until their rate of return falls to the new equilibrium level. Conversely if variability of return (risk) increases, one would expect asset values to fall until a new higher equilibrium rate of return is achieved.

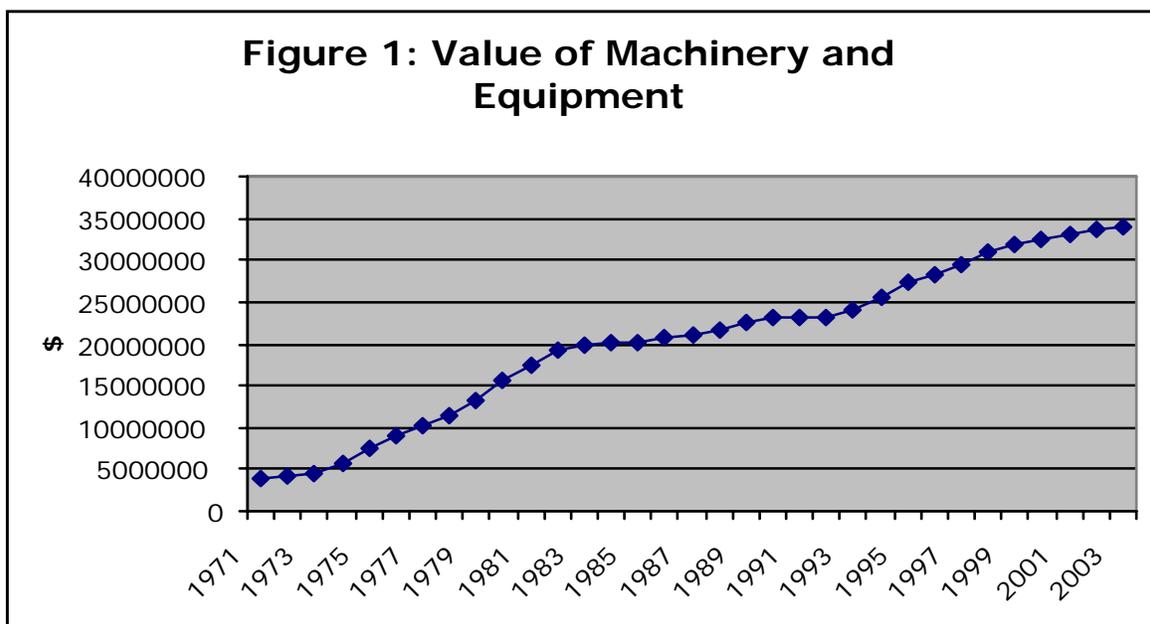
A significant question for policy is: when does a concern with stability become a concern with income levels?, i.e., how many years of below trend income are required to shift the focus from stabilization of income to increasing levels of income, or to the need for structural adjustment in the sector. A secondary question is, how long a time series should be used to define the trend. The longer the series the more plausible it is to argue that low incomes are cyclical. However waiting for more data implies delays in implementing a policy response. A third question relates to whether the trend toward lower aggregate incomes is indicative of a general reduction of incomes or whether this is

indicative that only a subset of farmers are facing declining incomes. Farm income is not uniformly distributed and while some farmers may be in poor financial health, others may be doing well.

Rates of Return

The rate of return issue introduced a new dimension to the farm problem, even though it is tightly linked to the level and variability aspects. Like the levels of income concern it is a longer term focus, but because it is a pure financial argument there is no fairness question attached. Simply put, it says that if farming does not generate a competitive risk-adjusted rate of return on current investments then there will be great difficulty in getting new investment in the sector. The two broad factors of production that have to earn competitive rates of return are labour and capital, since most farmland has limited opportunity costs. However it is not easy to determine the opportunity cost of farm labour (Gardner, 1992).

High rates of labour outflow over the past half century and more suggest that returns to labour have been low, either absolutely, or in relation to opportunity value of labour. At the same time there has been a massive increase in capital investment as machinery replaced animals and workers (Figure 1). The high and ongoing capital investment process suggests that capital had to be earning an adequate return in the long run. But the return to capital has to come from net farm income, since the farm operator is the owner of the capital. If farm income has a downward trend then the only way to reconcile a growing capital stock is through falling returns to other factors of production – primarily labour and land – unless productivity increases more than enough to offset the decline in returns to other factors. However, returns to land increased over most of the last twenty years, so returns to capital can only be explained by: significant increases in productivity, falling returns to labour, or perhaps an overall decline in the acceptable risk-adjusted rate of return, or a decline in variability (risk) due to government stabilization programs.



Differences Among Farms and Farm Families

The level of income from agriculture must be seen in the larger context of family household income. That is, the large majority of “farms” in Canada receive considerable income from non-farm sources. In fact, the smaller farms, under \$50,000 gross farm income, as a class have negligible or negative net income from farming, while the family household income of this group is above the average Canadian household income. The top 10 to 20 percent of farms claim about 90 percent of the net farm income in Canada. Even in these cases, non-farm income in the household is substantial. For a middle group of farms, net farm income is small, and family household income is below the average income for Canadian family households.

For the smaller farms, off-farm employment represents the primary occupation even though these households are defined as farming households. This requires that the farm residence lies within an area with off-farm employment opportunity. Where these employment opportunities do not exist within a reasonable radius from the farm, small farms cannot compete in today’s markets (Findeis, Lass and Hallberg, 1991). Most, in this situation, will be consuming equity to maintain family household expenditures. Stabilization programs do virtually nothing for this group since their level of farm income is so low. Similarly, other types of income support programs designed for all of agriculture do little for the group, when, support is based on net income, volume of production, or price supplements. Simply, they are too small to capture enough benefit to substantially influence their income.

For the largest farms, those capturing most of the net income from farming, net farm income is the largest source of household income, even though off-farm employment income is substantial in aggregate or on average. Essentially, the level of farm and off-farm employment on these farms is a labour allocation issue. Continuous year-round employment is a combination of farm operations and off-farm employment by the farm operator and the other family members. That is, these farms are finding enterprises for the household that utilize labour availability throughout the year, either within agriculture or in off-farm employment for one or more family members.

For the middle group of farms, there are often limited opportunities for continuous labour employment throughout the year in agriculture. Particularly for crop dependent farms, labour requirements for agricultural production are heaviest in spring and late-summer/fall, with very limited opportunity for income generation during other parts of the year. The labour hours during the year in agriculture alone are well below the Canadian average household, with household income commensurate with the labour utilization in the household. While other farmers in the same area and situation have found alternatives which enable better utilization of labour throughout the year, many have chosen to stay with only crop enterprises. The reasons will vary by individual situation. Generally, lack of skills and management capability to pursue value added or additional enterprises on the farm, limited financial capacity, age and life cycle status, limited local employment opportunity within the area, limited employable skills, and life style choice, represent the principal reasons for this seeming under-employment.

Technology

Changes in technology have had a significant effect on labour returns in agriculture. In general, improvements in technology have been embedded in purchased inputs, e.g., seed, as well as in increasing scale in machinery and other capital inputs. If a farmer or the farmers in a country do not adopt technological improvements as rapidly as the rest of the world, then returns to their capital will fall (and the capital assets will fall in value). If productivity improvements are made more rapidly than the rest of the world, asset values will rise, assuming returns to labour remain the same. Because many of the productivity increases are labour saving, unless labour continuously leaves the agricultural sector, returns to labour will continue to deteriorate. This implies a constant process of adjustment in the agricultural sector, forced by technological change, increasing capital requirement and a declining labour requirement in agriculture per unit of output. The departure of labour from agriculture is conditioned by the demand for labour and its attendant skills in other parts of the economy as well as the accepted return to labour remaining in agriculture. As well, there are several factors which slow the movement of labour from agriculture, below that expected from non-agricultural labour demand. Once in agriculture, the life cycle in farming, the fixed asset trap (returns to capital below acquisition values for expansion or productivity gains, and above salvage values), and the narrow skill range available for off-farm employment, all lead to farm labour remaining in agriculture long after returns fall below the non-agricultural labour returns.

A Too Limited Approach to Farm Goals

Agriculture is one of the most capital intensive industries in Canada. Historically, farmers have owned or controlled the assets in farming, building equity throughout their time in farming. This provides them with the opportunity to take potential net income from farming either as personal income or to keep it within the farm as retained earnings and reinvest it in the operation. Reinvestment provides an immediate tax shield and the potential for significant capital gains in the future that are either non-taxable or are taxed at a lower rate than personal income.

Because of the structure argument above, any returns above the acceptable labour income of the last entrant are likely to be utilized to increase equity in the farming operation. That is, for most in agriculture, maximizing equity represents a stronger driver in managing the farm operation than maximizing labour returns (Peoples, Freshwater, Hanson, Prentice and Thor, 1992). This feature is augmented by tax advantages available to agriculture, including the life time capital gains provision, cash accounting and the ability to write off losses in agriculture. Simply put, converting farming income to equity is regarded as superior to taking income as a return to labour, at least in the short to medium run.

One implication of this type of behavior, where farmers divert potential net income into expenditures on asset accumulation, is an explanation for why asset values in agriculture increase when net incomes are low. As shown in Figures 1, 2 and 3 below, there have been steady increases in asset values over a period when net income has not increased. This ongoing commitment of funds to farming when measured returns are low suggests

either that farmers make poor investment decisions, or that they have a more complex objective function than simple income maximization.

Changes in the pattern of farmland ownership may be weakening the incentive to capitalize income in asset values. As an increasing share of North American farmland is owned by non-operators the incentive of the farm operator to convert current income into capital long term gains is reduced. When the operator no longer owns the land, there is no incentive to not take income as a current return to labour and management. For farmland owners such a shift would lead to a lower rate of return to land and reduce the incentive for outside investors to hold farmland. It would also tend to increase the level of net income reported by farm operators because they would no longer be making the same level of investment in farmland.

Policy Focus Mismatch

Because most households engaged in agriculture have multiple sources of income, low levels of farm income or instability in farm income can have very different consequences.³ Historically, policy has been oriented to dealing with the problems of farms where agriculture provides the vast majority of total household income, but these are no longer the majority of farms. Now policy has to be defined in terms of which subset of farms is the intended target. For the majority of farms in Canada much of the standard competitive model still describes behavior. Farms remain price takers and supply is determined where price equals the marginal cost of production of the last farm willing to produce that commodity. Production expands until the last entrant achieves zero economic profit. However the crucial change in agriculture from the past is that farms no longer have a fairly common cost structure do their individual supply curves can differ significantly. Technology and scale economies allow some farms to produce at lower costs than others, and at least in the short run earn excess profits. Importantly if government support for agriculture allows higher cost farmers to remain in operation then excess profits continue for the more efficient and pressures to reallocate resources away from high cost producers are mitigated. Examples of technology and scale effects are air seeders for direct seeded crops, large scale livestock operations, large scale dry lot operations in dairy, and the like.

These new technologies shift the long run cost curve downward and to the right, offering greater return to those employing the technology than the returns to those who remain with older technology (Hallberg, 1992). However, in many cases, these new technologies place the salvage value of fixed capital equipment on farms at or close to zero. That is, older equipment for planting and spraying crops, for example, has no value to the farmer who shifts to the newer air seeder technology. This requires a recapitalization of agriculture on a continuous basis. Not all farmers are capable, from either a financial or from a managerial perspective, to continuously recapitalize the farming operation to remain at the forefront of technology. The consequence is that with the outward and downward shift in the long run average cost curve from these new technologies,

³ It should be noted that most households in Canada depend on multiple sources of income. For those reporting some income in agriculture, many have a primary occupation off the farm, with farming as a secondary activity, even though they are counted as farmers in the census and farm income numbers.

production continues to expand until the last entrant utilizing the new technology exactly matches returns and costs. Many farmers are left behind with costs above the returns in this situation, facing little opportunity to capture or use the benefits of the new technology. This implies that the few farmers leading the technological change in production will gather an increasing share of the net income from agriculture over time.

