



An Assessment of the Proposed New Risk Management Programs

for

Agriculture and Agri-Food Canada and the Canadian Federation of Agriculture

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1.0 Introduction

In 2001 Ministers of Agriculture in Canada undertook a review of safety net programs. The review focused on two general questions about safety net programs.

- How well do existing¹ programs work together?
- How well do they work as stabilization tools?

The review resulted in four general criticisms of existing programs. They are:

- There is a linkage problem between CFIP and current NISA: CFIP can be accessed without drawing down NISA balances, because the “triggers” are not linked, there can be “double coverage of losses under the two programs.
- There is a consistency problem between CFIP and Crop Insurance. They both deal with disasters, but one has a premium while the other does not. Timing of payments may also cause pressure for ad hoc programs.
- There is a coverage gap because negative margin coverage only exists in crop insurance and only for a number of commodities.
- Crop insurance is criticized for having high premiums and low coverage in some areas.

At the same time, working groups composed of federal government, provincial governments and producer representatives began the process of reviewing the current business risk programs and considering alternatives. As a result of these and other activities a new business risk management program has been proposed. It will be described in section 2.0.

1.1 Industry Concerns With Proposed Program

To date, the proposed program has not met with acceptance from some members of the agricultural industry. The Canadian Federation of Agriculture (CFA) expresses a number of reservations or concerns. CFA’s concerns include:

- The proposed program does not address chronic low prices, especially in a situation created by foreign subsidies – the “trade injury” argument.
- The proposed program may be too rigid to respond to specific regional conditions.
- The proposed program will be less affordable because it requires farmers to deposit their contribution to it. This may affect cash flow. Producers may not find the proposed program

¹ Existing programs include crop insurance, NISA (Net Income Stabilization Accounts), and CFIP (Canadian Farm Income Program), as well as companion programs available in some provinces.

acceptable because it is perceived that it provides no more stability and farmers' share of the risk will increase. The proposed program raises several questions about trade policy that likely can't be fully answered until either the next round of the WTO is settled, or until there is a test of the program in a NAFTA or WTO dispute. The fear is that the new program, because of the changes, may invite a dispute. They see no reason to risk it if the proposed program is not materially better than the current program.

- There is substantial concern with discussion about the “investment” trigger. This refers to the intent by some in government to use the program to encourage investment in infrastructure – e.g. investment in equipment that will enhance farm environmental practices. Fundamentally, the fear is that governments will impose regulations on farmers that will increase their costs and then expect them to pay for those costs out of stabilization funds. Farmers believe these costs should be kept separate, and that farmers should be compensated directly if governments increase their costs.
- The proposed program substantially changes the nature of the “entitlement”. With the current NISA program, governments contribute to the program when farmers do, and farmers can manage their stabilization dollars in a way that best suits their particular operations. With the new program, government only contributes when there is a need as defined by the program's triggering mechanism. This removes control from farmers and raises the question about what happens if the program is not triggered. In other words, if the commitment is \$1.1 billion per year, but the program does not trigger \$1.1 billion, is the remainder lost to or invested in agriculture?
- There are questions about how supply managed commodities will be handled in the program. In essence, the concern is how to ensure that a farmer with supply managed products is “covered” under the program for any non-supply managed products, without jeopardizing the intention of providing no government support for supply management.

These concerns have led to an impasse between government and farm organizations regarding the proposed programs. Because of the issues and the lack of clarity on them, the three senior authors of this report were engaged as third parties to assess the programs and the supporting research on the programs to examine the relative merits of the proposed new program and the proposed industry program compared to the current programs. The specific terms of reference for this report and its objectives are as follows.

1.2 Purpose and Scope

The purpose of this assessment as outlined in the terms of reference is:

“To obtain an assessment by an independent third party of the expected performance of the proposed new business risk management program's proposed New NISA and production insurance relative to the current set of risk management programming, including NISA, CFIP, crop insurance and companion programs.”

Within this context, the specific mandate and scope is to assess “the extent to which the current

and proposed programs meet the objectives set out by Agriculture Ministers for business risk management programming, as follows:

- to ensure programs are responsive to demand and that government dollars are directed to areas of need with respect to income stabilization, disaster mitigation, insurance coverage and investment;
- to provide equal treatment for farmers across Canada facing similar risk situations;
- to minimize the distortion of farmers' production and marketing decisions;
- to focus on management of risks related to the stability of the entire farm and to avoid duplication of payments;
- to be relatively simple and easy to understand; and
- to facilitate long term planning by farmers.”

As per our terms of reference, we did not commission additional research. Our analysis consisted of conceptual assessment of the alternative program designs and assessment of the research conducted by Agriculture and Agri-food Canada (AAFC) in developing the proposed program. The framework for our analysis, a description of the information received from AAFC, and a description of the research process undertaken by our research team is contained in section 3.0. . In section 2.0 that follows we provide a description of the proposed New NISA program and the industry proposal. Section 4.0 contains the analysis and section 5.0 contains the conclusions.

2.0 Describing the “Business Risk Management” and Industry Proposals

This section describes the new risk management programs (Crop Insurance and “New” NISA) and compares these with current programs (Crop Insurance, current NISA, CFIP and companion programs). It also describes the Industry Proposal as presented to us by the Canadian Federation of Agriculture.

2.1 Proposed New Risk Management Programs

The proposed new risk management programs draw on their predecessors in a number of design aspects. The sections that follow highlight the commonalities and differences between them.

2.1.1 *Commonalities Between the Current and Proposed Programs*

Both the current and proposed risk management programs include Crop Insurance as a primary vehicle for production insurance. Currently crop insurance provides coverage only in parts of the crop and horticulture industries. The proposed risk management programs envisage a broadening of crop insurance to a more general production insurance vehicle that would provide production risk protection for a wide range of crops and horticulture products as well as for the livestock industry. The options for offering this expanded form of crop insurance are currently being examined by the Crop Insurance Working Committee. The Crop Insurance program will remain unchanged for the current year. Accordingly, for the purposes of this analysis the Crop Insurance program as it currently is designed remains common between current and proposed programs.

2.1.2 *Differences Between the Current and Proposed Programs*

The most significant differences between the current and the proposed programs are:

- What is now NISA and CFIP will be combined into a single integrated program.
- Both the amount of income eligible for support under the new program and the actual distribution of program benefits are based on a “production” margin instead of eligible net sales and a “gross” margin.
- In the current NISA, the maximum contribution is generally 3% of eligible net sales to a cap of \$250,000, with the producer contribution matched by a government contribution. Payments are triggered when gross margin falls below a five-year historic average. Gross margin is calculated by deducting eligible expenses (calculated on a cash basis) from eligible revenue. Payments are deducted first from the government fund (fund 2), and then from the producer fund (fund 1). Funding for safety net payments is limited to producer and government balances.

- In the current CFIP, eligibility is based on a three-year average or an Olympic² five year average of gross margin, and payments are triggered when the current year falls below 70% of the gross margin (and covers 100% of the loss below 70% of gross margin adjusted for market revenue and NISA benefits). In CFIP, gross margin is calculated as in NISA, except that there is also a modified accrual adjustment for receivables, payables and changes in inventory for the claim year.
- In the proposed program, farm revenues are treated the same as in the current programs, but there is only one cost calculation. The “production” margin is gross margin but with fewer eligible expenses deducted. Like CFIP, an accrual adjustment is made. This means, therefore, that the Production Margin is much higher under the proposed program than was the case under the current programs – i.e. gross margin may have been \$50,000, while under the proposed program, it may be \$90,000 for the same period because fewer expenses are deducted.
- Under the proposed program, the coverage eligibility level for a farm is based on the Olympic five-year average.
- Program eligibility caps are much different under the proposed program. Contributions under NISA were limited at 3% of \$250,000 of eligible net sales (eligible sales less purchases of eligible commodities) per year per individual calculated on a cash basis and CFIP limits program benefits to from \$145,000 to \$175,000 calculated on a modified accrual basis. With the proposed program, caps will be set at \$975,000 of **Production Margin**. An exact comparison is not easy to make because of the differences in the way the caps are expressed. But if production margin is 50% of sales, then the cap is approximately equivalent to \$1.95 million of sales. If it is 70%, then the cap is approximately equivalent to \$1.625 million of sales. Obviously, the sales cap is dependent on what is included as an eligible expense – the fewer the expenses, the higher the cap. Another aspect of cap for the proposed program is that the total government payment cannot exceed 70% of a farmer’s calculated loss in Production Margin. This is to help ensure that the program meets WTO requirements.
- Under the current NISA, government’s portion is an entitlement when the farmer opts to join the program – i.e. the government’s portion is ***an entitlement when the farmer contributes to the program***. The farmer then has the right to claim or not claim if income falls. It is the farmer’s option. In the proposed program, the government’s portion is only due when the income is taken. Therefore, ***governments do not incur a liability until a payment is triggered, and farmers will not be able to build and hold balances as with NISA***. They must take the money when it is triggered.

The corollary to this is that under the current NISA program, farmers do not have “coverage” for the first 30% of losses until they have built a sufficient balance in their NISA account and the rate of accumulation is limited to 3% of ENS. Under the proposed new NISA a farmer can select a coverage level up to 100% of the reference Production Margin starting in year

² An Olympic average removes the high and the low years from the average calculation.

one. If one assumes that Production Margin is 50% of ENS, it would take a farmer three claim-free years to build a NISA account to provide equivalent protection.

- An important aspect of the proposed program is that producers' deposits to the stabilization and disaster portions are not premiums in the insurance sense. Rather they are regarded as a deposit that is part of their commitment to risk management. Producers need to calculate and decide what level of income coverage they want, and then are responsible initially for contributing a third of the total deposit.
- Deposit levels are required to reach 100% of the producer's risk sharing component by year three. However, in the year following a margin decline of greater than 30% of the reference margin, the requirement re-sets to the one-third level.
- Another change in program design relates to the minimum income trigger. The current NISA program provides for a trigger of the account when income (specifically defined on a cash basis and incorporating off-farm income) falls below \$30,000 for the year. This element of program design is considered a "support" component rather than a "stabilization" component and has not been incorporated into the proposed New NISA.

2.1.3 Determining Coverage From the Proposed Program

The proposed program has four levels of potential benefit. The first two are the "stabilization" portion of the program, the third is the disaster portion and the fourth is production insurance. As noted previously, Crop Insurance remains unchanged at this point.

Under the proposed program the two stabilization and one disaster portion form "layers" within the proposed New NISA. The relevant components from an eligibility perspective are 70%, 85%, and 100% of the five year average Olympic average Production Margin. In essence, the lesser the Production Margin decline, the lower the government's³ contribution to the coverage. As the Production Margin increases, the government's contribution to coverage increases. The government and producer portions are as follows:

- Between 85% and 100%, farmer and government both contribute 50%.
- Between 70% and 85%, farmer contributes 30%, government contributes 70%.
- 70% or less of Production Margin, farmer contributes 20%, government contributes 80%.
- Less than 0 Production Margin, government does not contribute, except through crop insurance.

To understand the program better, let us assume a farm has an Olympic average Production Margin (i.e. a reference margin) in year one of the program of \$100,000. The farm will have the

³ In all cases, the federal government will pay 60% and provincial governments will pay 40% of government costs.

choice to contribute for 70%, 85%, or 100% coverage of the reference margin. With this example:

- If the farmer chooses 70% coverage (i.e. \$70,000) then the farmer's deposit is \$14,000 (i.e. 20% of \$70,000).
- If the farmer chooses 85% coverage, (i.e. \$85,000) then the farmer's deposit is \$18,500 (i.e. \$14,000 from above and 30% of the next \$15,000).
- If the farmer chooses 100% coverage, (i.e. \$100,000) then the farmer's deposit is \$26,000 (i.e. \$18,500 from above and 50% of the next \$15,000).

Whichever level of coverage the farmer chooses, the farmer's initial obligation is to deposit one third (1/3) of the amount. The other two thirds (2/3) must be deposited by the end of the third year. Of course, the reference margin will change each year, so the deposit may also change.

