Impact of the APF-Business Risk Management Programs on Ontario Agriculture

Larry Martin
Al Mussell

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Forward

This study was an interesting experience. When Minister Johns and the Ontario Agricultural Commodity council asked us to do it, we thought it would be a good test because it gave us a chance to see whether what we thought was the case really was true. In the earlier work we did with IBM Business Consulting, we could only do conceptual analysis and a little empirical work from 40,000 ft.

With this study, we had access to data from over 11,000 Ontario farms. We were able, through Ontario Ministry personnel to test our conceptual analysis in a big way. The analysis confirms what we thought about the Business Risk Management program. But it also allowed us to go a lot farther and make some suggestions to improve the program.

We acknowledge the Ontario Minister of Agriculture and Food and OACC for sponsoring the project. The technical working group of OACC provide considerable input into earlier drafts of the report. Stephen Duff and his colleagues at OMAF were invaluable in using the databases to conduct the analysis. We are grateful to all of them.

Larry Martin, CEO

Allan Mussell, Senior Research Associate

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Executive Summary - Conclusions and Recommendations

This report is the result of a study commissioned by the Ontario Minister of Agriculture to provide an analysis of the Business Risk Management program (BRM), which is a key component of Canada's proposed Agricultural Policy Framework (APF). This section summarizes the objectives, methods, results, conclusions and recommendations.

Purpose, Objectives, and Approach

The purpose of this study was to provide an in-depth analysis of the proposed BRM program on Ontario agriculture as a complement to the study conducted on behalf of AAFC earlier this year. The objectives of the study were the following:

- To determine the extent to which the proposed program would stabilize individual farm incomes in Ontario for the various sectors;
- To determine the extent to which the proposed program would change the distribution of government funds between sectors, regions, and farmers with varying level of income decline and impact on the competitive advantage of Ontario producers versus those in other regions of Canada;
- To determine the extent to which the proposed program would reduce program overlap, maintain appropriate linkages between government programs and with private risk management mechanisms, and support good risk management practices;
- To determine the extent to which the proposed program would appropriately treat farms with supply managed production;
- To determine the extent to which the proposed program would offset the impact of programs in competing jurisdictions;
- To determine the extent to which the proposed program would incorporate insurance-like principles;
- To determine the extent to which the proposed program would distort production or marketing decisions;
- To determine the extent to which the proposed program would reduce the potential for trade disputes;
- To determine the extent to which the proposed program would be easy for farmers to understand and participate in, in a cost effective manner;
- To determine the extent to which the proposed program would provide a smooth transition from present programming; and
- To determine the extent to which the proposed program would contribute to better farm management decision making and planning.
- To suggest improvements to the proposed program

To answer the questions posed in these objectives, the design of the proposed program was described, analyzed conceptually, and tested using data from existing farm programs. Ontario farm data from crop insurance, OFIDP, NISA, and companion programs was used to simulate the proposed program, and to compare it with current programs. In addition, the data was used to consider variants of the proposed program.

The design and operation of the proposed program is presented in section 2.0. Section 3.0 provides the empirical analysis of the proposed program and the comparison with current programs. In section 4.0, the distribution of program payments by farm type and region is presented. Section 5.0 presents a conceptual analysis of incentives and distortions under the proposed program. In section 6.0, the differences in interpretation between simulations using cash and accrual accounting are determined. Section 7.0 provides an analysis of the operation of the proposed program for supply managed industries. The risk of trade retaliation under the proposed program is discussed in section 8.0. Section 9.0 considers the robustness of the proposed program to distortionary impacts of agricultural policies in other jurisdictions. The linkages between crop or production insurance and the proposed program are discussed in section 10.0. Program administration under the proposed program is described and analyzed in section 11.0. Section 12.0 provides empirical analyses of some variants on the proposed program. The affordability of the proposed program relative to current programs is analyzed in section 13.0. Section 14.0 provides a discussion and analysis of programming alternatives in the period of transition between current and proposed programs.