Another aspect of technological change has become important over the past two decades. Over the past century, the vast share of technological changes in agriculture was publicly funded, with the most gains from the technology going to the early adopters in primary agriculture. As the technology became widespread these transitory gains to early adopters dissipated. However, during the past two decades, a growing share of the technological gains in agriculture have been generated from private research funding and exhibit a pronounced large scale bias in application. The result is that a significant share of the gains from the new technologies is captured by the private research system, with limited benefits for the earlier adopting farmers. The implication is that the technological change contributes less to farm income growth than before, and access to the technology is increasingly restricted to those with the managerial and financial capacity to exploit these technologies.

With real commodity prices falling, and technology gains available to a decreasing proportion of farms, we are faced with accepting that the net income from farming will decline in real terms over time, and a small share of farmers will capture a larger share of the sectoral net income over time. For this smaller group, risk management and business continuity will be the primary problem. For the balance, income adequacy becomes a more significant problem. With labour returns in agriculture representing the residual after all costs have been met, even this variable may not be the appropriate measure to use as a policy indicator on income adequacy.

Changing Industry Structure

A rapidly emerging structural change is the importance of contracting and other forms of vertical integrations. In some types of agriculture, market forces are being replaced by supply chain management mechanisms. In these circumstances, farmers become part of a larger process and traditional agricultural support policy has little relevance for their well-being.

A second change is the growth in global competition. Even one or two decades ago, few countries were significant exporters of agricultural commodities. Today, many countries are capable of producing and exporting commodities using large scale efficient technologies, e.g., Brazil, South Africa, India, Argentina, Thailand, and the Ukraine. As well, many developing countries have substantially increased agricultural production of basic food commodities, driven in large measure by the “green revolution”. While future increases in production in developing countries are being questioned, the prices for these commodities (grains and oilseeds in particular) are being driven downward today with the new technologies utilized in many countries in the world. This is consistent with the general view that real prices for agricultural commodities have declined over a long period and can be expected to continue this decline for the foreseeable future.

Finally, the price support subsidies in developed countries also have been shown to lower world prices for several commodities, particularly grains and oilseeds. Increased supply induced by support payments leads to an overhang that lowers world prices. In combination with the market changes world-wide and the technology and scale changes in agriculture, these price subsidies are driving down the net returns to Canadian producers.

The Policy Response

Traditionally governments were concerned with two aspects of agriculture – a stable supply of commodities and reasonable returns to farm operators (Rausser, 1992). In the past, both objectives could be addressed by supporting commodity prices. Relatively high and stable prices ensured both adequate output and reasonable levels of farm income, but at considerable government cost. More recently governments in the industrialized countries have become concerned primarily with farm income and less with commodity price levels, because farm output has consistently exceeded domestic demand and high domestic commodity prices can limit export opportunity, unless export subsidies are employed. Trade agreements have imposed a measure of discipline on the volume of direct price supports and export subsidies for farm products.

Like most other developed nations Canada has modified its agricultural policy extensively over the last twenty years in response to internal and external pressures. These changes have each involved significant debates about the merits of change in general and the specific changes advanced in particular. In addition while each change has been presented as a solution to current problems, and as having a considerable effective life, the actual time between program changes is small. This leads to the obvious questions - what was wrong with past policies, and, can an effective, efficient and durable policy be designed?

It is worth exploring the stability and continuity of some policies and not others. Equally, it is important to understand the origins and concerns for continuous change in other policies. Supply management in the Canadian dairy and poultry sectors, as a means of offering stable prices and incomes, began in the late 1960s and was institutionally largely mature by the late 1970s. Little change has taken place in the regulatory and institutional structure since that time. In contrast, direct payments to farmers for stabilization and *ad hoc* payments have evolved continuously. For supply management, the institutional structures were legislated and did not require annual appropriations by Parliament. As well, world markets were sharply distorted and exports, at least in dairy products, were managed by GATT quotas, or treated as surplus product disposal. With sharp limitations on imports, domestic prices could be set largely independent of international markets. Finally, domestic prices were regulated jointly between producers and governments, avoiding or limiting the problems of setting relative prices within Canada. The transfers to supply management producers were coming from consumers, not government treasuries (the dairy subsidy until 1997 is the exception).

For the direct payment programs designed to achieve stability, continuous evolution took place. The WGSA program, started in the 1970s, was the first program to stabilize net income on a collection of commodities, rather than each individual product. Commodity specific support carries with it the risk of setting relative support levels across commodities different from the short and long term trends in the market. As a result, producers rapidly begin to respond to the support levels for individual commodities and not the directions which markets may be leading. By attempting to stabilize the net income across a range of commodities, the relative prices were expressed by market forces and not through government programs. As well, outside of the supply managed commodities, Canada faced relatively open and unrestricted markets, domestically and internationally. The policy and market shocks faced across nearly all of these commodities forced the continuing evolution of programs to respond to these situations. With a largely closed market, supply management was not continuously pressured for such changes.

The Government of Canada has a long track record of preferring regular and predictable program design and expenditure. In examining the Crow's Nest Pass Rate Agreement, it was clear by the late 1960s that the fixed rate for grain movement by rail in western Canada was leading to a substantial deterioration in rail infrastructure and system capacity. Nevertheless several decades of annual appropriations provided many "fixes" such as: rail rehabilitation, box car rehabilitation, export port development, and hopper car purchases, as means to forestall changing a century-long political and economic commitment to western Canada. By the 1980s, an arrangement finally was made to subsidize the rate for grain movement in return for the railways providing the investments for continued improvements in grain transportation. This offered a regular and predictable annual expenditure for government that was capped to prevent explosive or unforeseen increases in budgetary cost.

In principle stabilization policies offer a high degree of certainty in outlays. A well designed stabilization policy that addresses a purely cyclical phenomenon has very predictable demands. Once the base level of funding is established it is relatively easy to establish annual infusions that are used to cover outlays when the trough of the cycle takes place. Crucially this predictability depends upon stable cycles and programs that focus purely on cyclical instability. If other factors such as random shocks or declining trends are significant, or if cycles are not stable, then demands on government will be unpredictable too,

For the stabilization programs to date there was a cycle of initial stability in expenditures for new programs, followed by a growing amount of *ad hoc* and other unforeseen expenditures. These led inevitably to policy and program reviews that looked for ways to allow a return to stable programming and expenditures. Throughout the 1990s, an underlying condition that federal and provincial Ministers sought to achieve was a stable program set that would offer predictable expenditures and protection against continuous *ad hoc* demands. Unfortunately conditions in farming lacked the stability needed to achieve this result. As each set of programs was established, new and different causes for *ad hoc* assistance would emerge, eventually leading to another round of program changes

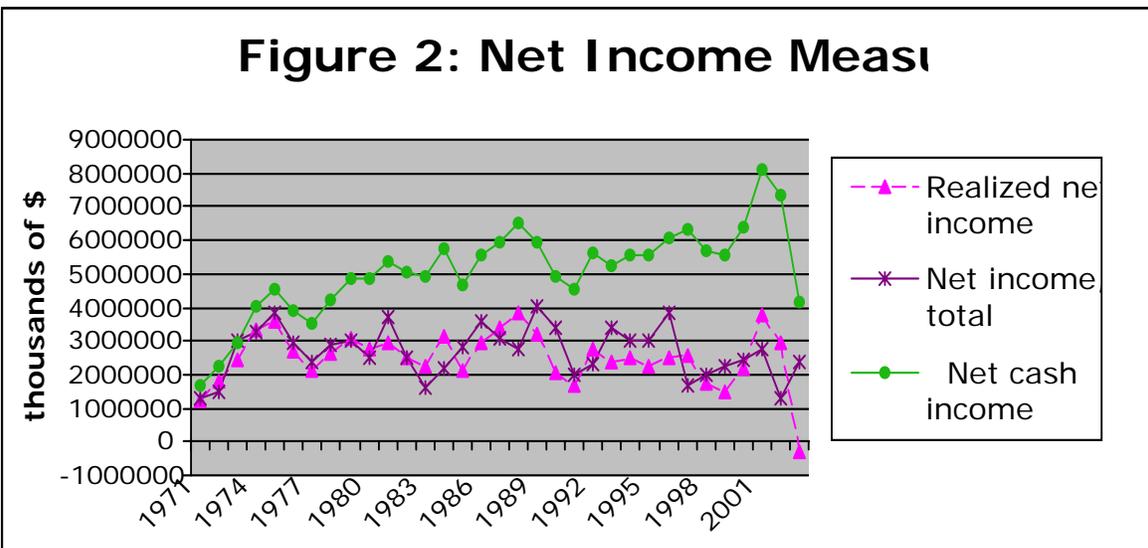
with the promise of predictable expenditures. The current round of programming designed as whole farm, responsive to all-risks in income variability, is the result. Its weakness is not that the current programming cannot respond to the variability in income, it is that the current programs cannot respond to the level of income issue.

The Current Policy Challenge

One way of illustrating the farm policy problem is to examine three related data series. The first is farm income, the second, average land values and the third, government payments. Net farm income is the most immediate indicator of current financial conditions since it gives a quick picture of current earnings. However, there are multiple measures of net income that can give conflicting signals. The second is farmland values. Farmers historically have capitalized program benefits into land and other asset values. As a result declining asset values are a reliable indicator of severe financial stress in agriculture. Conversely, increasing farm land and asset values at a time when incomes are stable or falling suggest a mixed message of the health of agriculture. The third series measures government support outlays. Government programs in Canada have focused on farm income support for many years. These outlays are expected to be countercyclical and effective. Higher outlays should occur in periods of low income but we should soon observe improvements in income levels as a result. Sustained downward movement in farm income are the trigger for questions about how well farm programs are working.

The Data

There are multiple measures of net farm income. The most common are total net income, realized net income and net cash income (see Box 1 for definitions). The three provide conflicting evidence of income conditions (Figure 2). Net cash income shows a strong upward trend over the years 1981 – 2002 albeit with a large decline in the last three years. Both realized net income and total net income exhibit a declining trend over the same period with total net income declining somewhat more. In the last three years, realized



net income shows a sharp decline of about the same magnitude as net cash income, while total net income has a very slight decline over the same three year period. Most

importantly, the variability of all three measures, especially realized net and net cash income was greatly reduced through most of the 1990s, but is much larger in the last three years. By contrast, the degree of variability of total net income has been more consistent over the total time period. In aggregate, the three net income series suggest a recent decline in the level of farm income and an increase in variability, but a three year interval is not particularly conclusive in determining if a significant break in long run conditions has occurred.

Over the same time interval, the aggregate value of farmland and buildings has experienced a strong upward trend (Figure 3). In the mid-1980s there was a significant

Box 1: Measures of Net Income

Net cash income measures farm business cash flow (farm cash receipts minus operating expenses) generated from the production of agricultural goods. Net cash income represents the amount of money available for debt repayment, investment or withdrawal by the owner.

Realized net income measures the financial flows, both monetary (net cash income) and non-monetary (depreciation and income-in-kind), of farm businesses. Similar to net cash income, realized net income represents the net farm income from transactions in a given year, regardless of the year in which the agricultural goods were produced.