It is important to understand that, except for changes in the reference margin, deposits do not change until there is a claim: in other words, the deposit is not a premium. If there is no claim for ten years, and the reference margin stays at \$100,000 for the entire time, the farmer's total deposit is a one-time total of \$14,000 (assuming 70% coverage).

2.1.4 Making a Claim Under the Proposed Program

A claim can be made under the proposed program when a farm's actual Production Margin in a given year falls below the reference margin. The amount of the claim is dependent on the level of coverage selected by the producer.

An important aspect of the proposed program design is that payouts will be done on a "bottom" up basis – i.e. payments start at the level of loss and work up until either the producer's deposit is used up or the producer's margin is brought back up to the reference margin. This means that the greatest proportion of government risk sharing is accessed first.

Returning to the example farm above, assume in a given year, the Production Margin is 60% of the reference – i.e. the farm has a 40% loss, which in this example is a \$40,000 loss. How much will a farmer receive with 70, 85 and 100% coverage?

- The farmer with 70% coverage will receive \$26,000 (or 65% of the total loss) in government payment and receive the return of the entire \$14,000 of his or her own deposit. This is calculated as follows:
 - For the \$10,000 loss between 60% and 70%, the producer's share is \$2,000 (20%), and the government's is \$8,000.
 - For the \$15,000 loss between 70% and 85%, the producer's share is \$4,500 (30%) and the government's share is \$10,500.

- At this point, the producer has received \$6,500 of the original deposit, thereby leaving \$7,500. Therefore, government pays another \$7,500 to match this part between 85% and 100%.
- The total government contribution from the three portions is \$26,000, while the farmer's share is \$14,000, and all of the loss is covered.
- Farmers with 85% and 100% coverage would not need to use their additional deposits. Therefore, they could be used to secure subsequent levels of protection. In our example, a farmer with 85% coverage has \$4,500 left on deposit, while the farmer with 100% coverage has \$12,000 left. This money can then be used as part or all of the deposit for subsequent years' coverage under the program.

The foregoing description reveals another interesting aspect of the proposed program – i.e. because of its bottom-up nature, the proposed program can provide a substantial portion of a loss that exceeds one's coverage. In the example, the farmer is covered for 100% of the total loss with 70% coverage. The importance of this depends on the magnitude of the loss. Assume alternatively that this example farm loses 80% of the reference margin in a given year or \$80,000. Below we calculate the payout with 70, 85 and 100% coverage.

- If the farm has 70% coverage, then the government payment is \$49,333 (or 61.6% of the loss) at the point when the farm's entire \$14,000 deposit has been returned. (For the first \$50,000 in losses, government pays \$40,000, the farmer's contribution is \$10,000; this leaves \$4,000 of the farmer's deposit which at the 7/3 ratio gets used with \$9,333 in government payment. So, the total coverage of the \$80,000 loss is \$14,000 of producer deposit and \$49,333 of government contribution, which equals \$63,333 of the total loss).
- If the farm has 85% coverage, then the government payment is \$54,500 (68.1% of the total loss) when the farm's deposit has been completely returned. (For the first \$50,000 in loss, the farmer pays \$10,000 and the government pays \$40,000. For the next \$15,000, the farmer pays \$4,500 and the government pays \$10,500. This leaves \$4,000 in unused producer deposit, so the farmer can claim \$4,000).
- If the farmer has 100% coverage, then the government portion is \$56,000, which occurs because of the cap on payments of 70% of the loss. The total government payment is \$54,500 as above, plus an additional \$1,500 where the cap is reached. So the farmer would have \$20,000 of the deposit returned, and would have \$6,000 left to contribute toward the program in the future.

Figure 1 Performance of Proposed Program Assuming \$100,000 Reference Production Margin and \$14,000 Producer Account Balance (70% Coverage)

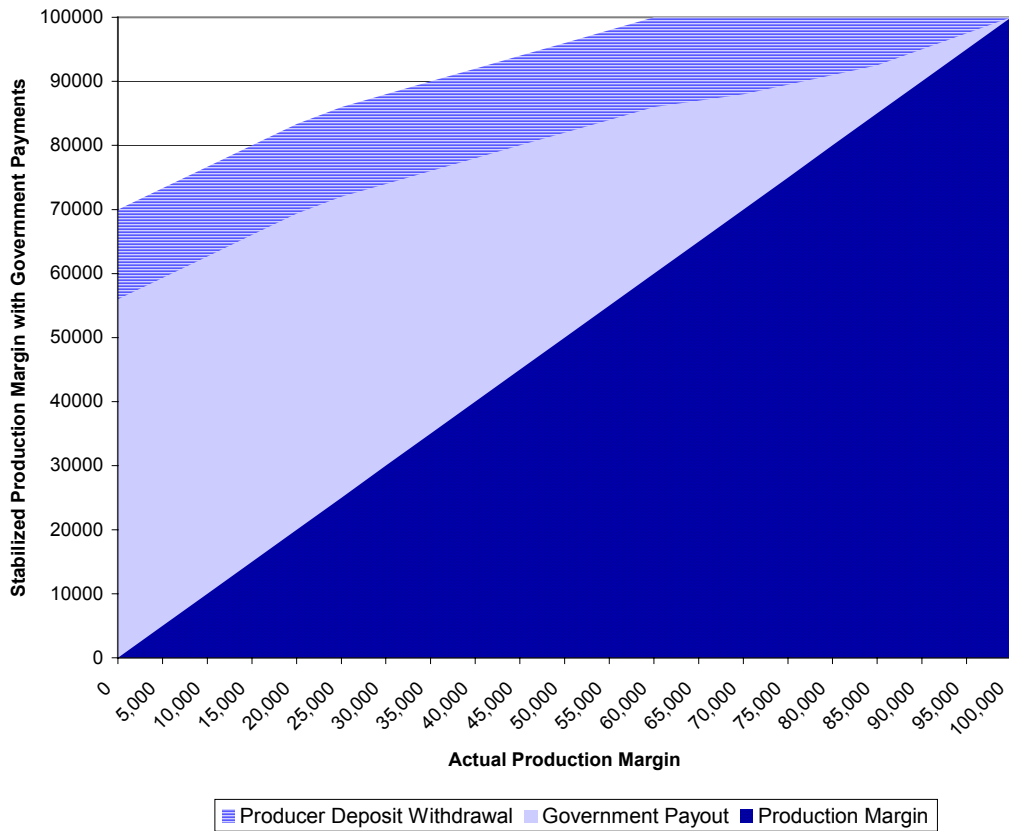


Figure 1 presents the relative payouts and producer withdrawals under a range of scenarios from 100% decline in Production Margin through to no decline.

Unlike the current NISA program, deposits cannot be “deemed” to have occurred. In order to receive government payments, producers must select their coverage level in the spring of the year and deposits are required by December 31st of that year.

A final note on the terminology of the program is that the term “coverage” is likely confusing to people, at least it has been to the authors. First, it implies that the deposit is a premium in the insurance or option sense. It is not: if one were buying insurance that gives a payment only when the production margin falls below 70% of the reference, then it would be paid for with a premium that would be determined by the risk of the event (i.e. a drop below 70%) actually occurring.

Second, the term “70% coverage” implies, as above, that one only receives a benefit if the claim year margin falls below the “coverage” level – i.e. 70% in this case. This is not so in the

proposed program. Rather it simply is a way of calculating how much deposit a producer wants to make. The producer with 70% “coverage” can claim even with a 92% or even a 99% claim year Production Margin. If the reference margin is \$100,000 and the claim year margin is 92% (i.e. an \$8,000 loss), then the farmer with 70% coverage can use \$4,000 of his or her deposit to claim a matching \$4,000 from the program. So, the term “70% coverage” simply means that the farmer used 70% of the reference margin to calculate the deposit. But, in fact, the deposit covers all the losses down to 60% of the reference margin.

2.1.5 Structural Changes

An important distinction in the proposed New NISA is the plan to alter the reference margin to reflect structural changes in a farming operation. For example, if a producer was in the process of exiting farming over a number of years to retire and reduced the size of his or her production base, a structural adjustment would be incorporated into the reference margin to ensure payments would trigger on the basis of current margin potential. Similarly, a producer who was expanding his or her business would have his reference margin adjusted to ensure he was eligible for sufficient coverage to protect his expanded level of risk.

The specifics of how these adjustments will occur have not been determined.

2.1.6 Continuation of the Program

A final point about the program is what occurs when moving from one year to the next. There are three possible situations:

- Reference margin remains unchanged. In this situation, the producer’s deposit to the program would not change – if I’ve elected 70% coverage and the reference margin does not change, then my deposit continues to cover me at the 70% level.
- Reference margin increases. An increase in the reference margin means that a farmer is eligible for a higher level of coverage. In our example farm, assume that in year two of the program, the farm had a good year and the reference margin increases to \$110,000. Now with 70% coverage, the farm is eligible to increase its protection to \$77,000. It would therefore need to add to its deposit accordingly (i.e. the total deposit would increase from \$14,000 to \$15,400).
- Reference margin declines. In this case, the producer’s minimum deposit would decline because of a drop in the margin that resulted in a claim. But some or all of the existing deposit is used up because of the claim. In this case, the producer will be required to bring the deposit back to the new required level given the new reference margin. If the margin was more than 30% lower than the reference margin, then the producer will be allowed to recharge the deposit at 1/3 of the required amount in the subsequent year and will be required to have the full amount on deposit by the end of the third year subsequent to the loss.

2.2 The Industry Proposal

The industry proposal continues to evolve as this report is being written. The industry proposal, as presented to the National Safety Nets Advisory Committee (NSNAC) on February 7th, 2003, consisted of the broad concept for the program. Specific parameters were to be decided after considering results of initial modelling. The broad outline of the proposed structure is as follows:

- As with the proposed New NISA, the industry proposal would include a stabilization portion and a disaster portion.
- Payments would be triggered by a decline in the Production Margin as in the proposed New NISA.
- The stabilization component would be based on matching government and producer contributions to producer accounts, while the government funding for the disaster component would be available only upon triggering a withdrawal and taking it (“entitlement”).
- Farmers would have the choice to withdraw money from the stabilization component as they do now for the current NISA. Because the program would use a single margin for both stabilization and disaster, it would imply a shift to modified accrual accounting for both the stabilization and disaster triggers.
- The minimum income trigger would be retained in the industry proposal.

A first run of the program was based on parameters suggested by NSNAC’s Technical Working Group. The structure of the initial model, includes the following features:

- The stabilization portion would have 50:50 farmer/government matching funds for the first 15 % of income, while government would pay all of the losses below 85%.
- The contributions to the stabilization portion would be calculated in a similar manner as in the current NISA i.e. 3% of eligible net sales. However, there would be no caps on contributions in any one year.
- The disaster component would be based on 85% of the Production Margin as defined in the proposed New NISA.

3.0 Analytical Framework, Data, and Factors Affecting the Analysis

Our task in this report is to assess the current set of programs for risk management compared to the proposed New NISA and the Industry Proposal. They are to be assessed relative to the criteria presented in Chapter 1.0, the terms of reference. An important aspect of the terms of reference is that the individual components are interrelated. For example, determining whether a program responds to needs in terms of its disaster, stabilization, and insurance requirements is not unrelated to the question of its impacts on whole farm income, or whether it provides equal treatment to farmers with the same risk profile in various parts of the country. As a result of the interrelationship among the terms of reference, there will be some repetition in the analysis.

In this section of the report we present the framework for analysis, the data, models and analysis provided by AAFC for us to analyse and a discussion of a number of factors that affected our ability to complete the assignment as described in the terms of reference.

3.1 Framework for Analysis

This section describes the theoretical framework used to compare the current and proposed programs to the objectives agreed to by the Ministers.