Conclusions

The description of the operation of the proposed program in section 2.0 shows a number of differences between current programs and the proposed programs:

- The proposed program provides program payments based on actual losses (with "loss" defined as a production margin below the reference production margin); current programs (notably NISA, SDRM, and NISA top-up programs) provide an entitlement regardless of a "loss" concept.
- In order to be eligible for government support, the producer must set aside cash devoted to margin loss contingencies; this is unlike the current OFIDP program.
- Aspects of the proposed program are confusing; notably, the concept of "coverage" under the proposed program is entirely misleading. The concept of "deposit level" is far more intuitive.
- Reference to the proposed program as "New NISA" is also confusing because it brings to mind "old NISA". The proposed program is in fact very different from NISA.

Section 3.0 provides extensive empirical analysis and testing of the proposed program relative to current programs. The analysis applied data from applicants to the OFIDP program from 1998-2001, data from NISA participants from 1998-2001 for whom links to crop insurance and companion programs could be made, and data from continuous OFIDP applicants from 1998-2001. These data were sorted by farm type, and where possible, size. In all three data sets, the level of program payments that would have been made under the proposed program was compared with actual payments under current programs; for those in which a time series was available (the NISA participants and continuous OFIDP applicants), measures of stability in gross and production margin were made.

The results were surprisingly unanimous across datasets of farm records:

- The proposed program would have provided greater support in Ontario than did current programs.
- Program funding according to farm type is generally not dramatic, although it appears cash crops, cow-calf, and feedlots would have received significantly more funding, while the fruits and vegetable, and greenhouse segments would have received less funding.
- These general comments do not hold across all farm sizes. There is a tendency for the greatest benefits to accrue to smaller and larger farms, but even this generalization does not hold across all farm types.
- The analysis overstates the benefits of the current programs because special measures increased payments, especially for hog producers, in 1998/99. Moreover, the time period included in the analysis saw tremendous expansion in the hog, fruit and vegetable, and greenhouse industries. Expanding farms were able to increase their funding under structural adjustment procedures of the current programs. While the proposed program includes structural adjustment procedures, it cannot be included in our analysis.
- Production margin is almost universally more variable than gross margin, so it is a more sensitive trigger for program payments than gross margin.
- The proposed program does a much better job of stabilizing either gross margin or production margin than current programs. This result was robust across farm types and sizes.

Section 4.0 provides an analysis of program payment shares across commodities. It shows that:

- Funding shares in Ontario are relatively stable comparing current with the proposed program, with slightly larger shares going to grains and beef under the proposed program. It appears that the share of program payments going to horticultural farms would decrease.
- Nationally, the share of funding to Saskatchewan would increase and other provinces' funding shares would decrease slightly, although this observation should be treated with caution because crop insurance data were excluded and data for Quebec was largely unavailable.

Section 5.0 considers the potential for the proposed program to convey incentives that would influence farm management decisions. The analysis suggests that the use of the "Olympic" average concept in the reference margin could produce incentives to periodically magnify losses. This stems from the fact that the reference margin effectively excludes the minimum of the previous five years margins. As such, it could create perverse incentives that a simple moving average would not.

In section 6.0, a comparison is made between the payments that would have been paid out under the proposed program using cash-basis farm records relative to those under accrual farm records. This is an important consideration because the proposed program uses modified accrual farm records, but almost all of the time-series data used to simulate the program is based on cash farm records. Based on the set of farms that continuously applied to OFIDP from 1998 to 2001 (most of which were cash crop farms), the results show that:

- Using cash basis data as a proxy for accrual data (which is what was done in the analysis using the NISA data base in section 3.0) understates the actual program payments - by about 18% on the sample farms.
- This reinforces the observations on section 3.0 that the proposed program will pay more to farmers than the current programs.

Section 7.0 considers the proposed program as it relates to supply management. The conclusions are:

- Farms with supply managed sales are sufficiently diversified in the production of other products to need farm risk management protection in addition to that provided by supply management.
- The proposed program for supply management contains some significant design flaws. Specifically, the pro-rating of claims in the stabilization tiers according to the proportion of non-supply managed sales, combined with the lifting of all pro-rating once claims penetrate the disaster layers creates a significant incentive for farmers to intentionally magnify losses.

The prospect of trade retaliation by other countries due to the proposed program is investigated in section 8.0. Two issues are considered; a WTO challenge to the level of green box payments under the proposed program, and the potential for bilateral countervailing trade action by the US. As to the first issue, the methodology used by AAFC to determine green box payments gives a much higher level of "green" box payments than under current programs.