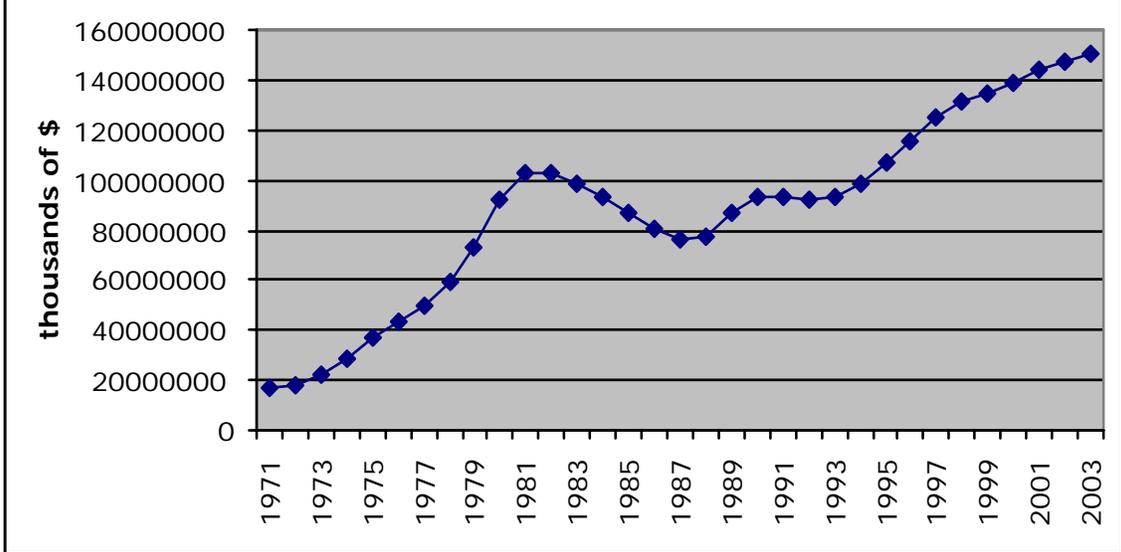
Total net income measures the financial flows and stock changes of farm businesses (net cash income minus depreciation plus income-in-kind and value of inventory change). Total net income values agriculture economic production during the year that the agricultural goods were produced. It represents the return to owner's equity, unpaid labour, management and risk.

reversal during the North American farm financial crisis but since then, the upward trend has been maintained. The upward trend has important implications for the interpretation of the net income results. Since a major determinant of farmland values is the future path of net farm income, an extended period where income has a declining trend is not obviously consistent with increasing farmland values. Standard models of farmland value use the discounted present value of future farm income as the basis for setting prices. This is adjusted by the potential for conversion of land to non-farm use. In the vicinity of urban areas, the major determinant of farmland value is often its use in housing or commercial activity, but most farmland has a value driven by future agricultural income. Over the last ten years, interest rates have

trended down so this would lead to higher present values for any given income stream and this could explain an upward land price trend if farm income was constant. However, two of the three net income series show a declining trend. Only if farmers base their land acquisition decisions on net cash income do we have a consistent story between income and farm asset values.

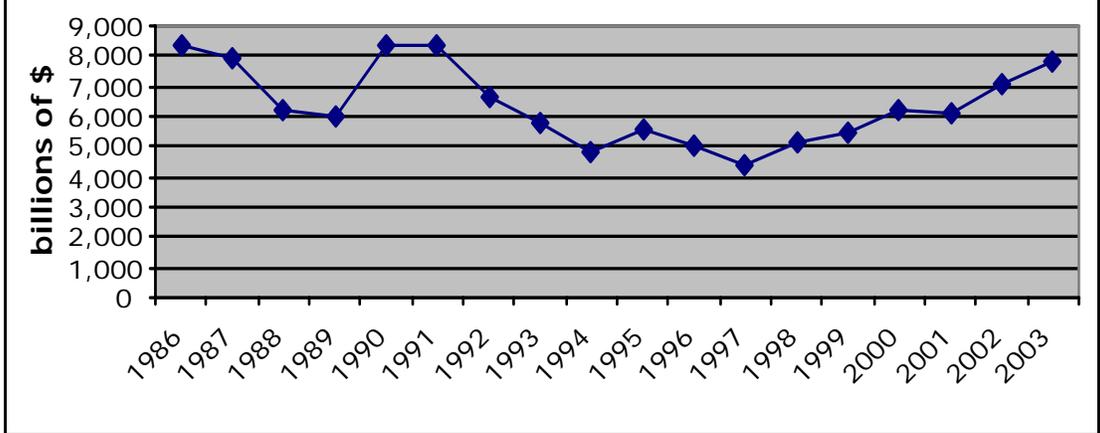
The third series is government outlays (Figure 4). These show a recent increase in government support as measured by the OECD using PSE methodology. Canadian support for producers reached a low of \$4.39 billion in 1997, from a peak of \$8.35 billion

Figure 3: Value of Land and Building:



in 1991. Since then overall support has climbed steadily to \$7.8 billion in 2003 using the PSE methodology. The direct expenditures by government are considerably less than the overall PSE support to agriculture, with the balance provided through market price support, principally in the supply management sectors. While direct government payments have constituted a growing share of net farm income over the period, it has become exceedingly important in the last few years as net income has declined. In particular, recent years show declines in farm income and increased income variability, despite the existence of large amounts of government funds.

Figure 4: OECD PSE Government \$



Policy Effectiveness

When policy was designed to support income at some desired level it would be possible to have higher levels of government payments and lower levels of farm income if the support mechanism was not able to replace the decline in market prices. In this circumstance, one might expect asset values to decline if the situation extended over several periods. It might also be possible to observe relatively high levels of income and support and increases in asset values if support levels were too high.

By contrast, because Canada has shifted from supporting levels of farm income to reducing the variability in farm income, one would expect greater stability in outlays, income and asset values. Because the specific mechanisms of Canadian policy largely reduce income shortfalls and do not impose a symmetry condition of reducing high levels of income to preserve mean values, the average level of income should increase. Figures 2 - 4 show that what has actually happened over the last twenty years is not particularly consistent with the policy model.

Several questions can be posed about the relationships between gross and net farm income measures and their sources by commodity group and payment or support levels. For example, do the differing levels of support for individual commodity groups lead to changes in the product mix in the sector? The aggregate evidence comparing regions of Canada with adjacent regions of the U.S. clearly suggest that significant changes in product mix result (Hedley, 2004). However, the extent of change, the causes of the change and the impacts on net farm income remain unclear. For another example, for each dollar of payment from governments, how much does net farm income change? This question is primarily about the efficiency of the transfer from government to farmers. Complicating the issue is that where the policy objective is stability of income rather than level of income, the transfer efficiency should be measured against the objective of the policy (stability) rather than the extent of change in farm income. As well, does net farm income change as a result of a shift in production mix from one commodity group to another? Micro-economic analysis at the individual farm level clearly indicates that these changes occur based on technology and relative price changes (Hedley, 2004). However, at the sector level, there is no evidence linking or measuring these changes in relation to net farm income level or its stability. Finally, to what extent does the change in risk levels from stabilization payments (as opposed to support payments) affect the commodity mix in the sector, assuming that risk levels are not uniform across all commodities, nor across all farmers?

Constraints in the Current Policy Environment

In this section we discuss a series of factors that constrain government policy. The factors are discussed independently, although it is clear that specific combinations of forces are more important at certain points in time. Indeed, a key policy problem is that the set of limiting factors is unstable over time, so a policy that was designed to deal with certain issues becomes ineffective when the underlying forces change.

Transfer Efficiency

Transfer efficiency deals with the fact that all the payments from government to producers often do not remain with the intended recipient. The simplest way to introduce the concept is to note that government expenditures for farm programs are typically much larger than net farm income. This raises the obvious question, why isn't policy altered to provide a direct income transfer and increase efficiency?

Another way to describe the issue is to use the simple accounting relationship

$$\text{Market Receipts} - \text{Expenses} = \text{Net Farm Income}$$

Suppose the government believes net income is too low and provides an income transfer to farmers. In an ideal world we should also have the following relationship.

$$\begin{aligned} (\text{Market Receipts} - \text{Expenses}) + \text{Government Transfer} \\ = \text{Net Farm Income} + \text{Government Transfer} \end{aligned}$$

If the government provides farmers with additional income it should show up as an equivalent increase in net farm income, *ceteris paribus*. In principle, a dollar of income transferred should be equated with a dollar increase in net farm income. But what we see in reality is that a considerable portion of the government funds that flow in to the left hand side of the equation do not reappear on the right hand side. As a result, the change in net farm income is often considerably less than the amount of support provided to the sector. Transfer efficiency is a measure of what share of the support provided actually sticks as an increase in net farm income.

The simple explanation for why net farm income does not change in direct proportion to government outlays is that government programs influence either, or both, market receipts (gross income) and expenses (OECD, 2002). That is, specific programs subsidize the purchase of inputs or support the price of specific commodities, rather than directly augmenting net income. In doing so, they induce changes in farmers' behavior and provide a mechanism for those outside the farm sector to capture a portion of the benefits. For example, price supports for output provide an initial increment to farm receipts, but they also induce farmers to increase output in subsequent years in response to the new higher price. Increased output requires a lower market price for the extra quantity to be absorbed. This leads to a lower price for all output not just the last increment, so consumers benefit, and the lower market price results in a fall in earnings per unit of production for producers. If producers subsequently argue for an additional subsidy to make up the difference, then the process repeats itself.

The increase in output caused by the subsidy in turn also requires more inputs to be purchased. In virtually all cases, an increase in the quantity of inputs demanded leads to an increase in price for all units of the input. This means that expenses per unit of output increase in response to the government program. A similar process can be traced through for virtually all government programs. Policy that is intended to add to net farm income

leads to reductions in market receipts and/or increases in expenses, with the result that net income never reaches the anticipated level (Gardner, 1987).

In general, we would expect transfer efficiency to decline over the life of a program. In the initial stage farmers are most unlikely to be able to alter production behavior so program benefits flow into net income. In subsequent years, the presence of the program induces behavioral change, at least some of which negates the benefits of the program. Most importantly, as firms outside agriculture recognize that additional payments are flowing to farmers, these firms have an incentive to alter their pricing policy to capture some of the benefits.

From a governmental policy perspective, higher levels of transfer efficiency are desirable. Stated differently, where income supplements are the objective of government policy, then the greater the share of the payments remaining with the recipient, the more closely the program meets the government objective. However, in the case of agriculture, all of the leakages may not be undesirable. If the higher output associated with government programs reduces the budget share for food of low income consumers making them better off, a social benefit occurs. Since the income elasticity of food consumed is low, benefits to high income consumers are relatively unimportant. Such a leakage or erosion of the payments to other groups in society helps explain the complaint of farmers that we have a “cheap food” policy. But it is the consequence of leakages from policies that induce higher production and thereby depress prices.

Other forms of leakage are less desirable. To the extent that benefits accrue to input suppliers or processors who are able to exploit monopoly power, no clear gain in social welfare results. Similarly, when consumers are the beneficiaries of the leakage, and the majority of production is exported (the Canadian wheat case), a significant share of the benefits accrues to consumers in foreign markets, while producers in foreign countries face lower prices because of the leakage. Domestically, a significant share of farm land is owned by non-farmers (retired farmers, absentee investors, non-farm families residing on farms) and operated by active farmers under either crop share or fixed lease payments. In the crop share arrangements, part of the payments will be captured by the landowner; in the fixed lease arrangement, on-going payments will be captured by landowners through higher land rents. In these cases, there is more reason for concern with transfer efficiency in the formation of both domestic and international/trade policy. Clearly, the type of payment, market structure, and asset ownership patterns can affect the transfer efficiency.

An important consequence of transfer inefficiency is that it enlarges the political constituency for supporting farm programs. As the number of farmers declines and their relative importance in the economy shrinks, it becomes more important that farmers be able to identify other groups who will support their programs. Because transfer inefficient programs spread the benefits of government expenditure over a much larger base than the nominal target groups, there is the potential for farmers to enlist these other parties as allies in pressing for higher levels of support.

Ad Hoc Payments and Transfer Efficiency

Leakages

It is clear that leakages tend to increase over time, so transfer efficiency declines. This reflects the ability of input suppliers and the marketing chain to modify behavior to become more efficient at capturing the transfers to farmers. In addition the supply response of farmers also increases over time as they too respond to the new mix of market and government policy signals.