3.1.1 Are Government dollars directed appropriate with the need? Are the alternatives cost effective?

The term “demand” in the statement of terms of reference appears to refer to “need” in other words, how well do the programs give assistance when there is a shortfall from one of the identified sources of risk? This means analyzing the triggering mechanisms of each of the programs. This is to be done sequentially along the following steps:

- First, compare program designs. Based on the sources of risk determine whether the designs of each will likely meet the needs in concept. Is one trigger more responsive to need than another in concept?
- Second, are there differences in their sensitivity in reality. That is, once the concept is translated to a program rule, are the conclusions about responsiveness to need the same as in concept? Here, we need to examine whether the tests and simulations that have been done by AAFC address this question adequately. If not, what would? If so, what do they show?
- There appears to be little specifically on cost and efficiency in the terms of reference. Farm organizations have concern about the affordability of the proposed New NISA. It would be inappropriate to avoid the question of cost and cost effectiveness in this assessment. There appears to be considerable information in the research that can be used to address this. What can we learn from what’s been done and do we need more? How can/should we differentiate between cost and cash flow?

3.1.2 Equal Treatment.

The issue is whether farmers with similar risk situations in different parts of the country will be treated the same. It is not about whether the risks are different in different places. Two ways to approach this are:

- Design: Is there anything inherent in the design of programs that result in inequity among regions or commodities? Would there be any difference in the triggers in a given program for different parts of the country?
- Simulations and tests: Do the simulations address this question? If not, can they and what can we conclude? What more is needed?

3.1.3 Minimize Distortion in Management Decisions

The major issue here is whether the bundles of programs mask market signals or cause farmers to produce certain products or make different production decisions. Again, this requires a three-stage inquiry:

- First, is there anything in the design of the programs that mask signals or gives an incentive to invest in a product, or invest in a region?
- Second, do the actual triggers mask incentives from the market place, or provide inappropriate ones?
- Third, are there incentives for production-related moral hazards?

3.1.4 Manage risks

Risk management occurs if programs stabilize some measure of net income. The question is what should be stabilized, how should it be measured, and how much is enough to conclude that a program assists in managing risks?

- It is not likely that agreement could be reached among economists on what is the best measure of income. At least some of the work done by AAFC takes into account several potential measures of income. Hence we can analyse these to see whether they are reasonable measures of income and, with several measures, we can obtain a notion about the robustness of the stabilizing effects. By analyzing several variables and programs, we will have at least some comparators of performance.
- Fundamentally, the questions that need to be asked are which program imparts the most stability, and is there a difference in the cost efficiency among them?

3.1.5 Simplicity

The questions here are quite straight forward – are any of the sets of programs easier to understand and comply with than others? Do any provide a lesser administrative burden than others and yet meet the overall objectives of the program?

- To investigate, one issue is whether there is anything different in the design of the programs that differentiates them in this regard.
- The second issue is whether application is any easier. To address this we will review direct experience in applying for the current programs compared to the proposed requirements for the new programs as defined by AAFC program administrators.

3.1.6 Facilitate Long Term Planning

If a program is superior relative to this criterion, it will mean it provides a better forecast of the worst outcome and/or makes the worst outcome less severe. These circumstances will make it easier for a manager to develop planning strategies. The questions that arise are:

- Are there differences in the clarity of potential outcomes?
- Are there differences in potential worst outcomes?
- Are there differences in the structures of the programs such that they provide different assurance of payback to lenders and, therefore, differences in the ability to finance growth and or ongoing efficiencies in operations?

In appendix A of this report we have provided a table that shows the data/information source and activity conducted to address each objective of the proposed program.

3.2 An Assessment of the Data Provided

Three primary sources of data were provided to assist with the assessment: real farm data, model farm data, and NISA data.

3.2.1 Real Farm Data

Historic data were provided from actual farms in Ontario and Saskatchewan to illustrate the impact of current farm programs, the proposed program, and a program proposed by industry. For each farm, revenue sources, eligible revenue, expenses, accrual adjustments, and accrued contributions to the existing program are presented. Ontario data consisted of five farms, three of which were cash crop farms (small, mid-sized, and large) and two of which were hog farms (small and mid sized). The Ontario farms had information from 1995-2000. Data from four Saskatchewan farms was also provided, all of which were cash crop farms. The Saskatchewan farms had information from 1995-2001.

Based on the above historical information, real farm models simulate farm incomes under no safety net programs, under the current programs, and under the proposed program.

The major strength of the real farm data is the level of detail and transparency that is presented. The conditions that led to farm incomes in a given year, including sales, expenses, crop insurance payments, and inventory changes are generally clear. It is also clear how the calculation of program payments under the various safety nets is done. Since we were provided with the actual models used, we were able to test the robustness of the results by varying a number of the parameters.

The weaknesses of the real farm data are the following:

- Small sample. A total of only nine farms in two provinces were available for the analysis. These farms were drawn from two farm types. Thus, the representation is from a small and very narrow sample that cannot be used to make broad inferences and conclusions.
- Treatment of NISA Fund 1 contributions and payments. The real farm models treat producers' NISA contributions to Fund 1 as an expense. These contributions are deposits that are guaranteed with interest; they are not expenses, despite the fact they represent cash outflows. Similarly, NISA payments to producers drawn from Fund 1 are treated as revenues, when in fact (apart from the interest paid on the account) they are simply a return to the producer of earlier contributions. The real farm analysis was conducted both with and without the producer NISA cash flows included in the measure of stabilised income. As was expected, incomes were more stable when the cash flows were included, however, the ultimate preference for program design was not impacted by this assumption.
- We updated the models of the real farm data to reflect the proposed New NISA program. The models we were provided with modelled a previous version of the program design. Accordingly, we:
 - Removed the deductible provision;
 - Corrected the cost shares in each layer of the program; and
 - Replaced a five year moving average reference margin with an Olympic average reference Production Margin where data were available.
- Period reflected by the data. Because the proposed program has a reference margin based on an Olympic average, five years of data are required to compute the reference Production Margin. Using the real farm data, that left only one or two years in which analysis using the formal reference Production Margin could be used. Thus, a simple average of the available information was used in years where there was insufficient information to construct a proper Olympic average.

3.2.2 Model Farm Data

The model farm data was based on a representation of a typical farm commodity type. Rather than represent the income and expense experience of an actual farm, the model farms generate data for incomes and expenses based on distributions of historical values. Thus, given the basic framework of the representative farm, the values used in individual income and expense categories were drawn using repeated samples from a distribution (Monte Carlo approach). Given the individual revenue and expense values drawn from the distributions, the implications on farm income and stabilized net farm income were observed.

Using this approach, many observations of potential outcomes of farm income and safety net support are observed. Thus, it would appear that many more observations are possible than under the real farm data observed above, and that the results are most robust. However, the fundamental difficulty with the model farm data is that, as part of the sampling procedure, the temporal link between the revenue and expense values it simulates is severed. For example, in years with relatively high farm revenues, there is likely to also be relatively high expenses. In particular, expectations of high revenues tend to influence input costs such that expenses are driven higher. The model farm simulation procedure freely mixes data across years in its sampling, so that sales data from high revenue years can be coupled with expense data from low input-cost years. This produces results that the data suggest are possible, but ignores any inherent correlation between revenue and expense. If one assumes that income and expenses are positively correlated then the model farm approach will overestimate the standard deviation of Production Margins relative to the population. Thus, the results from the Model Farms should be examined in the light that the models overestimate the need for stabilization. However, there is no reason to expect this to favour one program over another in the analysis.

3.2.3 NISA Data

Historic data were obtained from the NISA database to provide information aggregated from actual farms, sorted by farm type and province. The following characterizes the NISA data:

- Proposed program was modeled over the 1996 to 2000 period and compared with actual results under the current programs using actual data for NISA participants in each year.
- Margins were based on the Gross Margin definition for the current NISA and CFIP programs and the Production Margin definition for New NISA. In cases, where accrual data was not available (because CFIP was not in existence or had not been participated in by the producer) accrual adjustments were simulated. This was done to ensure the programs were fully tested, since accrual adjustments increased the instability of margins.
- Contributions are adjusted in each year to reflect producer funds carried over from year to year and the reference margin to be covered.
- In each scenario, government funds are pooled with producer funds and only accessible when triggered and withdrawn. This means the funds only have a stabilizing affect in the year they are accessed.

The advantage of the information presented from the NISA data is the volume of data and breadth of farm types represented. The NISA information consists of a vast number of farms and spans farm types across the country. This allows observations on program performance to be made with the benefit of a much larger sample size. In addition, farms of a given type can be compared across provinces, and information is available on a large number of farm types.

A weakness of the NISA data is the lack of detail provided with regard to the nature of the sample it is drawn from and how the various component programs were treated in the data. For instance, over the time period in question (1996-2000) the parameters of companion programs have evolved. As a result, the modelling on the NISA data set should be viewed as a comparison of the proposed programs to the current programs as they evolved over the time period in question rather than as they currently exist. We understand that the exception to this is the CFIP program, which, while only introduced in 1999, was modelled over the full dataset.

The ability to model the correct accrual adjustments within the NISA dataset is also limited, given that producers were only required to submit information on accrual adjustments when applying to the CFIP program.

Secondly, only aggregate results are presented. However, the results have been stratified so that one can compare the results for small versus large farms, high margin versus low margin and farms stabilized relatively more or less than the mean result. For instance, while the effect of companion programs is blurred in the national results, an examination of the results by commodity, by province allows an analysis that gives full credit to the companion programs.

The aggregate nature of the NISA data allows inferences about the broad results and impacts of the proposed programs.

3.2.4 Data Value and Relationships

While each dataset has limitations in its ability to be extrapolated to draw conclusions about the ability of the proposed program to stabilize farm incomes relative to existing programs, where there is agreement between the models on the relative merits of the programs, a fairly robust conclusion can be drawn, especially with respect to the grains and oilseeds, and pork sectors (since each are present in all three datasets). Where the models disagree, it is more difficult to draw definitive conclusions as no one model is a conclusively better abstraction of reality than the others.

3.3 Summary of the Process Used in This Analysis

As implied in the foregoing discussion, and given the nature of this assessment, the procedures used included three major components:

- Listening to submissions by the parties. The project team had two formal meetings with each of AAFC and CFA. In those meetings, the parties provided their input on the issues identified in the terms of reference. They also provided written submissions on their analysis regarding the issues in the terms. We also attended an additional meeting of the

safety net committee of the CFA and participated in a Safety Net Advisory Committee Teleconference where further input from the industry was provided.

- Analysis of program design. A number of the issues in this assessment have to do with conceptual design of the programs. The project team used its experience and knowledge to understand and anticipate the relative impacts of the alternative programs.
- Examination and analysis of AAFC research. The research team had access to the results of the AAFC research on safety nets and for the NISA and Real Farm data access to the models used for analysis. This allowed the team to test the anticipated results from the conceptual analysis above against the AAFC results.

3.4 Factors Affecting the Analysis and Conclusions

In the course of our review we have identified a number of factors that affect our ability to comment on the expected performance of the proposed risk programs relative to the current group of programs. We have documented each below with an explanation as to the impact on our analysis and, where possible, what we did to adjust.

3.4.1 Crop Insurance

We have been advised that concurrent with the introduction of the proposed New NISA Program, the Crop Insurance Program will be receiving an increase in funding from current levels of approximately \$250 million to \$400 million annually. Our understanding is that much of this is due to increased claims in the Prairies and Ontario over the past two years, as well as to slightly higher grain prices. In addition however, it is our understanding that the overall federal subsidy level within the crop insurance program will move from 30% on average to 36%.

In the longer term there has been a decision as part of the risk management program to expand production insurance coverage to crops for which there is currently no or limited coverage and to other commodities beyond crops. The exact nature of these changes has not been determined; however, they will presumably include increases in the number of crops or products covered, the level of coverage and possibly the cost to producers of coverage. The simulations that have been conducted and provided to us assume no change in crop insurance coverage. Clearly, changes of this magnitude would have a significant impact on the performance of the new programs. Expansion of production insurance could increase the extent of negative margin coverage available to the industry as a whole adding increased support.

3.4.2 Labour

Whether labour or which components of labour (arms length and non-arms length) are included in the margin has not been decided. Most recently it appears that non-arms length labour will be in the margin and that arms length labour costs will be deductible. The analysis made available to us assumes all labour is not an eligible expense. If this is not the case, it affects the relative performance of the programs in terms of timing and amount of payment triggered. As with section 3.1, above, we will comment on the likely impact of the inclusion or exclusion in margin of labour, but cannot provide comment based on a fulsome analysis.