- Even if the methodology applied by AAFC were challenged (which has never occurred), the proposed program would have higher green box payments its in disaster portion. Thus, with regard to aggregate measures of support, it appears that the proposed program is at least as resistant (if not more resistant) to trade challenge as current programs.

In the second case, the relevant question is whether the payments under the proposed program accrue disproportionately to a given commodity.

- The evidence on the proposed program shows that there is little change in the share of program payments across commodities relative to current programs. Moreover, the proposed program with integrated disaster and stabilization components may be less vulnerable if the so-called Peace Clause does not appear more likely to trigger US countervail than current programs.

The ability of the proposed program to protect against the market distortions of farm programs in other countries is considered in section 9.0. The conclusions are:

- It is not possible to conclude whether the proposed program is better or worse over time.
- The analysis shows that during 1994 – 2001 there was essentially no correlation between corn, soybean, and wheat prices and the production margins on Ontario cash crop farms. At the same time, there was a positive correlation between production margin and gross sales. Therefore, during this period, payments triggered by losses in the production

margin would have had a greater stabilizing effect, which is what was found in section 3.0.

- In other words, reductions in production cost more than compensated for any decreases in income caused by declining prices. This suggests that reference production margins would provide some relief when foreign farm policies depress prices.
- But, at the limit, this result cannot always apply. In the final analysis, since a wide range of factors affect grain prices and costs, the effectiveness of the proposed program in this regard likely depends on the pattern of price variation.

Section 10.0 considers the role of expanded production insurance and its linkage to the proposed program. There is potential to expand production insurance to include:

- Livestock mortality insurance
- Negative margin insurance, especially for finishing livestock, but also for other products if feasible.
- Weather (e.g. rainfall, temperature) insurance for horticulture
- Additional crop insurance products for horticulture
- An insurance product to replace the current Market Revenue Insurance
- An option that would call farmers' deposits from the option provider when the farmer has a claim against the proposed program.

In addition, we suggest in this section that there may be no need to use deposits, and that an alternative would be to establish fees based on risk and frequency of claim. At the limit, especially if the same organization that administers the program is also the insurance provider, this and the option above converge at least in the sense of calculating the cost.

A number of alternatives exist for linkage between the proposed program and crop/production insurance. Based on our analysis and observations:

- The current concept of linking BRM payments to production insurance by counting insurance payouts as income and insurance premiums as costs is a good start.
- But, in order to provide an incentive for farmers to maximize use of production insurance, their premiums should be rebated to farmers when PI saves payments from BRM.
- In the case of processing vegetables, the Ontario Board believes PI should be required for a producer to be eligible for BRM.

Administration under the proposed program is analyzed in section 11.0. The proposed program will carry a processing fee, which is nominal. Unlike current disaster programs, producers will not apply when they believe they can trigger a payment; rather, filings will occur every year. Because of this feature, it is likely that as the program runs, the understanding of it will improve and compliance will become easier. In contrast, under current programs a greater variety of forms and potential confusion is involved.
Administratively, the proposed program will require producers to file accrual accounting figures every year. This means a slightly higher cost to participate. Two timelines have been discussed for producer filing, the first by OMAF and the second by AAFC:

- OMAF approach:
    - Mar. 31: Signup, choice of deposit level, deposit due, accruals due for past year
    - Cheques issued by September
- AAFC approach
    - Mar. 31: Signup, choice of deposit level
    - Dec. 31: one third of deposit due, accruals due
    - Cheques issued following December.
- Because the OMAF approach puts little additional pressure on the producer in terms of timing or affordability, substantially reduces administrative costs, and would return payments more quickly, it appears that the OMAF approach is preferred.

Section 12.0 provides analysis of variations on the proposed program. These variations include moving hired labour into the category of ineligible expenses, combining the two stabilization layers into a single layer funded 40% by producer deposits and 60% by government, and the analysis of the relative effect on the "assets" of producers under the proposed program compared to the NISA program. In all cases, analyses were conducted using the NISA database. The conclusions are:

- Excluding hired labour as an eligible expense increased aggregate program payments slightly to most farm types and sizes.
- However, for fruit and vegetable farms and greenhouses, making hired labour ineligible reduces program benefits quite substantially for the largest farms, but provides greater benefit for most size categories.
- Combining the two stabilization layers results in a slight increase in aggregate program payments, and has no clear impact on stability.