Payments by government to farmers can clearly be eroded through both input and output markets, as well as in increased production resulting from the payments by government. One of the issues regarding payments by government is whether farmers have knowledge of the payment before making production decisions. Where there is prior knowledge of the payment rules farmers can include the information in their plans and find ways to “game the program.” Where *ad hoc* (and hence unforeseen) payments occur after production and marketing decisions on the farm have taken place, payments by government can have the greatest impact on incomes in the short run, although even in this case, some of the cash flow from payments can affect future capital investment and repair spending decisions in the near term. In both of these cases, the net income of farms may not demonstrate the full increase of the payment by government as an increase in farm income.

Capitalization

One response to transfer inefficiency concerns would be to move to *ad hoc* payments. If payments vary in size and focus on a seemingly random basis it is difficult for upstream and downstream forces to adjust behavior to capture the transfer. Similarly farmers are less likely to adjust behavior to increase program rents. If the nature of the support in any year cannot be predicted, but the amount of support is established, it may be possible to support farm income with a higher degree of transfer efficiency. Consequently *ad hoc* programs may be an effective policy response if increasing transfer efficiency is a major policy goal.

However, one of the difficulties with *ad hoc* payments is that after a few years of seemingly *ad hoc* payments, farmers begin to expect that the *ad hoc* payments will continue. In doing so, these payments can no longer be considered as *ad hoc* payments since they will change farm decisions on marketing and levels of production. Effectively, they become foreseen payments and factored into farm decisions even though the specifics of obtaining the money may not be known. Farm decisions will result in lower net farm incomes as the payments are captured as equity, and bled into input and product markets. Only by continually increasing these payments, can governments raise reported farm incomes, because once the expectations of rising payments are built into farm decisions, erosion into equity, factor and product markets will rapidly occur. In these cases, any change in policy to halt or substantially reduce these *ad hoc* payments will result in both considerable backlash from the farm community, re-adjustment in farm decision making, deterioration in asset values, and the return of farm income toward its market-established equilibrium.

Timing Problems

One of the difficulties in interpreting income stabilization effects is the timing problem embedded in the data sets. Since income based programming is dependent upon the historical experience of the individual farm, there can be a relatively long gap between actual losses experienced by individual farms and their receipt of payments. For a farm using the calendar year as its tax year, payments due under the program are not only made after taxes are filed for the year but also after any delays while assessments of eligibility for the program are made. The vast majority of payments are made at least six months, and in some cases one year, after the year in which losses were sustained.

This time gap between losses incurred and program payments can generate immense political pressure for *ad hoc* payments. Even though advance payments against likely future payments under the income program have been available, farmers have not used these advance payments to the extent expected, based on the calls for additional assistance in the January to June period. Significantly from a program design perspective the calls for additional assistance in this period are normally requested for all farmers, eroding the intention of the income-based programming to respond only to those experiencing losses.

As well, *ad hoc* payments are usually treated as income in the year in which they are received, reducing/offsetting the amount of payments under the income program (CAIS) for those experiencing a loss. For those not experiencing a loss, the general payment represents a net gain for the farm.

A second timing problem in interpreting the statistics from various sources is the difference between when the payments are considered as expenditures by government and when the payments are reported as farm income. Governments consider payments to farmers as expenditures in the fiscal year in which the events have occurred to cause the payments. However, in many cases the actual payments to farmers are considered as income in the year in which the payments are received. As a result, the expenditure statistics by year may not correspond with the income statistics for farmers. An example is the \$500 million announced in March 2002 by the Government of Canada. It appeared as expenditures for the 2001-2002 fiscal year, even though it was reported as farm income in the 2002 and 2003 farm tax years.

Politics of Ad Hoc

Stabilization programs in Canada are designed primarily to deal with downward fluctuations in net farm income. Certainly, there is a trade-off between transfers to offset losses and transfers to increase net farm income. However, directing payments to those with losses means that only some farmers will receive payments in any period, whereas farm support measures provide payments to every farmer, regardless of need. As indicated earlier, the greatest weakness in the stabilization payments for those with losses is that there appears to be a continuing political desire for payments to all farmers. In each of the last several years, the *ad hoc* programming has involved payments to all farmers, even though the stabilization programs covering part of the losses for individual farmers have been in place. The desire for income support at political level can stem from

several sources. First is the interest in “fairness”. It has been politically difficult for both governments and farm organizations to accept that only some farmers receive payments. From the farmer’s perspective, a neighbour receiving a stabilization payment can be interpreted as either the neighbour has made serious managerial mistakes and the property may become available for sale, or it can be regarded as compensation for those who make a mistake, when no money is provided for those who do well. The fairness concept is that everyone is treated equally. While the stabilization payments treat everyone equally in the long term, stabilization payments in any period can be interpreted as unfair.

The second issue is the level of income problem. Any decline in net farm income usually leads to calls for additional payments. With net income in farming as a residual, then a drop in sectoral or regional income is interpreted as succumbing to risk beyond the farmers’ control, for which some societal transfer needs to be provided. This responds to concerns of equity within Canadian society rather than economic fairness.

Third, political election cycles and competition within farm organization leadership as well as among elected government members can also arouse strong pressures for “across-the-board” payments. The combination of these political cycles with drops in net farm income and media interest can be a very powerful combination of pressures for additional payments to farmers in the form of *ad hoc* programming.⁴

Finally, there are critical periods in the annual cycle of cash flow on farms. By late October, farmers with production credit will be faced with making arrangements for repaying their spring credit. By November and December, farmers will be looking at mortgage payments and tax planning for the year. By January and February, arrangements for the following year’s production credit and planning for the input purchases, particularly fuel, fertilizer, seed and pesticide, will be underway. This period from late October to March/April is a vulnerable period for governments in facing demands for added assistance for farmers. In Canada, it coincides with the approaching end to the fiscal year (31 March) and the knowledge of any surpluses in the annual budget accounts. As well, it is governments’ budget planning time for the coming year. It is interesting to note that most of the *ad hoc* programs in Canada over the past several years have all been announced in this period, most have been “booked” from the surpluses of the budget year end, even though the payments to farmers have been made several months later.

Minimizing U.S. Trade Action as a Domestic Policy Constraint

⁴ Farmers have argued that the funding envelope for stabilization payments is too small. Until the end of the programs for the 2002 year, this was a valid concern when there was a fixed dollar value for the envelope. For 2003, for example, the federal government envelope had to be expanded to meet all program claims for the year. Starting in 2003, the annual envelope is nominally \$1.1 billion (federal only), with the ability by the federal government to fully fund any claims on programs in every year. Until this funding method demonstrates that it is flexible enough to fully cover all claims, farmers are unlikely to concede that the envelope is large enough.

In the last quarter of a century, there has been a significant increase in the degree of continental economic integration. Formal trade agreements started with the Canada U.S. Auto Pact in the 1950s, followed by the Canada US Trade Agreement (CUSTA) in the 1980s and the North American Free Trade Agreement (NAFTA) in the 1990s. In addition, steady reductions in trade barriers through multi-lateral trade agreements have provided nominal increases in trade opportunities. Much of North American production, marketing and processing now is organized on a continental basis. Food processors, that once processed and marketed food products separately within each of the countries, now optimize their operations across both countries, in effect treating North America as one market.

Production agriculture remains far less coordinated. A major reason for this has been the reluctance of U.S. farmers to accept increased competition in domestic markets. Despite the apparent promise that formal trade agreements would facilitate trade, the experience with farm products in the last decade demonstrates that major barriers to the flow of commodities not only continue to exist but are being promoted. Producers in the United States constantly examine Canadian agricultural policy and programs in a search for aspects that will allow them to claim unfair competition or violation of some aspect of U.S. or international trade law. Because the U.S. market is both close and large, it offers the best prospects for increased sales for many Canadian farm products. In addition, NAFTA was designed to encourage increased North-South trade. However, U.S. producers close to the Canadian border see imports from Canada as a direct threat to their sales and act to maintain their market share.

The evolution of markets in North America for agricultural products has not been continuous or uniform across all products. By the early 1980s, both the hog and cattle markets had begun very considerable integration principally in processed products. With CUSTA and NAFTA, integration across both live animal and processed products began to occur in these two industries.

The grains trade between Canada and the U.S. has evolved considerably post-NAFTA. Before the trade agreements, very little grain moved to the U.S. from Canada. Malting barley and some durum wheat moved, but milling wheat movement was minimal or non-existent. Corn moved from the U.S. into Ontario, other parts of eastern Canada, and southern BC, yielding an import price basis for feed grains in these regions. Along the western Canada border, there was little legal movement of feed grains or milling wheat. The result was a separated market along the 49th parallel. Spatially, both the Canadian and U.S. markets were separately in equilibrium for the conditions under which they operated.⁵ However, without integration between the two markets, price spreads at nearby

⁵ Even in this case in the U.S., prices along the Burlington and Northern Railway west to Portland did not fully reflect distance alone. Montana was a major import area for feed grains and prices were often nearly as high in Montana as they were at Portland. The railway transport costs clearly were not linear with distance from western Minnesota to Portland. The result was a large price spread between southern Alberta and Montana prices, exacerbated by the CWB pooling and WGTA subsidy arrangements. Hence, Alberta was a strong proponent of eliminating the CWB monopoly, eliminating the WGTA, and opening trade in

border points in the two countries were substantial. That is, there was substantial spatial disequilibrium across the 49th parallel.

As the border opened, the two markets began to find a new spatial equilibrium. Coupled with the elimination of the WGTA subsidies and a deeply modified pooling arrangement by the CWB, prices in the eastern prairies dropped sharply, increasing the price spread between Manitoba prices for grains and nearby points in the U.S. The lower priced grains (feed barley, in particular) began to leave the crop mix in the eastern prairies, and the best market for wheat grown in the eastern prairies was in the northern U.S.. The consequence was a fall in prices in the U.S. northern tier states for durum and milling wheat as the spatial equilibrium in the integrated markets was established. In reaction, U.S. Senators and Congressmen from these northern tier states led (and continue to lead) the pressure on the U.S. Administration and in Congress to halt the movement of Canadian grains into the U.S. The recent countervail ruling against Canada by the U.S. on milling wheat is a result of this pressure.

In examining north-bound trade, Canada has imported considerable quantities of raw commodities from the U.S.. Grains and oilseeds are imported into eastern Canada and BC to support dairy, poultry, hog and beef operations. Fruits and vegetables also have been a historic import from the U.S. seasonally and year round. For beef and pork, trade is “U” shaped. Significant exports of live and dressed product flow from western Canada into the U.S., while eastern Canada is an importer of dressed product. However, these imports have attracted little concern by producers in Canada. Clearly, horticulture producers in Canada were concerned with the CUSTA and later the NAFTA agreements, but the seasonal “snap back” tariff provisions were incorporated to provide some security to producers. As well, the horticulture markets for fresh product were well on the way to integration prior to these agreements.

Based on this, and the fact that Canada is a very small market compared to the U.S., Canada has not had great interest in pursuing countervail against U.S. imports of agricultural products. The disruption to domestic markets, the costs to consumers, the very limited effect countervail would have on U.S. prices and products, and the likely reactions by the U.S. were considered too great to pursue countervail action against U.S. imports as a general strategy. The result is an asymmetric trade relationship between Canada and the U.S. Canada faces considerable threat of countervail, while the U.S. remains largely immune to countervail action by Canada.