3.4.3 Treatment of Fund One and Two Balances

The modeling and analysis provided to us by AAFC compares the performance of the two program groups based on a modeling approach that “seeds” balances into the current NISA program. Accordingly this approach creates a comparison between the new programs and a “theoretical” set of current programs. Given that NISA balances will be returned to farmers regardless of the design parameters of the new program, a preferred comparison would have been to compare the existing program design to proposed program designs under an assumption of \$0 starting balances. For the real farm data we have modified the models to include an assumption of \$0 balances. For the models that we were not able to modify the assumption, the reader should understand that an assumption of a starting balance benefits the results of the simulations of the current programs and the industry proposal relative to the proposed New NISA. However, its impact on the comparison between the current program and the industry proposal is not clear.

3.4.4 Producer Deposits

In both the communication materials and program modeling producer deposits are referred to and treated as costs. While there may be important administrative, political or trade reasons to have a formal deposit component to the program, we find that the reference to and treatment of these by both AAFC and CFA as “costs” to be misleading and confusing to the analysis. The deposit is clearly not an expense to a farmer and a return of the deposit is not income. However, if one views risk as being derived from a farmer’s ability to meet other obligations after production expenses have been met, then the cash flows into and out of either the current or proposed New NISA are relevant to the discussion of the degree of risk faced by a farm. Our primary concern is with labelling the flows as “costs” and “income” as we believe this serves to confuse people’s understanding of the deposit concept.

3.4.5 Reference Margin Modelling

The models were limited in their ability to simulate a true five year Olympic average (five years less best and worst years) for the establishment of the reference margin across the full timeframe for analysis. Where the Production Margin history was too short (less than five years) to establish an Olympic average, a simple average of the available observations was used. Thus, the full buffering effect of the Olympic average was not modelled and margin decline events in the first years of a simulation potentially had a different impact on the reference margin than those in the later years.

3.4.6 Industry Proposal Status

The industry proposal as provided to us and as acknowledged by CFA is not fully developed and is to be considered a first draft requiring further refinement. Of particular note we have as recently as April 23rd received conflicting information regarding whether governments are expected to provide 100% coverage of losses to the 70% or the 85% level. Modelling of the industry proposal was undertaken. However, the cost of the program is estimated to be significantly higher than the cost of either the current programs or the proposed AAFC program. The cost is higher to the extent that it is well above the available funding envelope. Since we are

comparing a program that has been designed to fit within the available funds to one that is not, direct comparison between the programs in absolute terms is of limited value. However, we have commented on the structural differences between the programs where appropriate.

3.4.7 Documentation and Communication Materials

Throughout our review and analysis we faced challenges with the terminology used and consistency of communications in the documents provided. Accordingly we draw attention to the potential for misunderstanding and misinterpretation of program design or modelling results. In particular, terms such as “coverage” level, “premium” and “cost” as applied to the producer deposit of the proposed program convey meanings to those who know about insurance or options that are different than the standard definitions. Using language that is more precise will assist in understanding.

4.0 Analysis of Proposed Program Compared to Current Programs and The Industry Proposal

As identified above, the task of assessing alternative programs in light of the stated objectives involves analyzing their design and the simulated performance. Given the terms of reference, this is to be accomplished by reviewing and making observations on existing data and research. The purpose of this section is to provide a conceptual analysis of the design of the programs, and to interpret the results of data and simulations.

Section 4.1 presents an analysis of response to needs under the proposed program. Section 4.2 provides an analysis of the equity of treatment of risks across farm types and regions. The extent to which programs minimize the distortion in incentives between farm products and regions is considered in Section 4.3. Section 4.4 considers the extent to which risks are stabilized on a whole-farm basis under alternative programs based on empirical evidence. Section 4.5 considers the simplicity of application and claim procedures under alternative program conceptions. Section 4.6 addresses the programs' impacts on long-planning and 4.7 reviews the programs in terms of the needs of the supply managed industries.

4.1 Need, Are Government Dollars Directed Correctly?

The fundamental question regarding the ability of a program to respond to needs is whether it triggers payments when the need event happens. More specifically, is the triggering mechanism for a payment sensitive to the conditions against which the program is designed to provide protection. As indicated in both sections 1.0 and 3.0, the words in the terms of reference for this project say programs should ensure that government dollars are directed to areas of need with respect to ***income stabilization, disaster mitigation, insurance coverage and investment*** (emphasis ours). As already suggested, nothing can be said about "investment" under either the proposed or current programs because the issue will not be addressed until 2006, and how it will be addressed is not known. Moreover, there is a very strong feeling in the industry that investment should not be an aspect of an income stabilization policy. Or said differently, the industry feels that farmers should not be expected to pay for public infrastructure out of their stabilization funds. Hence we do not address this issue again. Nothing can be concluded.

The remaining three (income stabilization, disaster mitigation and insurance coverage) are relatively broad and the list of possible sources of risk for crops, tree fruits, and livestock in the supporting documentation is so large it is daunting. But, essentially, our perception is that the concern in policy is to protect farmers from uncontrollable losses in net farm income due to uncontrollable declines in prices of final products, uncontrollable increases in the prices of inputs, and uncontrollable shortfalls in production from disease, weather or other factors outside producers' control. Hence all three programs have three elements: crop (production) insurance to protect against physical disaster; an income stabilization program intended to protect against income shortfalls of up to 30%; and a

disaster portion to protect against larger declines in income. The differences are the triggering mechanisms of the programs, the timing of the entitlements under the programs, and the breadth of production insurance instruments.

Note that the emphasis is on “whole farm” income, not income from one or a set of products. It would appear that this issue is closely related to the stabilization and equity issues. Some would argue that there are problems if a program provides a different payout for two farms producing the same products, but having different private risk management programs. Others would argue that if two farmers are producing the same product, but also producing different sets of other products, that a program should make the same payment to both farmers for the same product (at least on a per unit basis). Our interpretation of the intent of these programs is that they are intended to provide relief from a decline in whole farm net income.

From this starting point then the question is whether one of the triggering mechanisms is better than another in terms of its sensitivity to a decline in farm income, and whether the crop or production insurance components are better. The current program uses a gross margin calculated on a cash basis as a trigger for the NISA component as well as a gross margin calculated on a modified accrual basis for the CFIP component. The proposed program, as well as the industry proposal, uses a Production Margin calculated on a modified accrual basis.

4.1.1 Responsiveness of the Triggers

Which program is more responsive to the risks against which programs are supposed to protect? To begin with, conceptually, it would appear that the Production Margin is more responsive. This is because it specifically accounts for the factors that affect income risk – the level of production, prices of products, and prices of inputs. By simultaneously using the smallest possible number of variables to represent what is at risk, the Production Margin has less likelihood of being masked by something that is not related to the risks the programs are attempting to mitigate.

For example, suppose input prices rise substantially in a given year. Assuming that product prices and production don't change, the increase in input prices would trigger a loss. However, suppose in the same year, the farm has a decline in legal and accounting fees that offsets the rise in input prices. With the Production Margin, a loss would be triggered. With a gross margin, a loss would not be triggered. Similarly, if the opposite situation occurred – i.e. in a given year the farm has a decline in input prices and an increase in legal and accounting - a payment may or may not be triggered. But the farm will have a lower reference margin in the subsequent year if legal and accounting is an allowable expense. Therefore, the farm is not able to benefit as much in subsequent years if there are uncontrollable changes in prices of products, prices of inputs or production.

Some have argued that the Production Margin is a more appropriate trigger only when its variance is greater than the variance of the gross margin. In the first place, since programs only trigger once per year, and that a few years can make a very significant difference to the aggregate outcome for an individual, basing conclusions on the

assumptions of normal distributions may be limiting. (Variations in my income may be normally distributed over 30 years, but if I can't survive the three really bad ones early on, the other parts of the distribution may be quite academic.) The Production Margin is much more responsive to current conditions with respect to the factors of interest. Second, we show in Appendix B that, as implied above, the real issue is the correlation between the eligible expenses and revenue. As illustrated above, in the example of legal and accounting expenses, the eligible expenses in a production margin are likely to be more correlated with revenue. In addition, the proposed measurement of Production Margin using a modified accrual basis should be more reflective of need as compared to the current NISA approach. However, there has been a great deal of controversy over the method of valuing inventory as well as a greater risk of moral hazard. We believe the risk of moral hazard can be overcome by simply adjusting inventory by a standardized price for the valuation of inventory. This will remove individual discretion and increase the integrity of the process.

A further aspect of the programs' responsiveness to need is the fact that in the current NISA program and in the industry proposal, all producers were eligible to receive government deposits to their account based on 3% of ENS regardless of need, long term or short term. With the proposed program, funds are only distributed based on 'need' using a margin comparison. It is an important shift from the current program.

One aspect of the design of the current program is the cap at \$250,000 of ENS, while CFIP is capped at between \$145,000 - \$175,000 of benefits. This places a ceiling on benefits for many farms, especially those with high turnovers such as livestock operations. With the current program, this means that large losses, by definition, are not covered. With the cap at \$975,000 for the government proportion of total program payment, the proposed program will respond significantly better to the need of those with larger losses.

The current program has two triggers that can be activated to provide withdrawal access: the gross margin trigger and the minimum income trigger (MIT). The MIT is activated when gross margin in the current year falls below a threshold level. The threshold is fixed and therefore is concerned with the absolute level (or adequacy) of the gross margin. One could characterize the MIT as a form of support rather than stabilization. Regardless of the current year's margin relative to the reference margin, the producer can trigger a payment to bring the margin back to the threshold level. If a producer does not have a NISA account balance, then the amount triggered is limited to 3% of ENS to a maximum of \$7500. In effect, the MIT becomes a subsidy of 3% of ENS for those producers with a gross margin chronically below the threshold level. The proposed program does not have a similar component as it was designed to stabilize incomes rather than support them.

The foregoing is the consensus of our project team based on examining program design. The analysis in a later section on the income stabilizing effects of the programs appears to bear out these conclusions.

4.1.2 Labour As An Eligible Expense

An important issue is whether to include labour as an eligible expense in the Production Margin. There are two types of labour cost – arm’s length and non-arms length. To date, the advice has been for non-arms length labour to not qualify as an eligible expense. In other words, it is “in the margin”. The rationale for this is that, for most farms, it is relatively fixed. Another is that as an eligible expense it creates a moral hazard. We concur with this and note that by including it in the margin, the reference margin is higher in the proposed program.

It has been recommended that non-arms length labour cost be an eligible expense. Whether this is correct or not depends on whether increased labour costs represent a source of risk that a program should cover. In turn, this likely depends on the nature of the farm business since it is unlikely that farm wage rates will vary uncontrollably (as opposed to trending upward). For many farm operations, hired labour is relatively fixed from year to year and relatively “lumpy”. Labour costs may go up in a year with a bumper crop that requires more help to deal with, or labour might be laid off if there is a crop failure. In other words, there is likely either a direct or no correlation between revenue and labour costs. In this case, from the farm’s perspective, it would be preferred that non-arm’s length labour be in the margin – i.e. if my revenue falls, I won’t be penalized in a claim year if I reduce my labour cost as I should, and I don’t want labour costs to mask the effects of the underlying hazard. Conversely, in a good year I might have higher labour costs. If it is not a deductible, then the reference margin is likely higher the following year, thereby increasing the farmer’s coverage. This also reduces the incentive for moral hazard.

The problem is that, especially, many horticultural operations face the opposite situation because, with a poor crop, they often need to hire additional labour to salvage some value in the crop. In fact, a common part of crop insurance programs for horticultural crops is that farms must make every effort to salvage a crop and there is separate coverage for additional labour costs on the grounds that the insurer will likely pay less for additional labour cost than for additional crop loss. For farms in this situation, one would expect a negative correlation between labour cost and revenue, and one would prefer that labour be an eligible expense. If revenue declines because of a crop problem, Production Margin falls. But it also falls with the increased labour costs; both are an aspect of production risk. Therefore, the Production Margin would respond to both sources of need.