The hog countervail duty imposed by the U.S. in the mid-1980s spurred the initial understanding in Canada that domestic policies needed to be responsive to these U.S. threats. The WTO Agriculture Agreement Annex II 1994 provided guidelines (however imprecise) for “green” programs, those least distorting to trade. Additionally, the “peace clause” in the agreement provided that domestic programs meeting the criteria in Annex II could not be countervailed until after 31 December 2003. This opening accelerated the

grains with the U.S.. Several studies by AAFC demonstrate these impacts. The “Blue Ribbon Panel” report (joint Canada-USA study team), Kurt Klein’s work for AAFC on WGTA impacts, and the AAFC study on CWB pooling implications are examples.

search in Canada for programs which met Annex II criteria. The evolution of income support programs in Canada to AIDA, then CFIP and now CAIS, all of which have some or all of the payments considered as “green” under Annex II, Paragraph 7, reflect the shift in response to these countervail threats.

The U.S. does not face a similar threat from Canada. The result has been much greater freedom in the selection of domestic policy instruments. While the 1995 Farm Bill began to move toward less trade distorting policy tools, the most recent Farm Bill reverted to earlier program designs of commodity specific support, which are testing the limits of the domestic support limits imposed under the WTO Agricultural Agreement (AMS, the Aggregate Measure of Support). The U.S. is now facing the first real tests of its domestic policy tools with the first round success by Brazil in challenging U.S. cotton policies.

Another aspect of the constraints imposed on domestic policy in Canada is the U.S. interpretation and application of the “specificity” test (disproportionality) in countervail cases. In the WTO Agreement, a general subsidy can be considered countervailable if the impact of the subsidy is disproportionately directed to a specific commodity. The intention in trade law appears to have been that disproportionality was a relative term. That is, a general subsidy to agricultural incomes, for example, would impact on a specific commodity in its proportion in the aggregate income in farming (or some similar measure). If the impact varies from this proportion significantly, then it could be regarded as “disproportionate” and hence included in the calculation of the subsidy for a specific product in the countervail investigation. In the U.S., disproportionality has been interpreted in an absolute sense. From examination of several cases involving this rule, the U.S. appears to consider a general subsidy “disproportionate” if the share of the general subsidy going to a particular commodity is greater than 14 to 17 percent, even though the relative share of the subsidy to this commodity reflects its share in the aggregate income. The result is that even though it may be possible to meet the criteria for general programs across all of agriculture in Canada, there remains the threat of countervail action even for these programs. With the termination of the “peace clause” on 31 December 2004, Canada is once again quite vulnerable to the continuing threats to its domestic policies and programs by the U.S.

Anti-dumping is also a threat in agriculture. The long history of price and production cycles in North American livestock markets makes it inevitable that for some periods of time, farm gate sales will be at prices below production costs. The recent U.S. anti-dump challenge against the import of Canadian live swine is a case in point. There are two interesting elements in this case. The vast majority of hogs in Canada are sold in an open market, rarely on contract, although admittedly contracts between packer and producer are growing. As a result, the prices receive by most farmers for hogs reflect these market prices. In the U.S., over 80 percent of all hogs are under contract and few of these are traded at the visible market prices; most will be sold at a formula price set at or before the production period. Only the portion of hogs on the open market will actually trade at the “market prices”, including the hogs entering the U.S. from Canada. The result is that even though Canadian farmers are far more vulnerable than U.S. farmers to these price cycles,

because of the greater integrated markets in the U.S., the anti-dumping action has been brought by the U.S. against Canadian exports.

The second interesting note is that for many years, anti-dumping was a rarely used tool in agricultural trade in North America. Canada initiated and won an anti-dump case against the U.S. quite recently. There is little question that this event set in train the likelihood of a much greater incidence of anti-dumping actions by the two countries in the future. Once this has started, Canada becomes deeply vulnerable to either countervail or anti-dumping measures. If market prices fall below costs (as they do generally in each cycle), the vulnerability is anti-dumping action. If governments attempt to mandate or otherwise support prices above costs during this period to avoid an anti-dumping threat, the action can be treated as price support and subject to countervail threat. The result is that successfully expanding the production of agricultural commodities far beyond the absorptive capacity of a domestic market opens the way to vulnerabilities and risks even under the substantial trade liberalization progress in the past two decades. Of interest is the fact that vertical integration within Canada or across the Canada-U.S. border, i.e., supply chain management, will not remove the threat or likely success of anti-dumping actions in the future.

The asymmetry in trade relations and risks between Canada and the U.S., leave Canada with a policy dilemma. The U.S. is largely free to choose domestic policy instruments, which are the envy of many Canadian producers. Canada clearly does not have this freedom. Policy tool selections (such as commodity specific support) which invite potential countervail action by the U.S. will disrupt domestic markets, cause the government to be blamed for any trade action by the U.S., and lead to calls for trade injury payments. Doing nothing also leaves Canada vulnerable to anti-dumping for price volatile and cyclical commodities. The importance of the U.S. market to Canada means that these threats cannot be ignored. Any Canadian government efforts to support (rather than stabilize) Canadian farmers' incomes are likely to be challenged by U.S. producers even though they may be the most efficient form of domestic support, or identical to U.S. programs. The evolution in Canada toward stabilization policy and avoidance of income or commodity specific support policies, and the freedom in the U.S. to choose more trade distorting domestic policies which impact on farmers in Canada reflect this situation. Consequently, policy choices become limited to those that are least likely to experience a successful U.S. challenge.

Policy Constraints

We suggested earlier that agricultural policy can be thought of as a constrained optimization model. Government chooses a set of policy goals and designs instruments to achieve them. However, there are always constraints on the goals. In the case of Canada, there are five key constraints that effectively limit possible policy choices and how well policies perform. These three constraints are:

- the necessity to bridge significant regional differences in agricultural structure, political realities (for example the constitutional division of responsibility) and socio-cultural conditions ,
- the critical role of U.S. agricultural policy and trade policy on North American product flows,
- general international obligations under GATT/WTO that restrict the set of agricultural policies,
- a strong concern with fairness. and
- the role of central budget agencies/departments in setting financial parameters and rules (booking and expenditure year, non-stacking rules, etc.).

Regional differences in Canadian agriculture are large and persistent. An obvious difference is that Western Canadian agriculture is heavily oriented to export markets while eastern agriculture is much more focused on domestic markets. In particular, the Wheat Board dominates wheat and barley marketing in Western Canada while most eastern production is sold through private markets or contracts. Regional differences also exist beyond agriculture. There are large political differences among the provinces, both in terms of their interpretation of federalism and in their fiscal capacity and willingness to deliver programs. Most importantly, significant differences exist both on an east-west basis, but also among individual provinces. As a result, Canadian policy has to be crafted to meet the multiple provincial and territorial constraints as well as federal requirements.

The U.S. is by far Canada's largest trade partner and a significant number of Canadian commodities are firmly integrated into a continental market. But the conditions under which this market operates are not stable and undergo periodic shocks as each country adjusts its policies. Because the U.S. is far larger than Canada, the impact of shocks is felt more in Canada. While trade agreements may provide a framework for resolving trade dispute they do not prevent them from happening, and there are other border shocks that do not have a trade dispute origin, for example, mad cow disease. Significantly, certain types of policies that might be desirable in Canada are not acceptable to the U.S. because they are seen as tilting the playing field in Canada's favor.

While trade friction with the United States is pervasive, Canada also has to reconcile domestic policies with a steadily more restrictive set of international trading rules that limit direct support for farmers. Each round of multi-national agreements has tightened the rules on farm policy and required adjustments to domestic policy to meet international obligations.

Canadian public policy has historically placed an emphasis on fairness. While all policies create losers, a basic premise of Canadian public policy is that gains should be large enough to allow for some degree of compensation for losers. For a significant period, a common mechanism in Canada was to make payments in support of a commodity to all farmers, regardless of need or location. As well, under the CWB, farmers who delivered grain at various times during the year received the same average price (adjusted in part for transportation) even though the grain may have been sold at different prices during the year. Current programming has clearly begun to redefine the concept of fairness from

one based on equivalent payments to all farmers in a set, to one based on specific need at a point in time. Views remain divided in Canada on this foundational issue. Pressure for *ad hoc* payments going to all farmers (based on gross income, for example) continues year after year, while on-going programming directed to income stability offers payments only to those who experience short term losses.

High costs for programs that provide support to all farmers lead to pressures from central budget agencies to reduce outlays. Just as important farm payments have become increasingly unstable in recent years which makes it more difficult to manage aggregate fiscal activity. Consequently there is growing pressure to find a set of policies that have greater stability in terms of government outlays.

In addition to the constraints above, several considerations are important in selecting policy directions and program design. These have been explored above and include:

- transfer efficiency,
- extent of capitalization of payments into asset values,
- leakages into non-farm operator markets (input markets, value chain and consumers (at home and abroad),
- trade retaliation or harassment,
- effects on production level and commodity/enterprise mix on the farm,
- risk/return trade-offs,
- balancing the shares of risk management between farmers and government,
- timing of payments,
- foreseen (long term programs) and unforeseen (ad hoc) payments,
- market and value chain structure.

Other constraints have been important factors in agricultural policy from time to time. In the late 1960s and early 1970s, large inventories of grain were overhanging the market and policy had to reflect the importance of shrinking these overhangs. For much of the 1950 to 1970 period there was a concern that the number of farmers exceeded the available opportunities for an adequate income, and in response, a desire to shrink the farm population appeared as an objective for some programs and a constraint in others.

Most importantly while constraints always exist and the five main ones are typically significant, the set of constraints is not constant either in number or in terms of impact. Regional differences are in a constant state of flux, as are American policies and the U.S. awareness of Canadian trade flows. Finally the notion of fairness has different connotations over time and may be more or less critical depending on general economic, social and political circumstances.

Using this general model we suggest that at a minimum a policy must have a clear objective that deals with a specific concern, and the capacity to alter conditions in a way to make conditions better. But it must also be feasible in the sense that it is not ruled out by one of the constraints. This would be a significant challenge if the constraints were

fully identifiable at the time the policy was formulated but in practice the specific nature of the constraint set is often not known until the policy has been put in place and reactions become visible.

This abstract description of the policy formation process points to a particular path for failure. In this case the policy may be poorly articulated in terms of objectives or in violating constraints. But there are other reasons for agricultural policy failure. These include the following:

- Objective mis-identified
- Inadequate resources
- Deficient delivery mechanism
- Resource immobility
- Changed environment

Objective mis-identified

The perceived failure of agricultural policy may reflect a misunderstanding of objectives, or the failure to establish objectives and constraints before a program design is selected and promoted. The main source of confusion comes from not recognizing that political considerations have a profound influence on both the timing and the nature of agricultural policy. Two obvious examples are the 2002 Farm Bill in the U.S. and the payments announced under the Special Canadian Grains Program in 1986 in Canada. In both cases, the driving force for the programs both in terms of timing and content was an effort to affect impending elections in specific parts of the country where farm interests were both important and contestable. Whether the programs represented good public policy, whether they addressed fundamental problems in agriculture and whether they were capable of efficiently achieving their stated goals was largely over-ridden by the wider political considerations.

At the extreme one can argue that all policy is inherently political, in that policy reflects the perceptions and values of elected individuals who weigh their behavior in terms of the impact on the next election cycle. The two examples above are instances of this situation. However while politics is always important in defining policy it is often less important than other factors. While it is possible to define a theory of political behavior that is driven by simple electoral probabilities such theories provide incomplete explanations of behavior.

Inadequate resources

A second explanation of policy failure is that insufficient resources were allocated to alter underlying conditions. In some cases this argument extends to situations where the magnitude of the problem is so large that there is no possibility of finding sufficient resources. An obvious example was falling farmland values in the U.S. in the 1980s. While there were a number of proposals to stabilize land values through government purchases, the reality was that so much land was on the market with so few buyers that the level of government outlays for land purchases would have been far in excess of any amount that would have been politically acceptable.