Fundamentally, this discussion says that whether non-arm’s length labour should be included or excluded as an eligible expense depends on the nature of the farm operation, its structure and whether labour cost is positively or negatively correlated with revenue. Interestingly, we asked AAFC to provide information on this from the NISA database. Preliminary information suggests a negative correlation between hired labour cost and revenue for horticultural operations, and no or positive correlations for all other farm types.

Another factor in this discussion is that an eligible expense by definition reduces the level of the reference margin and, therefore, the level of coverage available. This compounds the problem for a farm with a positive correlation between revenue and labour cost – including labour as an eligible expense reduces the reference margin (i.e. the level of coverage) and reduces the payoff in a claim year. *All* labour (both arms length and non-arms length)⁴ represents between 20% and 60% of the difference between the Gross Margin and Production Margin depending on commodity type⁵.

Clearly, this is not a simple problem for which there is a universal solution. If possible, the best solution would be to let the program reflect reality, that is, give farmers a one time (unless the nature of their operations change) choice of whether to include hired labour as an eligible expense. This would clearly remove the problem. If this is not administratively workable, then the fewest people would likely be negatively affected if arms length labour is an eligible deduction.

4.1.3 The Trade Injury Issue

As indicated in section 1.0, members of the industry have a major reservation about the proposed program because of the argument that they should be compensated for trade injury – i.e. the effects of foreign subsidies. Trade injuries happen in at least two ways – relatively short term injury caused by a short-term policy or event such as dumping; or more systemic issues that create lower prices because of ongoing subsidies in a foreign country. The systemic issue would arise if the foreign country's policies distort market signals and draw too many resources into production of a certain product or products. In turn, this drags down world prices and Canadian producers are injured systemically.

We would argue that all three proposals deal with the first type of injury. As discussed above, a Production Margin trigger is more sensitive, and should be more responsive to this type of injury.

The systemic problem is a problem in all three proposals. Almost by definition, an effective stabilization program will not be an effective tool for systemic trends. If foreign subsidies bring down product prices over time, this will erode the reference margin, and the level of the trigger for those who produce affected products will fall. We addressed this by examining some alternative margin scenarios. Not surprisingly, as product prices fall over time, the program that has the most positive impact for farmers is the one that has the highest component of government money in it. But it says nothing conclusive about which triggering mechanism is better. One can make up examples that prove any point one wants to prove.

⁴ The data weren't immediately available to separate arm's length and non-arm's length.

⁵ Table B-2 in Appendix B presents a detailed breakdown of the differences between Gross Margin and Production Margin

One small exception should be noted, the current NISA program provides for a payment of 3% of Eligible Net Sales (or up to a maximum of \$7,500) in the case of a minimum income trigger. This would provide some minimal level of support (albeit eroding over time as ENS erodes from trade injury) to small producers. This support, however, is very small and insufficient to provide viable assistance to commercial producers being affected by trade injury or to sustain a small producer with reoccurring low income over the long run.

In our view, the bottom line is that the systemic trade injury issue is not one that can be resolved with a stabilization program. All a stabilization program can do is assist those affected with a transition to some other production opportunity if foreign subsidies remove those opportunities one is currently pursuing.

4.1.4 Affordability

Questions have been raised regarding whether farmers can afford the proposed programs as compared to the current programs. There are several aspects of this issue. The first is cash flow. The deposit required to participate in the current NISA program is 3% of Eligible Net Sales (ENS). If one assumes that the Production Margin is 50% of ENS (an assumption that is within the range observed in the real farm data), then the deposit would be 6% of the Production Margin. In the first year a producer participates in the proposed program, the required deposit is one third of 14% or 4.67% - less than the deposit amount required under the current NISA program. Moreover, in the current NISA the 3% deposit is required each year whereas, once a producer has deposited the full 14%, no further deposits are required until a claim is made under the proposed New NISA

In exchange for the smaller deposit, the producer receives 70% coverage of his or her Production Margin whereas under the current programs the producer receives coverage equivalent to double the deposit amount plus the CFIP coverage of 49% of the Gross Margin (70% of the decline below 70%) less the NISA adjustment of 6% of ENS. When one considers that the Gross Margin is typically 40% to 60% of the Production Margin, it is clear that a producer receives significantly more downside protection under the proposed program for a smaller impact on cash flow. For example, the producer with \$100,000 production margin and 70% of coverage, would be eligible for up to \$56,000 in government funds with the proposed program versus \$31,000 with the current program in the first year. Under the current program, producers also are eligible for the disaster portion. Therefore, a question remains around what level of coverage a producer will choose. Is an assumption of 70% coverage likely? Analysis of the distribution of margin declines in the NISA dataset shows that over 70% of the declines are less than 40% of production margin and the producer will be returned to 100% of the reference production margin with 70% coverage. Furthermore, when the aggregate payout was compared to the aggregate margin decline, the aggregate payout was between 96.2% and 99% of the aggregate margin decline when producers selected 70% coverage.

Therefore, it is difficult to believe that many producers will put an additional 12% of production margin on deposit to access the last 1-3% of benefit (especially when one

considers that the cap on government payouts at 70% of the decline limits the total payout to less than 100% of the aggregate margin decline even when a producer selects 100% coverage).

In addition to all of the foregoing, preliminary discussions with lenders indicates that, as a general rule, they would lend the deposit to producers and not make the loan part of an operating line. This is because the program provides protection to the lender through the protection it provides to producers. Thus, the maximum cost to producers would be the net interest paid on the deposit (cost of borrowing less deposit interest earned).

4.2 Equal Treatment

As indicated in section 3.0, the objective of equal treatment is achieved if producers with the same risk in two different places are treated the same way by a program when they have a risk. This is closely related to the need issue: if we both have an uncontrollable loss, will we be treated the same under the program? Since the proposed program triggers payments based on loss while the existing and industry proposals trigger them (at the initial levels) by sales, then by definition the proposed comes closer to meeting this objective. In the disaster portion, the programs are conceptually similar except for the nature of the margin calculation.

Moreover, in the strict sense of this objective, as compared to the current situation where producers in different provinces and different commodities have access to different companion programs, the proposed program represents a definite step towards improved “equality” of treatment for producers across the country and across commodities, as we understand equality of treatment. However, there are still several; situations where producers with similar risk situations will be treated differently.

First, crop insurance is provided for some commodities. It provides negative margin coverage that isn’t available to producers of crops for which crop insurance does not exist. As well, crop insurance mitigates risk at the specific commodity level rather than the whole farm level. The new business risk management framework proposes extending “production” insurance to a significantly wider range of commodities than currently are covered. However, specific analysis of the stabilization effect of crop insurance under the new programs was not conducted since the exact nature and coverage of the proposed new production insurance programs is unknown.

The payouts from crop insurance will be added into a producer’s income before the margin decline and eligibility for payment is calculated as it is with the current program. Depending on the degree of the decline it is possible that a producer will substitute 50% coverage of the loss (crop insurance payout) for 80% coverage of the loss (proposed program payout). The only time a producer would be indifferent between crop insurance and the proposed program is in the top stabilization layer where the matching is identical. Thus, producers with similar losses will be treated differently depending on whether they are enrolled in crop insurance.

The degree to which the variability of the Production Margin is an adequate proxy for the risks faced by an operation will vary across commodities. The relative importance and variability of expense items varies between commodity types and the degree of substitution of items in and out of the margin varies as well. Labour is the obvious example. It is a significantly larger portion of expenses on a horticultural operation as compared to other commodities and is the only commodity where labour tends to be negatively correlated with income. Thus, the potential exists for Production Margin to be a poorer proxy for cash flow risk in some commodities than others. It would be interesting and informative to examine whether the program preference decision is the same across all commodities if the stabilization of gross margin is the decision metric used instead of the stabilization of production margin.

The distribution and pattern of losses over a short time period will influence the degree of support received by a commodity. The majority of agricultural commodities have price cycles. Those commodities with price cycles longer than the five-year reference period will have their reference margins influenced by the price cycle of the commodity. Similarly, because the caps are different under the proposed programs, some producers will be eligible for coverage of larger losses than under the current program. This will likely change the distribution of payments among commodity groups.

While we have indicated that the proposed program meets the test of equal treatment as defined, there is clearly number of instances in which it changes the distribution of benefits. These changes may be interpreted by some as changes in the “equity” of the program.

4.3 Minimize distortion

As indicated in section 3.0, the major issue here is whether the bundles of programs mask market signals or cause farmers to produce certain products or make different production or management decisions.

Because the proposed program reduces the number of companion programs targeted at individual commodities, by definition it reduces the distortion of market signals. Additionally, the program stabilizes a producer’s own margin, which is a function of market prices, and therefore rewards and penalizes decisions the same as the marketplace does over time and in a manner similar to existing programs.

There are two areas where the proposed program reduces the distortions caused by the current NISA program. By calculating the Production Margin on an accrual basis, the incentive to make decisions that would maximize a payout in any given year but not necessarily maximize income over the longer term is significantly reduced. Secondly, the removal of off-farm income from the calculations eliminates the disincentive to self-stabilize with off-farm income in the current NISA program.

Inherent in any program that attempts to stabilize income is a distortion that provides greater reward to riskier behaviour. Both the old and new programs penalize self-

stabilizing behaviour by providing greater support to producers with greater variability in income. The effect is less obvious in the current NISA program. If two producers have the same average ENS, they are eligible to build the same coverage levels under the current NISA regardless of the standard deviations of their income streams. However, the producer with the greater variability in income will likely access the funds sooner.

An example of this effect may be enrolment in crop insurance. With the exception of insurable events that cause a negative Production Margin, a producer will generally receive equivalent or greater government compensation for a loss without crop insurance than with insurance. Thus, one might expect fewer producers to enroll in crop insurance under the proposed New Program. However, the results from the data provided were inconclusive on this point. On some metrics, in some models the producer would prefer to be enrolled in crop insurance as greater stability was observed. However, there were sufficient contradictory events to prevent drawing a conclusion. Regardless, we understand that part of the new program design will be to create a linkage between crop insurance and the New Program such that producers will not be dissuaded from continuing their risk reduction behaviour of enrolling in crop insurance.

Finally, the Minimum Income Trigger (MIT) has a greater potential to distort farmers' production and marketing decisions than the stabilization trigger in the proposed program. To a certain extent, the MIT will mask market signals to discontinue an unsustainable enterprise.

4.4 Entire Farm Risks Stabilized

All three sources of analysis – NISA farm data, model farm simulations, and real farm data – were examined to compare the stabilization impact of both the proposed “New” NISA program and the Industry proposal to the current programs.

Inherent in any empirical analysis is an assumption regarding the definition of “risk” and the corresponding definition of “stabilization”. The widely accepted view is that a stabilization program should minimise the negative effect of unforeseeable and uncontrollable events on a producer’s income. Thus, measuring the semi-variance of the income stream, or a proxy thereof, is a widely used measure of the effectiveness of stabilization programs. Semi-variance is a similar measure to standard deviation except that it only examines the variation of the distribution below the mean. A lower semi-variance implies less variation of income below the mean. Use of semi-variance as a measure of stabilization implies that a producer is primarily concerned with the variation of income on the downside and any shift of the mean is inconsequential to the stabilization effect of a program. However, one can argue that in the case where one program has a higher semi-variance and a higher mean income relative to another program it is difficult to determine which program should be preferred. Government stabilization programs, by their very nature, impact both the mean and the variation of the income distribution. It would be interesting to examine other decision metrics that consider a program’s impact on the mean as well as its impact on variation. A possible alternative would be to calculate the semi-variance against the mean of the unstabilized

distribution rather than the mean of the stabilized distribution. By using this alternative calculation, both the reduction in variation and how close to the original mean the distribution is truncated would be factored into the decision metric.