A similar argument has been made about efforts to stabilize farm output prices. Historically the long run trend in all natural resource prices has been downward for over a century. While there have been periods of significant price rise that have lasted for up to a decade they have always reversed and been overwhelmed by the trend. On the other hand there have been equally long intervals of cyclical decline that have made trend movements even worse. In this environment it is difficult to see how any policy that tries to either increase, or even maintain, the level of real commodity prices can be successful in the long run.

Deficient delivery mechanism

A third cause of policy failure is more technical. It is concerned with leakages that result in outlays not reaching the target audience. The literature on transfer efficiency captures much of this concern. If government is seeking to increase net farm income then a measure of policy success is the ratio of the change in net farm income to the government outlay. If the ratio is low then much of the funds expended is leaking to other parties. Potential sources of leakage include: administrative costs, dead-weight losses, capture of funds by industries upstream or downstream because of monopoly power and capitalization of transfers into fixed assets.

Resource Immobility

A significant problem in agriculture is resource immobility. When resources have limited opportunity costs they tend not to respond to price signals. In this respect the two major issues are land and people. A large percentage of farmland in North America has virtually no opportunity cost – that is, has no alternative use. In this situation, as long as the land generates some positive return in agriculture, it will remain in production. This leads to very limited supply response behavior in agriculture, especially in the short run since a large share of purchased capital in agriculture also has limited alternatives during its useful life.

Human capital in agriculture is typically characterized by declining opportunity cost as the farmer ages. In particular, limited resource farmers who have relatively small amounts of production and assets, tend to have the most limited employment alternatives outside agriculture. Not only do these individuals have relatively low rates of return on their labour and capital, they also have low levels of output and income. Consequently, during low price and income cycles they have particularly difficult times. But because they have few or no alternatives they continue to remain in production. An additional factor that limits labour mobility is the widely held belief that farming is a way of life and has an intrinsic value above the financial rewards. Such a belief can lead to people accepting low money incomes because they have a perceived high quality of life.

In the Canadian context the ongoing plight of limited resource farmers creates significant political pressure. While limited resource farms are a small percentage of the population they are both large enough to be visible and dependent upon farm income. This creates pressure to provide support, but their limited output makes all traditional agricultural transfer programs relatively ineffective in raising their incomes to any degree.

As long as a significant proportion of the land and labour in agriculture has limited opportunity costs there will be a limited ability of market signals to generate sufficient reduction in capacity. Periods of relatively strong income will reinforce the decision to remain in agriculture and may provide the resources to withstand periods of low return. While the abandonment of inferior land and the departure of limited resource farmers may be an economically rational response to changing conditions, neither option is seen by the general public as a desirable consequence, so there is broad political support to maintain these factors in agriculture.

Changed environment

Agricultural policy is constrained to a considerable extent by the past. Past policy becomes the starting point for discussions of new policy and more importantly, our understanding of how and what farming was in the past, conditions our understanding of the current situation. Canadian policy has moved significantly away from policies that are designed to work for the average farmer, to a more individual orientation. In this move there has been a concentration on commercial sized farms as the focus of agricultural policy. The justification for this approach is that these larger enterprises account for the vast majority of output and net income from farming.

For some decades, farms and farm households have become increasingly diverse, in size, sources of household income, commodity mix and specialization, commercialization and degree of processing. The majority of farmers now earn most of their income from non-farm occupations, but they control a considerable share of farm assets. As policy has increasingly focused on the commercial farms, it has consequently played a much smaller part for less commercially oriented farms, even though these farms continue to have a significant impact on conditions in agriculture.

One of the most important ways small farms remain critical has been described above in the discussion of limited resource producers. These individuals remain dependent upon farm income and justifiably ask why farm policy is unable to help them. Because they clearly have the greatest need and are typically used to justify any form of policy intervention, there is a serious mismatch between initial objectives and actual outcomes.

A second way that small farms influence conditions is through asset markets, especially farmland. For farms that obtain the majority of their income from non-farm sources agriculture is either part of a diversified asset portfolio or a life-style choice. These farmers are motivated by different values than traditional full-time farmers and face different resource and time constraints. Consequently, they do not respond to policies in the same way as large farms. In all but the most remote rural regions, small farms have a large influence on farmland values and in areas close to urban centers they are the dominant force. Their ability to buy land at prices above the normal rate of return from farm enterprises can contribute to upward pressure on land values.

Concluding Observations

Differing Views On The Current Policy Approach

Many parts of the agricultural constituency in Canada have been very reluctant to accept the current policy approach of income based, whole farm, cost shared programming, even though governments have been moving in this direction for a number of years. The fundamental conflicts within Canada, in forming the APF, between the agricultural constituency and governments are:

- income **support** to agriculture versus one to three year **stability** in agricultural income

Generally, farm constituencies have sought income supplements as opposed to (or in addition to) stability as an objective in the programs. This conflict is at the heart of the continuing demands for *ad hoc*, across-the-board payments to farmers.

- **income** measures versus **commodity and regional** measures

Some commodity groups, particularly grains and oilseeds in some regions, have pressed for specific measures for their commodities. The rationale has been that in comparison to the U.S., these commodities are supported to a far lesser extent in Canada, while Canadian producers still face the same domestic and international markets for these products. Other commodity groups, having experienced countervail by the U.S. for their products because of commodity specific programming, are very reluctant to see a return to commodity specific or region specific programming.

For a purely competitive industry, incomes fall to the accepted income of the last entrant. The majority of farmers fall in this category. Only by technological and scale advantage in production or marketing can individual farmers obtain higher returns than would be the case under purely competitive situations. These advantages are transitory; as new technologies and scale advantages are discovered, these farmers must constantly up-date their technology and scale to keep these advantages.

As a consequence, income support represents wealth creation rather than increases to income for most farmers. Any payments by government represent wealth or equity gains, since incomes for the majority still reflect the accepted income of the last entrant to farming.

- **individual** economic performance versus the **aggregate** performance of the sector

The shift to payments based on individual performance has been underway for several years in Canada, both in crop insurance and income based programming. By moving to individual performance as a basis for payment, the responsibility for risk management on farms shifts much more heavily to the individual rather than government. For general

farm organizations, this shift is considered to reduce governmental responsibility, eroding the capacity of the farm organization to press for added income support.

- **agriculture sector responsibility** for its externalities versus **governmental responsibility** to mitigate all externalities (marketing, environment, food safety, tracking and tracing, etc.).

In facing rising concerns for environmentally sound production and high standards in food safety and quality, farm groups have pressed for full funding by governments to meet all costs associated with meeting these concerns and emerging regulations. This attribute is an extension of the view that government remains at least partially responsible for marketing and the price consequences of any goods that farmers may choose to produce. Coupled with the shift to greater risk management by the farm rather than by government, these issues are emerging as critical for the debates ahead.

To some extent, the “multifunctionality” debate is involved. Started as an explicit policy direction in Europe, it has attracted interest in North America because it holds the potential for governments to pay for any externalities arising from jointly produced public goods (or “bads”) associated with agricultural production,⁶ thereby extending income support to agriculture. For other industries, little assistance is given for these externalities, since regulation by governments has essentially forced the internalization of these costs on firms (e.g., polluter pays).

- agriculture as **victim** versus agriculture as **economic opportunity**

Agricultural production faces risks beyond those of most industries. Market fluctuations, continuously declining real prices, inelastic demand for products, climatic events such as drought, flood, frost, and heat, insect and disease infestations, policy shifts in major importers and exporters, high levels of agricultural subsidies in competing countries, all add to the general view that agriculture is the victim of events far beyond the individual’s ability to manage successfully. As farm size grows, fewer rural residents exist, leading to the demise of the more remote rural towns and local infrastructure, generating concern in urban as well as rural residents, often expressed as the erosion of a pastoral way of life.

Basing pressure for income support on the premise that agriculture is a victim of events and situations far beyond the individual’s control, essentially reflects a redistributive approach. That is, it reflects taking from one part of society and giving to another. The argument is used more generally for those less fortunate individuals and families in society for social and health programs such as old age income security, health care and other welfare programs.

Another view is that economic growth in a sector can also generate income and wealth, through technological and scale advantage, tapping new and different higher priced

⁶ Examples include air pollution (manure), denying use of riparian areas historically used for agriculture, limiting fertilizer use to limit or prevent run-off and leaching into streams, rivers and lakes, and farm land habitat for endangered species.

markets, differentiated products, and the like. That is, even with high risk situations, there are many ways to increase incomes above the accepted income of the last entrant. This is not a re-distributive approach, but a means of capturing benefits for a specific group based on added economic growth.

The Agricultural Policy Framework and its programs are based on the economic growth approach although many farm groups have great reluctance to accept that there are gains from growth. The Agricultural Policy Framework is a set of programs (crop insurance and CAIS, as well as the environmental, innovation and food safety measures) which respond specifically to the economic and market conditions of the agricultural and agri-food sector, and not the wider societal concern for agriculture as a victim of events beyond the individual's control. Most *ad hoc* income support programming demanded and provided by governments responds to this wider social and political view of agriculture, but does not solve underlying problems contributing to the persistent view of agriculture as victim. The result is continuing *ad hoc* demands that grow with time and subsequent programming for income supplements.

Farm organizations have also pressed for more and more funding for the on-going business risk management programs of the APF. Programs designed to offer mechanisms for individuals to manage their own risks without on-going subsidy is a significant and difficult balancing act. The greater the portion of loss provided by governments, the less is the responsibility for risk management by the individual producer. But also, the greater becomes the income supplement effect compared to the stabilizing effect of the program. With some farm groups reluctant to accept the more limited, economic stabilizing objective of the programs, pressing for greater funding in the on-going programs becomes another means of increasing the redistributive approach to farm policy, undermining the integrity of the stabilizing objective in program design, providing the same effect as *ad hoc* income programming, and ultimately discrediting the long run program in the farm community and at Cabinets.

The Path To Stabilization Policy

We have shown that Canadian policy responds to a wide range of forces, some of which are common to all countries, including rapid technological change, a more diversified farm population, and central agency pressure to contain agricultural outlays. But in Canada, there are also some particular forces, that may not be unique to Canada, but are clearly crucial to the policy process. The essence of our argument is that the shift from direct support payments to income stabilization was the logical consequence of these forces acting in specific ways through an extended period of time.

In particular five major factors can be seen as driving the change. The first is the growing influence of the provinces through federal-provincial consultations that led to pressure for programs that provided uniform support across Canada. Given the wide diversity of production types and conditions on a province by province basis, it was impossible to develop commodity programs that provided uniform levels of support across the huge diversity of Canadian conditions. As a result income support became an attractive

alternative if only because it provided a basis for programs that was applicable across all farm types and provinces.

A second significant factor relates to the changing structure of agriculture. When the initial round of support programs based upon commodity prices was introduced most farms in Canada produced a mix of outputs, were primarily dependent upon farm income, and were relatively homogeneous in terms of size and income. This structure allowed a significant degree of self-protection against risk, because a mix of crop and livestock activities was common. Because commodity production was broadly distributed across regions, price supports provided general assistance to a large share of the farm population. And because farms were relatively homogeneous most farms received roughly equivalent levels of benefit.

In the last half of the twentieth century the structure of agriculture changed. Production of any given commodity became more concentrated by region and more of it takes place on larger farms that reap full economies of scale. These scale economies require specialization so farms have lost the possibility of self-protection against risk. Small farms increasingly rely upon off-farm income as their primary source of household income, which provides income security but makes these farms less responsive to commodity programs.

As a result of the structural changes, commodity programs now result in major income transfers to a small share of the farm population. In many cases these farms are held by financially sound families whose income and net worth levels greatly exceed national household averages, which contradicts the original rationale for farm programs – to address the farm income gap. This targeting gap raised important fairness questions, as well as questions about the opportunity cost of public funds used for commodity support payments. Shifting to an income stabilization program provided a way to continue support for fairness in a program format that was less controversial and which increased the base of farmers who could benefit from the program.