The primary metric used to measure the stabilization effect of each program in each analysis provided by AAFC was semi-variance of the Production Margin. For the real farm data, the semi-variance of the gross margin was also examined and found to produce the same decision when comparing the proposed programs to the current programs. This is an important result because it implies that using the production margin as the triggering mechanism results, as would be preferred, in greater stability of net income. This inference follows from the fact that, because more costs are deducted from revenue in the gross margin, it is a closer measure of net income. It is not likely that one can truly model the final effects on net income because it is also affected by the capital structure of the farm - ie interest and depreciation. In turn, this means that one needs the farm's balance sheet, as well as its profit and loss statement. More importantly, one would need to know what decisions the farmer would make about investment and borrowing under different circumstances. Making assumptions about these things would determine the results of the analysis. Using gross margin as a proxy incorporates fewer opportunities for bias.

Table 4.1 presents a summary of an analysis of the semi-variance of the Production Margin for various commodity groups when the new program was simulated using the NISA farm dataset.

Table 4.1: Summary of Semi-Variance Analysis of the Production Margin (Proposed Program)

	Number of Participants	Semi-Variance Production Margin			Semi Variance - Index		
		Before	After Proposed Program	After Current Safety Nets	Before	After Proposed Program	After Current Safety Nets
All Farms		16,426	10,092	13,431	1.000	0.614	0.818
Grains and Oilseeds	64,398	13,493	7,470	10,504	1.000	0.554	0.778
Cattle	20,380	14,892	9,573	12,276	1.000	0.643	0.824
Other	10,693	23,605	17,145	21,199	1.000	0.726	0.898
Fruit, Vegetable and Potato	4,951	32,123	23,694	29,710	1.000	0.738	0.925
Hogs	3,038	38,024	22,160	29,353	1.000	0.583	0.772

While only the Canada summary is presented here, a similar result was found when examining each of the provinces individually, only low margin farms, only high margin farms, only small farms and only large farms.

Similarly, the model farm simulations and the real farm analysis showed lower semi-variances from the proposed program as compared to the current programs.

Table 4.2: Comparison of Semi-Variance on the Model Farms

	Current Semi-Variance	Proposed Program Semi-Variance
Ontario Grain and Oilseed	27,723	21,049
Ontario Hog	16,993*	18,668
Saskatchewan Grain and Oilseed	33,742	26,095
Alberta Cattle	6,988	5,191
Manitoba Grain and Oilseed	35,078	31,978

NOTE: *This result may be an artefact of the large beginning balance that was modelled for this farm. Because of the large initial balance, the farm can trigger payments under the current program which are larger than the actual loss, creating an “over stabilization”. If the farms were to be modelled with \$0 beginning balances, we expect the result would be consistent with all other comparisons.

Table 4.3: Summary of Semi-Variance Analysis of the Production Margin (Industry Proposal)

	Number of Participants	Semi Variance - Contribution Margin			Semi Variance - Index		
		Before	After Proposed Program	After Current Safety Nets	Before	After Proposed Program	After Current Safety Nets
All Farms	103,460	16,426	10,386	13,431	1.000	0.632	0.818
Grains and Oilseeds	64,398	13,493	7,831	10,504	1.000	0.580	0.778
Cattle	20,380	14,892	9,013	12,276	1.000	0.605	0.824
Other	10,693	23,605	18,215	21,199	1.000	0.772	0.898
Fruit, Vegetable And Potato	4,951	32,123	24,813	29,710	1.000	0.772	0.925
Hog	3,038	38,024	22,696	29,353	1.000	0.597	0.772

Again, the results are presented for the entire Canadian dataset, but the result of a greater stabilization impact for the industry proposal relative to the current programs holds regardless of geography, commodity, farm size or margin.

No firm conclusions can be drawn about the relative stabilization impact of the industry proposal compared to the AAFC proposed program as the relative stabilization impact varies by commodity and region. However, in the NISA data modelling across all time periods, the cost to the government of achieving the stabilization impact was significantly higher than in the AAFC proposal. Thus, when one considers the fact that when all farms are taken in aggregate, the AAFC proposal provides marginally greater stabilization impact at a materially lower cost, one should conclude that the current AAFC proposal is preferred from an efficiency point of view.

4.5 Simplicity

The objective of simplicity is to ensure programs do not create an unnecessary administrative burden on participants, increase costs of compliance (for example through accounting and legal fees), discourage participation or result in exorbitant administrative costs. In addition the program should be easy to understand so producers can make informed decisions on their own use of the program.

Currently, producers are required to undertake the administration related to at minimum two programs (NISA and CFIP) in order to receive stabilization and disaster protection. In the case of grains and oilseeds farmers and some horticulture producers, there is the additional requirement of Crop Insurance in order to have production insurance and negative margin coverage as well. Finally in some provinces, there may be additional administrative requirements for some producers to participate in the various companion programs in order to receive the fullest risk management protection available to them. The move to a single program to replace CFIP, Companion Programs and current NISA clearly reduces the administrative burden for both producers and governments.

Over time the NISA program has evolved to allow ease of application for partnerships and proprietors by integrating more directly with the income tax filing system. The plan to continue and enhance the linkage to income tax filing for the proposed New NISA should ensure more simplicity. On the other hand, the CFIP program has been more complicated administratively for several reasons. First, data on production and valuation over time is required for accrual adjustments. This often created significant difficulties for producers who did not maintain this data on an annual basis as part of their normal operating procedures. This means that in a year where the producer believes he might be eligible for a claim, he has to go back and try to establish all the relevant data historically in order to apply for program funding. In some cases, significant support from an accountant is required. Furthermore, producers often had to complete the full application form before they could assess whether they were eligible for program funding. In some cases, producers would incur the accounting costs only to find out that they were not eligible for program funding.

Since the proposed New NISA program operates on a continuous basis the challenges of “recreating” historical data are eliminated in exchange for some incremental work each year. Furthermore by providing data on an annual basis a producer does not risk the situation that could occur with CFIP where they were unable to obtain coverage because

they had not maintained the necessary historical data. That said, for a producer who has traditionally only participated in the current NISA program the accrual adjustment information that will be required under the proposed New NISA will represent an increased administrative burden. The government should put significant attention into simplifying the way they calculate payments.

In the current program, because NISA has a relatively low cap for contribution levels it is not uncommon for farming operations to have multiple NISA accounts in order to achieve coverage levels that are appropriate for the size of their operation. This increases administration costs to both producers and governments. The increase in program cap under the proposed New NISA will allow producers to operate under only one account.

Finally, the move to a single program to replace NISA and CFIP will make it easier for a producer to understand the farm's risk position and protection since determining entitlement under the proposed program will not require an understanding of two separate program calculations and their linkages.

4.6 Long Term Planning

It is important that any risk management program made available to farmers supports the management objective of long term planning. It is critical that it allow producers to objectively make production and investment decisions for the long-term benefit of their operation. A key element of this is to help provide sufficient stability to the farming operation to support their access to borrowed capital for long term investment purposes.

As discussed above under the section on simplicity, the proposed program will be easier to understand and provide producers with a better year-to-year perspective on their level of risk and coverage. This in itself supports long term planning and investment decisions since producers and bankers both better understand the farm's position.

Because the proposed new program provides full coverage from year one without the need to build up account balances as in the current NISA program, it provides better support for expansion and investment. This is particularly relevant for beginning producers who in the past have had very limited support since they have not had sufficient time to build up a balance for protection in their NISA account. This is further exacerbated if there has been pressure on margins in the early years of their operation, thereby not allowing them the ability to build up balances in their account.

There has been much discussion regarding the reaction of banks to the proposed new program. Overall we believe that it will be easier for lenders to understand the level of risk support being provided to the farming operation and thus the bank's exposure under the new program. Furthermore, overall the program provides a major reduction in risk to producers. Consequently, it is difficult to imagine why a financial institution would not want to support a producer in meeting his deposit requirement to participate fully in the proposed new program, since it only reduces the bank's risk exposure.

In the current NISA program, producers must continually deposit funds to their account in order to receive the matching government contribution. Under the proposed new program producers do not have to continue deposits once they have reached their full deposit level (after three years). This means that once producers have reached the full deposit level they no longer are required to trade-off the relative merit of additional investment in NISA versus directly in their farming operation.

In addition for any producers with balances in their current NISA account, these funds would become available to provide the capital for deposit requirements under the proposed new program. The NISA Consultation document released in 2001 indicated that over 60% of participants had sufficient balances to cover more than 30% of their reference margin. Since the Production Margin generally ranges from 1.5 to 2.5 times the NISA reference margin, this would indicate that approximately 60% of producers will access sufficient capital in the close out of their current NISA accounts to fully fund the deposit required for 70% coverage under the new program.

The proposed program includes a structural adjustment component that will allow the Production Margin to scale with changes in the size of an operation. This means that producers who are in the process of expanding their operations will be eligible for coverage relative to their new risk level, not their historic levels. This provides an important element of support for long-term investment and access to capital. Alternatively, producers downscaling their operations in preparation for retirement can reduce their coverage levels to reflect the lower risk exposure they have, freeing up funds for other transition related need. While the exact details of the method for implementing the structural adjustment component are still being developed, in concept, it is an important improvement relative to the current NISA program and similar to the provisions of the CFIP program.

Finally the requirement to provide accrual data on an annual basis in order to participate in the Proposed program (as opposed to CFIP where it is provided sporadically) could encourage better farm management and improved decision making by some producers since they should become more fully aware of their true financial performance. This is a very positive element of program design.

4.7 Needs of Supply Management Sectors

As discussed above, the needs for stabilization and disaster relief for supply managed commodities do not derive from output price volatility. Instead, the need for stabilization and disaster protection derives from production related perils, such as animal disease, catastrophic mortality, and product spoilage losses. These perils are currently protected against under CFIP. However, CFIP only covers losses of more than 30%, i.e. if a supply managed farm has a loss of 40%, it can only be compensated back to a 30% loss.

A second source of need for a farm that produces supply managed products is losses that occur on non-supply managed products that it also produces. Under the current program,

non-supply managed enterprises on a farm that also has supply management can participate in NISA, but only if they are separated from the supply managed enterprises.

Under the proposed program, a loss of more than 30% would be covered back to 100% of the reference margin, the amount of the farmer's deposit, or to a point where no more than 70% of the loss is covered by government, whichever is less. In other words, if the total loss is greater than 30%, a supply managed enterprise obtains more coverage than under the current program.

As with the current program, a supply managed farm with losses less 30% is eligible for compensation, but only for the portion of the farm that is not supply managed.

These distinctions are made because of legal opinions obtained by AAFC that the distinction between "green" and "amber" payments under the WTO is based on the farmer's loss, not the nature of the payment. In other words, the opinion is that any payment to a farm with a loss greater than 30% of the reference margin is green, even if part of the payment restores the loss to less than 30%. If the loss is less than 30% of the reference, then any payment is regarded as amber. It should be noted, however, that the supply managed industries have expressed concern about the potential impact on their supply management programs should these interpretations prove incorrect.

We were not presented with data or research related to supply managed industries. Thus, the analysis of the proposed program in the context of supply management proceeds only on a conceptual basis.

- The proposed program is a clear improvement on CFIP in protecting against production losses.
- The proposed program should be at least as beneficial to non-supply managed commodities produced on farms with supply managed commodities as the current program.

5.0 Conclusions

Need, Are Government Dollars Directed Correctly

Need is defined as protecting farmers from uncontrollable decreases in farm income due to declines in prices of final products, increases in the prices of inputs and shortfalls in production from disease, weather, etcetera. Since all three programs (current, proposed and industry) have elements of crop (production) insurance, disaster and stabilization, the relative merit of each program is based on the differences in triggering mechanisms, timing of payments and breadth of protection. In this regard we observe the following.

With respect to responsiveness:

- Production Margin (Proposed New NISA) is more responsive to income declines than gross margin (current NISA) since the Production Margin contains those expense components that are less directly correlated to production.
- The modified accrual approach used in the Production Margin can be more reflective of need if appropriate inventory valuation standards are enforced.
- The shift to government fund contributions or payments only at the time of income decline (proposed program) instead of annually (current NISA) means funds are distributed based on income need not to program participants at large.
- The increase in cap under the new proposed program significantly increases responsiveness to need for the livestock sector and larger operations in general.