A third major factor is the influence of the United States. Several cases demonstrated that it was relatively easy for U.S. producers to block imports from Canada that benefited from commodity based programs. As these countervail actions built precedents the potential to define commodity based programs that could withstand a U.S. challenge decreased. If farmers were to be supported an alternative mechanism would be required. Because income stabilization is effectively decoupled from production decisions it has been reasonably successful in avoiding countervail and other border restrictions with the dominant trade partner of Canada.

A fourth factor relates to the third, but has a broader perspective. The evolution of GATT and WTO agreements made traditional Canadian agricultural policies difficult to maintain. The trend in agreements is to eliminate support programs that are directly linked to production decisions since they can be seen as trade distorting. By shifting to an income stabilization structure Canada found a way to reduce international trade irritants.

The fifth significant factor is the growing influence of central budget agencies over programs in line departments. By their nature, commodity support programs result in highly unstable demands for funding. This creates major challenges in forecasting outlays. Pressure for a more predictable set of program outlays also influenced the introduction of the stabilization approach. While there is some variability in the levels of government outlay it is far more stable since the main commitment is to match farmer and possibly provincial contributions. A low-income trigger that releases the funds to the farmer has no consequence for government outlays, so long as adequate levels of reserves in the stabilization funds are available.

While other approaches may have also resolved these pressures, income stabilization provided a reasonable solution. Since the 1990s the changes in the form of the various stabilization policies can be seen as efforts to tune the programs to meet a number of different concerns, such as farmer complaints that reserves were too large, regional variability in farm income levels that depleted reserves in some areas but not others, fiscal limitations in some provinces, and changes in national political priorities.

Has Current Policy Failed?

Stabilization programs are best suited for smoothing out cyclical fluctuations in income. By using a moving average of incomes to trigger payments, year to year fluctuations in income are smoothed out. The greater the number of prior income years used in the moving average the less any single year has on the average, and it is less likely that there will be payouts. Conversely a small number of years in the moving average will increase the likelihood of payouts, but may not capture the full interval of a cycle. In Canada the duration of cycles is assumed to be five years, but there is little evidence that agriculture fluctuates this predictably. In addition, when cycles are combined with large year to year random variations the performance of stabilization plans is reduced. Large random shocks mask cyclical variability and payments are driven by yearly events, not the underlying cycle.

Deleting the highest and lowest income years in any five year interval might reduce the effect of random shocks and allow programs to better track true cyclical behavior. But this of course begs the question of what does the farmer do when random shocks are relatively large and back-to-back downturns occur. The stabilization programs⁷ which have emerged in Canada are designed to assist those farms which suffer significant losses in net income (margin) in a given year. The losses in any year are measured against the average of preceding years' performance (the middle three of the preceding five years, eliminating the highest and lowest years). With a severe loss in any year, the results for that year will not necessarily be included in the average against which future performance will be measured. As a result, a second severe loss within a five year period will require that at least one of these years will be included in the average, lowering the average

⁷ These programs include: the Net Income Stabilization Account (NISA) now being phased out; Crop Insurance and now Production Insurance, Agricultural Income Disaster Assistance (AIDA), replaced by the Canadian Farm Income Protection Program (CFIP), which in turn is being replaced by the Canadian Agricultural Income Stabilization Program (CAIS).

against which future performance is measured. In this case, the stabilization programs offer lower coverage as continuing or frequent losses occur for a farm.⁸ Effectively, the programs lower the risks associated with farming in the short run (one, two or three years out of any five year period) but do not substantially alter the long run risk profile for farming. This is in contrast to earlier programs, where programs supplemented income by commodity-based price deficiency payments, or in the case of NISA, payments were made to all farms based on gross income, regardless of net income performance.

From the finance literature, it is clear that as risk is reduced, the return to the enterprise will fall. Basic principles of finance require higher levels of return for risky investments to attract capital. The converse of this argument is that if risk is reduced then the previous rate of return – income or margin – is now too high. The resulting disequilibrium situation attracts additional investment. In agriculture, the main mechanism for increased investment is higher values for land and buildings. This causes a windfall gain for existing farmers. As asset values increase, the level of income becomes a smaller percentage of the asset base, which leads to a lower rate of return. Asset values should increase until rates of return fall to a level that reflects the prevailing amount of risk facing the farmer (Freshwater, 2002). While cash flows and levels of income are not directly influenced by this process, farmers may perceive an income shortfall when they look at the return on their investments relative to what they were prior to the risk reduction. However, now the reduction in risk has been capitalized into asset values and if risk falls because of the program design, there will be corresponding windfall losses as rates of return re-adjust.

If the farmer uses debt to finance asset purchases then the return to equity differs from the return to assets, with financial leverage magnifying the return to equity (Harwood, Heifner, Coble, Perry and Somwaru, 1999). However, there is increased risk associated with the use of debt, so the higher rate of return offsets the financial risk. With leverage, income is also reduced as the cost of debt service becomes a factor influencing net income. This means that farmers will experience deterioration in net income and additional cash flow pressure. This could lead to arguments that measured income has declined and farmers are worse off, when in fact they may be better off since the government has absorbed some of the risk they used to face.

The paper demonstrates that there are multiple ways for policy to fail, and that even if a policy is effective for a period of time it will over time inevitably lose its effectiveness. But we also raise the issue that perceptions of policy failure may be incorrect. In the current circumstance, Canadian stabilization policy is being questioned because some measures of net income have declined precipitously in recent years. However, not all income measures reflect dramatic declines, and some of the recent declines lie beyond the objectives underlying current policy. Further, asset values, which are also a significant indicator of farm well being are not showing the same decline. This suggests that financial conditions in agriculture are not easily determined.

⁸ Recall that the program payments are not included in the averages for the preceding years. This results from the “non-stacking rule” in the WTO Agriculture Agreement, Annex II. In other words, subsidies in one year are not allowed to beget subsidies in subsequent years.

The farm problem has evolved over time from a simple focus on the level of farm income to a more complex issue. At the same time the set of available policy tools has been reduced because of international agreements that limit direct support. In particular, the shift to stabilization as a basis for policy necessarily implies a focus on fluctuations about a mean and not managing the mean level of income. If there is a secular decline in income over time a stabilization policy is unable to provide much long run support.

Canadian farm income has been declining and more variable in the last few years by most measures and there is concern that stabilization/adjustment programs are unable to cope with an extended period of decline. Such a situation points out the problem of program design. If stabilization/adjustment is to cover extended down cycles it will require much higher levels of reserves than are currently employed, which will entail larger commitments by farmers and governments to fully fund the program. If long downturns are uncommon, this may not be the most efficient policy option and *ad hoc* payments may provide a more sensible response. In addition no stabilization program can offset a declining trend in prices, even though it may be able to operate effectively for a short period. This means that stabilization cannot provide along term policy solution if commodity prices always fall in the long run.

In particular, income stabilization policies have a series of consequences that may not have been fully anticipated when the programs were developed. If the program is effective in reducing income risk then there should be an induced decline in the average rate of return in order to maintain equilibrium in capital markets. If the level of risk is reduced and rates of return appear abnormally high in the short run there may be an inflow of investment that drives up asset values. In agriculture, this will mainly occur through competition for farmland. Increasing farmland values will tend to reinforce farmers willingness to convert current income into long term capital gains. The conversion has the effect of reducing observed net farm income and pushing asset prices higher. The result can be an overshooting of the adjustment triggered by the stabilization policy.

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Annex I

THE EVOLUTION OF CANADIAN FARM INCOME POLICY

This section identifies the evolution and change in program directions and policy over several decades in Canada. A more detailed Annex to the paper explains the shifts by program type over this period.

The changes in policy direction affecting support and stabilization programs in Canada over more than seven decades are as follows:

- a recent shift from regional to nationally uniform programs

Historically, federal programs displayed distinct regional differences responding to the differing conditions in each region of Canada. During the past ten years, nearly all of these differences have been removed in favour of common programming nationally.

- a shift from largely independent federal and provincial programs to common federal-provincial programming nation-wide

Even though agriculture is a shared jurisdiction in Canada, the federal fiscal capacity exceeded that of provinces as agricultural support programs began to grow during the 1930s with the result that the federal government was the primary source of support at that time. As the fiscal capacities of provinces improved, provinces began their own agricultural support programs, leading to a patchwork of competing support levels across Canada. By reaching common federal-provincial agreements, programs in Canada have become nationally much more uniform.

- fixed cost sharing arrangements on income stability measures

Under current federal-provincial agreements, the cost shares for the federal and provincial governments are set at 60:40 respectively across all stabilization programming.

- programs have shifted to reflect the individual farmer's performance rather than average performance in a region or local area.

In the past, crop insurance for an individual was measured against regional averages with a common premium cost to the farmer. Today, crop insurance is based on the individual's own performance over time with premiums adjusted to reflect individual performance. Similarly in CAIS, payments are based on the individual's performance, not regional or national aggregate performance in the sector. The result is a greater responsibility on the part of the farmer for managing risk.

- the shift from support payments by commodity to whole farm stabilization programming

With the exception of the supply managed sectors in Canadian agriculture, no on-going commodity specific support programs remain.

Even with these changes in policy direction over the past 15 years, the requirement for *ad hoc* programming remains. In each of the previous five years, additional funds have been appropriated, in most cases, as payments to all farmers regardless of need, based on gross income from the farm. The exception to this is the programming specific to the BSE issue in Canada.

PROGRAM ORIGINS AND CURRENT STATUS

This section identifies the evolution of program types used in Canada over the past several decades and demonstrates their current use and status. The purpose is to provide a brief overview of the range of program types used in Canada and the convergence toward whole farm, income-based programming and the elimination of individual commodity price support systems for most commodities in Canada.

Guaranteed Initial Prices with Price Pooling

- Initiated under the Canadian Wheat Board Act 1919 (and offered in subsequent years in the early 1920s, but unused) for wheat in western Canada.
- Incorporated into the Canadian Wheat Board Act 1935 for wheat; for wheat, oats and barley 1948 to 1991; continued since 1991 for wheat and barley.
- Made available to other commodities on an annual basis, now under the AMPA 1995 legislation.

Initial price guarantees with price pooling have very little price support effect today. The initial prices guaranteed by the federal government are established following rigorous market risk assessment and accepted by the Minister of Finance. Only when sharp and unforeseen price declines occur are the guarantees effective.

Administered Pricing

- Started during World War II, both minimum and maximum prices were established for selected commodities in agriculture, in part to service contracts with the UK as part of the war effort.
- Continued following World War II for a few years, and terminated following the end of the major contracts for agricultural products with the UK about 1950-51.
- Enabled under the Canadian Dairy Commission Act 1967 for skim milk powder and butter (hence, milk at farm level) and the National Farm Products Marketing Agencies Act 1970 for poultry products (eggs, broilers, turkeys and broiler hatching eggs).

With administered pricing arrangements for the dairy and poultry industries, the other support/stabilization programs have generally not applied to these products. The National Farm Products Marketing Agencies Act denies any direct support for the products with marketing arrangements in place. In dairy, the subsidy on milk continued following the establishment of supply management for milk and was phased out following the Program Review in 1995.

Purchase, Transformation and Resale Support

- Powers established under the Agricultural Prices Support Board 1944 as part of the continuing war effort and the transition to peace; used for major commodities involved in contracts with the UK.
- After the end of the UK contracts 1950-51, the Agricultural Products Board (APB) Act 1951 was created as a mechanism to support agricultural prices.
- Powers were also incorporated into the Agricultural Stabilization Act (ASA) 1958.
- The powers under the APB Act 1951 were incorporated into the AMPA legislation 1995 and remain available today.