With respect to treatment of labour expenses:

- With the exception of horticulture (where labour can be negatively correlated to revenue for salvage situations), the inclusion of labour in the Production Margin encourages the reduction of labour expense where possible in a year of revenue decline, without penalizing the producer from receiving needed stabilization support.
- Inclusion of labour in the Eligible Expenses (i.e. Not in the Production Margin) reduces the reference margin thereby reducing the level of coverage provided to producers. Accordingly all producers (including horticulture) benefit from greater coverage levels when labour is included in the Production Margin.
- Because of the complexity of this expense, one option would be to allow producers a one time selection (at time of initial program enrolment) of whether arms length labour will be included or not in their margin calculations.

With respect to trade injury effects:

- All three programs deal well with short term injury caused by such events as dumping or single year subsidy programs.

- None of the three programs will address the systemic issue of long term price erosion resulting from foreign agriculture and trade policies since the programs are all fundamentally designed as stabilization rather than support programs.
- The presence of the stabilization program however does provide stability to producers choosing to switch from a product or commodity facing on-going trade injury to one(s) not affected.

With respect to equality of treatment:

- As compared to the current situation where producers in different provinces and different commodities have access to different companion programs, the proposed program represents a definite step toward improved “equality” of treatment of producers across the country and across commodities.
- The nature and availability of production (crop) insurance coverage affects equity. Since crop insurance payments are deducted from payments under the new program, in some cases producers will substitute 50% coverage for 80% and 70% coverage that is provided in the Proposed New NISA. Only in the case of the top layer of the proposed new program are producers indifferent to their source of protection.
- The degree to which the variability of the Production Margin is an adequate proxy for the risks faced by an operation will vary across commodities. Accordingly, the potential exists for Production Margin to be a poorer proxy for risk in some commodities compared to others. In general, however, equality of treatment should be greater within commodities.
- Since the distribution and pattern of losses over a short time period will influence the degree of support received by a commodity, those commodities with price cycles longer than the five year reference margin will have their level of margin support affected (either negatively or positively) depending on the length of the cycle and position in the cycle.
- While the proposed program meets the test of equal treatment as defined, there is clearly a number of instances where it changes the distribution of benefits. These changes may be interpreted by some as changes in the “equity” of the program.

Minimize Distortion

The objective of minimizing distortion is directed at reducing the tendency of producers to undertake activities they otherwise would not undertake if the program was not in place. In other words assuring that producers do not change decisions on what and how to operate their business as a result of the program. This infers that the program should not mask normal market signals to producers nor encourage different risk behaviours than would be the norm. In this regard, we observe the following:

- Because the proposed program reduces the number of companion programs targeted at individual commodities, by definition, it reduces the distortion of market signals.
- Because the proposed program stabilizes a producer's own margin and therefore rewards and penalizes decisions the same as the marketplace does, it reduces distortion.
- By calculating the Production Margin (proposed program) on an accrual basis, the incentive to maximize payout in a given year but not necessarily maximize income over the longer term is significantly reduced.
- By including capital related elements in the Production Margin (Machinery and Building Repairs and Maintenance) there is no incentive to distort investment in capital that may not be appropriate.
- The removal of off-farm income from the calculations in the proposed new program eliminates the disincentive to self-stabilize through off farm income as is the case with the current program.
- Both current and proposed programs have some tendency to reward riskier behaviour. In the current program, riskier producers may access funds sooner. On the other hand in the proposed program the self stabilizing producer cannot "bank" the benefits of his less risky behaviour.
- While the data were not at all conclusive it is possible that there could be a tendency for a crop producer with limited risk of negative Production Margins to eliminate or reduce crop insurance in their basket of risk management tools and use only the proposed New NISA program.

Entire Farm Income Risks Stabilized

All three sources of analysis – NISA farm data, model farm simulations, and "real" farm data – were examined to compare the stabilization impact of both the proposed New NISA program and the Industry proposal to the current programs. In all three cases, the measure of stability used was semi-variance. To judge the stabilizing effects, semi-variances of Production Margins are measured in the aggregate NISA farm data, but we also compared semi-variances on gross margins of the "real" farms. Gross margins are the best proxy for net farm incomes. The results are the same in both cases – i.e. what provides the most stability in the Production Margins of the NISA data also provides the most stability in the gross margins of "real" farms. In this regard we observe the following.

- The proposed program provides more income stability than the current program in all three sets of analysis.

- The proposed program consistently provides more stability than the current program when the aggregate NISA farms are disaggregated by type of farm, region, size of farm, or size of margin.
- The version of the industry proposal that was analysed resulted in better measures of stability for some industries and disaggregations than does the proposed program. However, the cost of that version would be quite high, significantly greater than the proposed new program.. Therefore, no conclusions can be drawn about the stabilizing impact of the industry program.

Simplicity

The objective of simplicity is to ensure programs do not create an unnecessary administrative burden on participants, increase costs of compliance (for example through accounting and legal fees), discourage participation or result in exorbitant administrative costs. In addition the program should be easy to understand so producers can make informed decisions on their own use of the program. In this regard we observe the following:

- The move to a single program to replace CFIP, Companion Programs and current NISA reduces the administrative burden for both producers and governments.
- The objective to continue and enhance the linkage to income tax filing for the proposed program supports simplicity.
- The increase in caps to allow producers to operate under only one account in the proposed reduces the burden of multiple NISA accounts that are used by large producers currently.
- The proposed program makes it easier to understand the farm's entitlement under the program since it does not require an understanding of two separate program calculations and their linkages.
- The proposed program operates on a continuous basis. This means producers do not need to invest in determining whether there is a benefit to applying in a given year as is the case for CFIP. Furthermore by providing data on an annual basis a producer does not risk the situation that could occur with CFIP where they were unable to obtain coverage because they had not maintained the necessary historical data (such as year end inventory levels and values).

Long Term Planning

The objective of long term planning is to allow producers to objectively make production and investment decisions for the long term benefit of their operation. In addition the goal is to provide sufficient stability to support access to capital for long term investment purposes. In this regard we observe the following:

- Since it is easier to understand your risk position and entitlements in the proposed New NISA program as compared to current NISA and CFIP, producers can naturally make better long term planning and investment decisions.
- Because the proposed new program provides full coverage from year one without the need to build up account balances as in the current NISA program, it better supports expansion and investment (particularly for beginning producers).
- Lenders are better able to understand the level of risk support being provided to the farming operation and thus the bank's exposure. This should result in the provision of the full deposit requirement by financial institutions since it reduces their risk exposure.
- Once producers have reached the full deposit level (after three years) they no longer are required to trade-off the relative merit of additional investment in NISA versus directly in their farming operation.
- The proposed program includes a structural adjustment component that will allow the Production Margin to scale with changes in the size of an operation. While the exact details of the structural adjustment are still being developed, in concept, it is an improvement relative to the current NISA program.
- Finally the requirement to provide accrual data on an annual basis in order to participate in the proposed New NISA program (as opposed to CFIP where it is provided sporadically) could encourage better farm management and improved decision making by some producers since they should become more fully aware of their true financial performance.

Supply Managed Industries Participation in Programs

While supply managed commodities have an alternative mechanism for managing the risk of an uncontrollable decline in price, they are still subject to margin risks from an uncontrollable decrease in production or an uncontrollable increase in input costs. Supply managed commodities have received differing treatment under the current suite of programs – they are not eligible for NISA but are eligible under CFIP. In this regard we observe the following.

- The proposed new program is a clear improvement over the current suite of programs since it will provide coverage for margin declines of less than 30% and provides greater coverage of margin declines greater than 30% relative to current programs. As well, the move from a gross margin to a Production Margin provides for a greater base of coverage.
- The eligibility of the whole farm will provide for equal treatment of operations with both supply managed and non-supply managed commodities as compared to those farms with only non-supply managed commodities. This is an improvement over the current situation where farms producing both types of commodities do not receive

equivalent treatment to their counterparts with only non-supply managed commodities under the NISA program as a result of the method of calculating eligible sales and eligible expenses.

Summary and Conclusions

Our review has, as requested, focused on comparing the expected performance of the proposed risk management programs (Proposed New NISA and Crop Insurance) to the current programs (NISA, CFIP, and Companion Programs) and the Industry Proposal. The analysis has been done on the basis of six of the seven objectives established by the Federal and Provincial Ministers of Agriculture (need, equal treatment, distortion minimization, whole farm stabilization, simplicity and long term planning). We note two important points.

First we did not assess the acceptability of the program within WTO Agriculture Guidelines. This concern was raised a number of times in the course of our work. It is important and we encourage its investigation and analysis.

Secondly only limited analysis of the industry proposal was possible given the early stages of its design. However, in its current form, it is clear from the analysis that it is not financially viable within the safety nets funding envelope.

We conclude that while the proposed new program has advantages and disadvantages compared to the current programs, on balance, it is clear to us that the proposed new programs better achieve the six objectives of business risk management as agreed to by the Federal and Provincial Ministers in Whitehorse.

Appendix A: Analytical Framework

Objective	Data/Information Source	Activity
1. Need for stabilization	<ul style="list-style-type: none"> - “Logic Model and Communications Approach for Risk Management” document - Scenario simulations 	<ul style="list-style-type: none"> - Consider the empirical evidence on the 11 sources of risk documented have been identified - Consider variance in total support under current programs, and proposed program
1. Need for disaster protection	<ul style="list-style-type: none"> - Scenario simulations 	<ul style="list-style-type: none"> - Consider minimum incomes under current programs, and proposed program
1. Need for safety net as insurance	<ul style="list-style-type: none"> - “Logic Model and Communications Approach for Risk Management” document - Scenario simulations 	<ul style="list-style-type: none"> - Consider the empirical evidence on the 9 producer and 3 government expectations that have been identified - Consider variance in income under current programs, and proposed program
2. Equity in treatment	<ul style="list-style-type: none"> - “Logic Model and Communications Approach for Risk Management” document - Description of expense items - Scenario simulations - Analysis of income variation - Discussions with program administrators 	<ul style="list-style-type: none"> - Interpret the proposed program design in the context of the intensity (size, capital/labour) and risks in each farm type and region - Interpret rationale for inclusion/exclusion of specific cost items under proposed program - Consider the relative variance in stabilized income and support under the alternative programs

Objective	Data/Information Source	Activity
3. Minimization of distortions	<ul style="list-style-type: none"> - “Logic Model and Communications Approach for Risk Management” document - Description of expense items 	<ul style="list-style-type: none"> - Interpret the design of the proposed program in the context of the incentives conveyed or masked - Interpret the design of the proposed program in the context of production-related moral hazard - Consider the apparent tax implications of the proposed program
4. Focus on management of risks related to the whole farm and to avoids duplication of payments	<ul style="list-style-type: none"> - Description of expense items - Scenario simulations - Analysis of income variation 	<ul style="list-style-type: none"> - Interpret program design to assess whether specific sources of risk are cushioned to a greater extent than overall income risk - Consider which revenue and expense components warrant cushioning. - Consider variance in income under no safety net, current programs, proposed program
5. Relatively simple and easy to understand	<ul style="list-style-type: none"> - Application forms for existing programs - Discussions with administrators of current programs 	<ul style="list-style-type: none"> - Interpret the procedures involved in applying to the proposed program and processing applications relative to the current program - Interpret rationale for inclusion/exclusion of specific cost items under proposed program

Objective	Data/Information Source	Activity
<p>6. Facilitates long term planning by farmers.</p>	<ul style="list-style-type: none"> - Description of expense items - Scenario simulations - Analysis of income variation 	<ul style="list-style-type: none"> - Interpret program design in the context of incentives to consider market signals - Interpret program design in the context of farm expansions - Consider variance in income under no safety net, current programs, proposed program - Consider variance in income under no safety net, current programs, proposed program

Appendix B: Production Margin Relative to Gross Margin as Safety Net Stability Concepts

Under either the proposed program or the program proposed by industry, production margin is maintained as a stabilization concept. This replaces the gross margin concept that is applied under the current NISA and CFIP programs. Production margin is calculated as

$$\text{Production margin} = \text{Eligible Revenue} - \text{Eligible Expenses(a)} + \text{Accrual Adjustment} \quad (1)$$

Gross margin under the current NISA program is calculated as

$$\text{Gross margin} = \text{Eligible Revenue} - \text{Eligible Expenses(b)} \quad (2)$$

Under CFIP, gross margin is calculated as

$$\text{Gross margin} = \text{Eligible Revenue} - \text{Eligible Expenses(b)} + \text{Accrual Adjustment} \quad (3)$$

Production margin (1) is structurally higher than the gross margin calculated under (3). The reason for this is that the gross margin calculation includes eligible expense items (b) that are not eligible expenses (a) in the production margin calculation. At the same time, the eligible revenues under either gross margin or production margin calculations are identical. Production margin (1) will therefore be greater than the CFIP gross margin (3) by precisely the difference in eligible expenses between (1) and (3). Thus, for a given farm in a given year, production margin under (1) above will be structurally higher than gross margin (3).

The difference between gross margins under the current NISA (2) and CFIP (3) is the accrual adjustment. The implication is that, ignoring accrual adjustments, the production margin under the proposed program (1) is structurally higher than the gross margin under the current NISA (2). However, because of the impact of the accrual adjustments, in practice production margin (1) need not necessarily be larger than the gross margin under current NISA (2).

Based on these observations on the differences between production margin and gross margins, the following questions are relevant:

- What provides the rationale for exclusion of specific cost items as eligible expenses under production margin relative to gross margin?
- What impact does the shift from production margin to gross margin have on the level of support?
- What is the relative variability between production margin and gross margin?
- What is the apparent impact of shifting specific cost items into the margin under (1) from eligible expenses under (2) on specific farm types?

Specific Cost Items Under Gross Margin and Production Margin

The specific cost items that are included as eligible expenses under the existing CFIP/NISA gross margin concept, but not included as eligible expenses for the production margin under the proposed program are the following, listed with the NISA code:

- Machinery repairs, licenses, and insurance (9760)
- Advertising and marketing costs (9792)
- Building and fence repairs (9795)
- Agricultural contract work (9798)
- Other insurance premiums (9804)
- Memberships subscription fees (9807)
- Office expenses (9808)
- Legal and accounting fees (9809)
- Salaries (other than spouse) (9815)
- Salaries paid to dependants (9816)
- Motor vehicle expenses (9819)
- Small tools (9820)
- Soil testing (9821)
- Licenses and permits (9823)
- Telephone (9824)
- Salaries paid to spouse or common-law partner (9828)
- Other (specify) (9897)

According to members of the federal-provincial committee of program administrators, the following criteria were used to determine whether to include individual cost items as eligible expenses:

- Exclude expenses directly related to production in the current year.
- Exclude expenses that are within a farmer's control.
- Exclude expenses that are discretionary or subject to moral hazard.

Table B-1 presents the rationale given by the committee of program administrators for exclusion of the specific cost items in the above list. Table B-1 shows that many of the costs excluded from eligibility are not within the producer's control, but are also not directly linked to production in the current year. Other costs are within a producer's control and could be subject to manipulation. Many of the expense items excluded as eligible costs under the proposed program are outside of a farmer's control, but do not vary with production scale and are not likely to be subject to significant variability over time in any case.

The non-arms length labour issue may be considered a moral hazard but it may also not treat on an equitable basis, those producers who rely on multi-family labour and/or ownership.

Table B-2 below provides an assessment of the impact of moving cost items from eligible expenses under gross margin into the margin under the production margin concept according to farm type. The data are drawn from the database of farms with NISA accounts between 1993-2001, with accrual adjustments. Table B-2 shows that as a result of moving eligible expenses into the margin under the production margin concept, eligible expenses decreased by \$26,000 to \$246,000. The share of this decrease varied across cost items according to farm type. For example, horticultural farms had the greatest share of the decrease due to wages and salaries, while cash crop and beef farms had machinery expenses as the greatest share of the reduction in eligible expenses.

Table B-1: Rationale For Exclusion of Specific Cost Items as Eligible Expenses Under Proposed Program

Cost Item	Rationale for Exclusion
Machinery repairs, licenses, and insurance	Subject to producer's discretion, not directly related to production in the current year
Advertising and marketing costs	Discretionary; within producer's control
Building and fence repairs	Subject to producer's discretion, not directly related to production in the current year
Agricultural contract work	Subject to producer's discretion, substitute for capital which is not directly related to production in the current year
Other insurance premiums	not directly related to production in the current year
Memberships subscription fees	not directly related to production in the current year
Office expenses	not directly related to production in the current year
Legal and accounting fees	not directly related to production in the current year

Cost Item	Rationale for Exclusion
Salaries (other than spouse)	
Salaries paid to dependants	Discretionary
Motor vehicle expenses	Subject to producer's discretion, not directly related to production in the current year
Small tools	Subject to producer's discretion, not directly related to production in the current year
Soil testing	Within producer's control
Licenses and permits	Subject to producer's discretion, not directly related to production in the current year
Telephone	not directly related to production in the current year
Salaries paid to spouse or common-law partner	Discretionary
Other (specify)	Discretionary

Table B-2: Change in Eligible Expenses Under Production Margin

Year	Farm Type	Average Expense Chg GM to PM	bldng		contract work	other mbrships/s		vehicle expenses	small licences/ tools permits		other	Salaries Salaries	Utilities Utilities	Admin Admin
			machinery repairs	& fence repairs		insurance premiums	bscrptn fees		9820	9823				
			9760	9795	9798	9804	9807	9819	9820	9823	9897			
1993-2001 yr averages														
	Cattle	-\$26,100.71	25.30%	6.93%	17.07%	2.87%	0.35%	3.42%	2.95%	0.18%	6.52%	19.83%	7.75%	6.80%
	Dairy	-\$62,998.09	16.87%	6.74%	11.39%	2.92%	0.45%	1.92%	2.75%	0.12%	9.38%	31.59%	8.22%	7.66%
	Edible Hort	-\$112,386.50	7.80%	2.78%	8.40%	2.85%	0.25%	1.66%	1.26%	0.15%	9.56%	52.17%	6.61%	6.51%
	Grains	-\$24,553.12	28.66%	4.56%	17.72%	2.85%	0.32%	3.73%	2.54%	0.22%	4.58%	21.90%	6.94%	5.98%
	Hogs	-\$75,843.08	18.06%	7.92%	12.46%	3.01%	0.20%	2.03%	2.16%	0.08%	6.31%	28.75%	12.48%	6.54%
	Inedible Hort	-\$246,185.08	4.51%	3.90%	2.85%	1.03%	0.16%	2.43%	1.06%	0.07%	10.34%	59.08%	8.77%	5.79%
	Livestock	-\$33,643.78	15.42%	7.37%	13.58%	2.82%	0.65%	2.66%	2.59%	0.22%	9.84%	27.44%	7.20%	10.21%
	Other	-\$45,535.93	23.03%	9.16%	9.45%	2.39%	0.30%	2.91%	2.52%	0.20%	6.95%	23.03%	10.88%	9.18%
	Potato	-\$159,051.60	19.22%	2.93%	11.15%	2.00%	0.30%	1.77%	0.84%	0.33%	3.86%	48.75%	4.72%	4.14%
	Poultry & Eggs	-\$98,287.68	10.79%	5.00%	7.94%	2.47%	0.41%	1.97%	1.67%	0.15%	12.44%	40.34%	9.06%	7.74%
	Tobacco	-\$78,698.95	10.77%	3.48%	5.45%	2.85%	0.25%	0.93%	1.61%	0.07%	4.55%	60.94%	5.48%	3.64%

Level of Support and Negative Margins

Relative to CFIP gross margins and current NISA gross margins under small accrual adjustments, the proposed program will offer a higher base for support. This higher base is precisely the amount of the decreased eligible costs illustrated in Table Y. As another example, for the most recent year on the mid-sized Ontario cash crop farm, the reference gross margin under the existing NISA program is \$259,905, while the comparable reference production margin is \$424,893. Since neither the existing nor the proposed program covers negative margins, the potential base for support is significant. Because the proposed program starts from a higher base, the issue of unprotected negative margins should be less common relative to the current program.

Variability in Production Margin Relative to Gross Margin

Variability in the production margin or gross margin is an important issue, because it represents the risk that is assumed by the producer and not covered by the safety net program. As a conceptual issue, the variability of the production margin relative to the gross margin hinges on the variability in the expense items that are included in the margin under the production margin concept, but are eligible expenses under the gross margin concept. To illustrate, consider the following. Under the gross margin concept, the difference between eligible revenues and eligible costs (i.e. the gross margin- profits and ineligible costs) is risky. One measure of this risk is the statistical variance of the gross margin.

If X represents the gross margin, Y represents eligible revenue, and Z represents eligible costs, then the gross margin is given by

$$X = Y - Z$$

And the risk in the gross margin is given by

$$\text{Variance [X]} = \text{variance[Y]} + \text{variance[Z]} - 2*\text{covariance[Y,Z]} \quad (4)$$

Under the production margin concept, some of the cost items listed above are moved from the eligible expenses into the margin. As described above, ignoring any differences due to accrual adjustments, this means that the production margin exceeds the gross margin (X) structurally by the value of the cost items in Table X above. If we let the value of the cost items in Table X be b, then

$$\text{Production Margin} = X + b = Y - [Z-b]$$

and the risk in the production margin is given by

$$\text{Variance[X + b]} = \text{Variance[Y]} + \{\text{variance[Z]} + \text{variance[b]} - 2*\text{covariance[Z,b]}\} - 2*\text{covariance[Y,Z-b]} \quad (5)$$

The sufficient condition for producers to bear more margin risk under the proposed program than under current programs is for

$$\text{Variance}[X + b] > \text{Variance}[X]$$

To conceptually test this, we subtract the risk expression in (4) from (5):

$$\text{Variance}[X + b] - \text{Variance}[X] = [\text{Variance}[Y] + \{\text{variance}[Z] + \text{variance}[b] - 2*\text{covariance}[Z,b]\} - 2*\text{covariance}[Y,Z-b]] - [\text{variance}[Y] + [\text{variance}[Z] - 2*\text{covariance}[Y,Z]], \text{ or}$$

$$\text{Variance}[X + b] - \text{Variance}[X] = \text{variance}[b] - 2*\text{covariance}[Z,b] - 2*\text{covariance}[Y,Z-b] + 2*\text{covariance}[Y,Z]$$

(6)

If (6) is positive, it means that the producer bears more risk under production margin than they did under the gross margin. Expression (6) suggests two tradeoffs in understanding the relative risk under the production margin relative to the gross margin:

- Variation in the cost items moved from the eligible category to the ineligible cost category (b) relative to the correlation between b and the eligible costs under the current program. The lower the variance in b and the higher the correlation between b and the eligible costs, the relatively lower the risk in the production margin.
- Correlation between revenue and eligible costs under the production margin concept and the correlation between revenue and eligible costs under the gross margin concept. The higher the correlation between revenue and eligible expenses under the production margin (and relative to the gross margin), the relatively lower the risk under the production margin.

Insufficient data has been presented to satisfactorily evaluate, based on the conceptual information above, whether the risk in the production margin exceeds the gross margin (i.e. whether expression 6 above is positive, negative, or zero). The only recourse is to appeal to the anticipated findings if data were available. Based on the description of the cost items included Table B-1 above, it appears that most of the cost items in b are of a fixed or overhead cost nature. Thus, it is anticipated that the first two terms in (6) would probably be small. That being the case, the material issue is the magnitude of the latter two terms relating the correlation between revenue and eligible costs under the production margin and gross margin concepts. If the cost items in b are not highly variable, as argued above, it is likely that they will act as a buffer (or as “noise”) to the expense items that are highly variable. Indeed, in order for a margin protection program to work effectively, the full variability in significant cost items must be observed in calculating the margin. This suggests that the correlation between revenue and the eligible expenses is likely to be highest under the production margin concept, and that the risk in the margin should be at least no greater (and possibly smaller) under the production margin than it is under the gross margin.