This mechanism was initially seen as the primary tool in price support for agriculture in peace time. However, its use diminished after the deficiency payment programs began after the ASA 1958. This mechanism was used in the 1970s and 1980s when it was more efficient to maintain prices for selected commodities in over-supply, than the use of deficiency payments, e.g., cherries. As markets and processing developed to deal with these perishable commodities in oversupply situations, use of this mechanism declined. It has not been used in recent years.

Deficiency Payments

- (a) Without a Specific Commodity Price Support Formula**
 - Initiated during World War II, with price support set annually by the federal Agricultural Prices Support Board.
 - Incorporated into the ASA 1958 for all commodities (referred to as the “designated commodities”) other than the nine named commodities in the Act, and wheat oats and barley in the CWB area of western Canada.
- (b) With Specific Commodity Price Support Formula**
 - Nine commodities specifically “named” for formula support in the ASA 1958; these named commodities were modified over time as other programs were put in place, e.g., eggs was removed from the named list when eggs were provided with administered pricing arrangements in 1971.
 - Minimum support was initially set at 80 percent of the preceding ten year price average; minimum support was increased to 90 percent of

the preceding five years in 1974; terminated with the passage of the FIPA legislation 1991

- The National Tripartite Stabilization Programs were established for selected commodities by agreement between federal and provincial governments in the 1980s under the ASA as amended in 1974. These were federal-provincial-producer cost shared programs providing formula-based support in a quarter or year compared to a preceding time period.

There is no specific commodity price support mechanism today in Canada. Nonetheless, general provisions in the Department of Agriculture Act and the FIPA 1991 allow such measures to be used. There have been no on-going commodity specific price support mechanisms in Canada since 1991.

(c) With Multiple Commodity Price/Income Support

- Initiated in 1976 under the Western Grain Stabilization Act, this program provided net income support across the grains and oilseeds commodities in western Canada.
- It was the first of the federal-producer, cost shared, income/price support programs.
- It was the initial attempt at moving toward income measures for support rather than price support.
- The WGSA was replaced with the Gross Revenue Insurance Program in 1991; this program was nation-wide, covered all of the grains and oilseed crops, cost shared federal-provincial-producer
- This program ended in 1995 and 1996, except for a follow-on program in Ontario for grains and oilseeds.

Whole Farm Income Stabilization Measures

- The Net Income Stabilization Account (NISA), begun in 1991, was the first of the voluntary, federal-provincial-producer cost shared, whole farm programs; all commodities were included except for those covered by administered pricing arrangements (dairy and poultry products) and those commodities whose regional or national producer associations specifically sought their removal; this program ended with the 2002 program year.⁹
- The Agricultural Income Disaster Assistance Program (AIDA 1998-1999) was the second voluntary, federal-provincial-producer cost shared, whole farm program. Again, it excluded income from commodities under administered price arrangements.
- The Canadian Farm Income Program (CFIP 2000-2002) was fashioned after the AIDA program, whole farm, cost shared.

⁹ While the program ended with the 2002 year, it will take until 2009 to wind down all accounts established in this program.

- The Canadian Agricultural Income Stabilization Program (CAIS) was established as part of the larger Agricultural Policy Framework for 2003 and subsequent years; modeled after the AIDA and CFIP programs; federal-provincial-producer cost shared; covers all commodities for losses in net income greater than 30 percent but generally excludes the income from commodities under administered pricing where losses are less than 30 percent of net income on the farm.

Crop Insurance

- Initiated in 1939 by the federal government, offering to back stop fund accounts established with producer premiums under widespread yield losses in western Canada. The program officially terminated in 1974.
- The Crop Insurance Act 1959 established the arrangements for federal-provincial agreements to provide for subsidized crop insurance by province. All provinces have agreements with the federal government to operate crop insurance programs with federal-provincial-producer cost sharing.
- Cost shares were fixed under the arrangements (two alternatives in cost sharing were generally offered to each province) and removed as a condition in 1991.
- The APF Agreement and the Implementation Agreements provide for mandatory offering of “whole farm” crop insurance programs in all provinces by 2005 (in addition to the crop specific insurance arrangements). That is, “whole farm” insurance is taken against a percentage of the gross income on the farm for a basket of commodities, at lower premium cost and greater protection for variable costs for the individual farm, than commodity specific crop insurance arrangements.
- Fixed cost sharing arrangements are being re-established, converging toward 36-24-40 (federal-provincial-producer) by 2006.

Advance Payments

- Initiated in 1959 for wheat, oats and barley in the CWB designated area, under the PGAPA providing interest free cash advances for the three CWB grains stored on farms; repaid as marketings took place.
- Provided for all storable, unprocessed products (other than wheat, oats and barley in the CWB designated area) in 1975 under the APCA, by annual application from a commodity organization..
- Now offered under the AMPA legislation (combining the prairie grain advance payments with the advance payments for crops) for all storable, unprocessed products in Canada

These programs provide within-year cash flow assistance for producers with very limited effective price or income support, geared to smaller farmers since the limit for interest-free advances is \$50,000 per farm.

Ad Hoc Programming

- Initially seen as necessary for large, unforeseen events, *ad hoc* programs grew in number and diminished in size over time; as relatively smaller and smaller events provoked *ad hoc* programming, more demands were placed on governments for such events.
- *Ad hoc* programming shifted in the mid-1980s toward more general income supplement measures, directed at income shortfalls generally or in response to specific events.
- As the more general income based programming came on stream in the 1990s, governments relied on these income-based programs to deal with the smaller events causing income losses for regional and local events.

There are only two on-going income protection programs remaining in Canada, the CAIS Program and Crop Insurance. Because both programs have whole farm, tripartite cost sharing arrangements, these two programs appear to be converging toward insurance based, whole farm, income stabilization arrangements. Administered pricing programs also remain in place for the dairy and poultry sectors.

ANNEX II

Problems of Insurance Based Programs

In addition to the broad set of factors that limit the effectiveness of all policy problems there are a number of forces that are especially important in any sort of risk management or insurance type program. In a classic article, Ehrlich and Becker identify three possible responses to risk. They are, market insurance, self-insurance and self-protection. The article begins with an assumption that while individuals will absorb certain levels of risk without changing their behavior because the costs of change exceed the benefits from change, individuals will react to risk when it rises to some level. Using any of the three alternatives will typically lead to lower expected returns, because risk reduction has a cost, either in the form of a cash outlay or in changed behavior. This reduction in return is consistent with and caused by underlying risk-return trade-offs – otherwise there is a free lunch.

Market-insurance refers to the purchase of insurance from another party. In return for a premium payment, some portion of the risk is transferred to someone else. Market insurance can be provided by a private for-profit firm, through a mutual insurance organization, or by the government. The essential feature of all arrangements is that another party accepts at least some portion of the risk. The premium charged to take on the risk may, or may not, be actuarially fair, and in some cases no premium may be charged, even though risk is shifted.

The second type of adjustment is self-insurance. In this case individuals set aside cash reserves to cover the expected losses associated with risk. These cash reserves can be thought of as insurance premiums that are paid to one's self instead of to another party. Importantly, risk is not transferred in this case, it still remains with the original bearer, but a reserve is established to offset the adverse consequences. Even in this case, there is a cost for this insurance. By building reserves to cover risks, these funds become less available to the operator for expanding the farm business, improving technology or adding new enterprises within the farm.

The third approach is self-protection where the individual alters behavior to reduce either the probabilities of adverse outcomes or the magnitude of their effects. Unlike the other two approaches this one requires a change in how or what is being done.

At some level the three options may be substitutes, but in other cases only one or two of the options may be practical. For example, in the case of catastrophic risk there is limited scope for self-insurance since most people cannot set aside enough funds to cover the potential loss, especially if it happens early in the planning period. In this case, market insurance or self-protection to reduce the risk levels and its impact are the only options.

If individuals are risk averse then stabilizing income through government programs, i.e., reducing income variability, is welfare enhancing if the mean return is preserved. This follows because risk is lower (a 'bad') and returns are the same (a 'good'). If stabilization

only trims downside risk then it is mean enhancing and welfare is increased over the mean-preserving case. In this case the “bad” is reduced and the “good” is increased. This means the investment receiving the protection should go up in value. Stabilization policies in Canada have never attempted to capture the income “up-side” through actuarially fair premiums or other means, while they limit downward movement. As a result there is a clear increase in the expected return for participating farmers, as well as a reduction in risk.

Stabilizing income instead of prices may lead farmers to more innovative behavior that has higher short term risk, since aggregate farm income is stabilized, not prices of specific commodities. Stabilizing income allows negative correlation between prices and yields to have an effect, thereby potentially reducing the need for at least some stabilization payments. Income stabilization focuses on the farm household, not on commodity prices and allows better targeting to need. Stabilizing income avoids buying and storing commodities as buffer stocks and reduces the ability of speculators to ‘game’ the program by commodity purchases and sales.

Factors that Limit the Effectiveness of Income Stabilization Programs

A number of factors may cause government provided insurance programs to be less effective than were planned. A list of possible factors follows

Moral hazard.

Once insurance is provided the individual may change behavior in ways that increase the loss exposure for the insurer. In the case of farmers, the changes can be considered as lower incentives to engage in self-insurance and self-protection. Farms may keep less cash on hand since they expect the government program to cover losses and cash flow shortfalls. More importantly they have less incentive to engage in self-protection and may in fact increase the level of risk they face by changing management strategies in an effort to increase expected returns.

Adverse Selection

Unless participation is compulsory only a portion of those eligible for support will commit to the program. Unfortunately those with the greatest likelihood of triggering a claim will be the most likely to participate. This alters the odds of payouts and increases the cost of the program. Higher program participation costs will encourage individuals to adopt self-insurance and self-protection if these are less expensive options, while those with high levels of risk will see relatively high premium levels as a minor barrier since their expected return will be even higher than the premiums. The control on this problem is the move toward premium payments by farmers which reflect their own individual behaviour.

Systemic Risk

While some forms of risk are specific to certain regions such as hail, frost or drought, income risk may have a much larger geographic spread. This means that a large proportion of the total farm population may suffer from low incomes at a given time, for

example, all grain farms when prices are low. The problem facing an income insurance program is a potentially high payout that overwhelms the reserves on hand. This accounts for the lack of private interest in income insurance. Even for a national government, the cost of a several years of high payout may make the program difficult to continue.

Inadequate Information

At any point in time the government has to establish the terms for the insurance policy. These terms include the magnitude of the premiums, who will pay the premiums (farmers, national government, provincial government) and the criteria under which payments will be triggered. While this is a conceptually simple problem of establishing probabilities for various events and determining appropriate premiums to cover the expected payouts, it is a very difficult problem in terms of actual implementation. In many cases there are no reliable estimates of the probability of specific outcomes, nor of their actual impact on farm incomes.

Bad Luck

From the perspective of the provider of insurance, the timing of payouts is a crucial element in determining their ability to maintain the program. If large payouts do not occur early in the life of the program then there is adequate time to establish a large reserve from premiums collected from participants. However, if large payouts occur early in the life of the program before sufficient funds have been collected to cover the required outlays, then the insurer has to use its own funds to cover these costs. This may lead to the insurer concluding that a mistake has been made in setting the level of the premiums or in estimating the underlying risk. However, the problem may simply be that bad luck resulted in a demand for compensation early in the program's life. In response, the insurance provider may either raise premiums or abandon the program because of an inability or unwillingness to absorb the short term costs, when from a longer term perspective the program is operating as it was designed.

Good Luck

A mirror problem occurs when an extended period occurs with low payouts. This can lead purchasers of insurance to conclude that the risks are lower than they had previously anticipated and cause pressure to terminate the program, reduce premiums or provide premium rebates. Once again from a longer term perspective, changes in the program are not warranted, because at some point the run of favorable outcomes will end and participants who drop out will be exposed to significant losses. Further, any reduction in premiums or reserves will leave the insurance provider under-funded.