The industry proposal (NISA 1-2-3) consisted of coverage below 70% of reference production margin entirely financed by government, with companion programs maintained and the maintenance of a NISA-type program with government matching of producer contributions up to 3% of eligible net sales with no cap. To compare the asset-building and entitlement aspects of NISA 1-2-3 relative to the proposed program, the government matching contributions under the industry proposal were compared with payments in the stabilization layers of the proposed program using the NISA database.

- The results are that aggregate payments in the stabilization tier of the proposed program would have been about $50 mil greater to Ontario farmers during 1998 – 2001 than under NISA.
- All farm types triggered more payments under the proposed program, except for fruits and vegetables, greenhouse (who would have lost SDRM), and dairy.

The issue of affordability of the proposed program is addressed in section 13.0. The issue of affordability is not one of cost: the cost to producers is an annual $50 registration fee and interest on the deposit.

The real issue is whether the cash tied up in deposits is a wise use of cash. One issue is how many farmers in Ontario have sufficient balances in their NISA accounts to fund their deposit requirements for the proposed program. To consider the extent to which farmers have access to the cash required to fund their required BRM deposits under the proposed program, current NISA balances were compared with minimum and maximum deposits required under the proposed program. A related issue is whether there are alternative ways to provide the deposit requirement, or whether a deposit is the most appropriate way to encourage farmers' commitment to risk management. These questions are considered in the section.

Conclusions are:

- 63-68% of producers had sufficient Fund 1 (non-taxable) NISA balances to fund minimum deposits under the proposed program.
- Counting Fund 2 (the tax deferred portion), 72-75% of producers had sufficient funding for deposits. The only commodity groups that showed a significant lack of funding from NISA sources were farms in supply management.
- What the foregoing means is that a substantial amount of additional cash will be required for deposits.
- At least three additional methods could be used to provide the deposits
    - Financial institutions believe the proposed program has so much merit that they would, in general, be willing to loan farmers their deposit money, usually above normal line of credit limits. This would make the cost to farmers who have the cash available, the spread between the borrowing rate and the savings rate.
    - By the same token, as a way to reduce the amount of cash tied up (and likely the cost), the loan could be made as guaranteed Letter of Credit that would be drawn only when there is a claim under the BRM.
    - The derivative discussed in section 10.0 that could be a product of an insurance provider could be used for the deposit, with the derivative's premium being based on risk and frequency of use.
- We do question whether a deposit is the appropriate way to handle farmers' commitments to risk management, the stated reason for the deposit in the first place. A deposit provides no incentives to improve private risk management. A fee structure, based on insurance principles would provide an incentive if the fee was based on individual and aggregate risk. This is entirely possible to do with the history that is available from the NISA database. Either a fee calculated and charged by the administering agency or the derivative discussed above are the only two alternatives that would provide risk assurance, but encourage farmers individually and in the aggregate, to privately manage risk better.

Section 14.0 addresses the transition from current programs to the proposed programs. The so-called "wedge" funding available for transition is less than what would have been spent on MRI, SDRM, NISA top-ups and the miscellaneous small programs, so some choices will need to be made. The observation that emerges is that some of this transition funding would be well used to help establish new products that can be used to replace those that are being phased out, particularly with respect to MRI. With specific regard to SDRM transition, several options were suggested:

- Issue cheques in the amount of NISA top-up money that would have been paid had NISA been continued.
- Create new matching accounts to which SDRM funds would be paid, with withdrawal triggers based on specified perils.
- Roll the SDRM portion of NISA accounts forward, and carry the funding (or some proportion of it) forward through the transition period.

Gaps and Overlaps

Based on the foregoing, there are some gaps and overlaps evident under the proposed program. These are the following:

- As it has been put forward, the language used to describe the proposed program (particularly the use of the terms "New NISA" and "coverage") is needlessly confusing. This creates a gap in understanding between government and producers.
- A major caveat that should be added to conclusions about the efficacy of the proposed program is that, as designed, it cannot deal well with substantial disasters such as the current BSE problem. In this case, we have a major export product for which access to the export market was lost. If this occurs for a protracted period of time, the program will run out of money and many producers will have negative margins. As we indicated in the text, there are disasters and there are disasters. Disasters of the magnitude that BSE can be if borders are not reopened will require more resources than are available in the BRM, if it is the public's goal to support the industry.
- Horticultural and greenhouse producers are worse off under the proposed program if market conditions remain as during 1998-2001 because it does not adequately replace SDRM.
- The Olympic average applied in the reference margin calculation creates an opportunity for producers to periodically magnify losses without a reduction in future reference margin. This represents an incentive gap in the proposed program. Similarly, it creates a huge moral hazard for supply managed industries.
- The proposed program, as it would apply to farms with supply managed sales, is simply poorly designed. It represents an incentive and coverage gap in the proposed program.
- As it is currently designed, with production insurance premiums as eligible expenses and indemnities as eligible revenue, the proposed program has some overlap with crop/production insurance. But this is an overlap that is good and needs to be extended.
- Under the proposed program, Market Revenue Insurance would be terminated. However, the proposed program does not respond to changes in the prices of grains and oilseeds in the same way that MRI did. Thus, a gap exists.
- The design of the proposed program calls for producers to make cash deposits. However, as suggested above, there are several alternatives to cash deposits that suggest they are likely redundant uses of capital.
- With producers liquidating their NISA accounts over the next five years, being eligible for payments under the BRM, and with transition funds available, there will be three years of program overlap with large amounts of cash available.

Recommendations

Based on the above, the following recommendations emerge:

- Numerous tests and simulations suggest that the proposed program operates at least as well as a stabilization program as the current programs do (with the exception of the horticulture and greenhouse industries). This is evident from the analysis of payments and margin stability, using a number of different data sets. We believe it is conceptually a good program given the policy objectives. It can be better if the gaps and overlaps identified above can be overcome. Therefore, the following recommendations should be implemented along with the basic program
- A clear policy position needs to be developed regarding disasters such as BSE, in which trade is curtailed and major losses are incurred by an industry. This may not be a unique occurrence; a long term disease and market disaster policy needs to be developed in addition to the stabilization policy.
- In the short term, the BSE situation underlines the need for a commitment regarding the current situation in the beef industry, as well as a commitment to develop means of insuring against negative margins, especially in the livestock industry.
- As described above, the language applied in the proposed program is needlessly confusing. An alternative name for the program, which makes no reference to NISA, should be devised (this has apparently been done). The "coverage" terminology should be replaced with "deposit", "proportional deposit", or some other alternative which reflects the actual operation of the program.
- The use of the Olympic average as part of the reference margin adjustment mechanism could lead to manipulation of the program by some. A useful improvement to the program would be to replace the Olympic average with a simple five-year average in the reference adjustment formula.
- The proposed program is not well designed for supply management. We recommend that either the industries' proposal to make supply managed commodities ineligible for the program be accepted, or at least revert to the former approach making it available in the disaster portion and then pro-rating in the stabilization portion.
- Link the proposed program and crop/production insurance by maintaining the current linkage, and add a rebate of up to the amount of the premium when production insurance saves the BRM money. There is also a case for making production insurance mandatory for processing vegetables.
- The proposed program does not serve to replace Market Revenue Insurance. We recommend that a successor to MRI should be developed as an insurance product along the general lines of the Alberta product.
- Cash deposits for the producer portion is a very poor use of capital. We recommend that alternatives to cash deposits be developed. Our preference would be a fee based one, on risk and use. The second alternative is a derivative that provides the deposit when there is a claim. Letters of Credit and loans from financial institutions are less preferred alternatives, but are much better than tying up farmers' money.
- The timing of activities under program administration will be critical in making the program transparent, and in providing producers with timely payment. We recommend

that the schedule of activities suggested by OMAF staff be implemented in program administration.

- The transition period during which current programs will be phased out will be important. Transition funds can flow to farmers, along with other sources of funding. Alternatively, a portion of the transition funds can be used to build devices that have a positive longer term impact. In order to maximize the value of the transition funds, we recommend that consideration be given to the following:
    - The fruit/vegetable and greenhouse sector appears to receive less in terms of program payments under the proposed program than under current programs. This may be because these sectors did not experience major perils in the period of time of the analysis, or because the proposed program does not fully replace SDRM. In either case, we recommend that these sectors be prioritized under the transition, and that alternatives to SDRM be developed, especially insurance products that are tailored to the industry's needs.
    - Development of an insurance product to replace MRI.
    - Determine whether it is feasible to delay part of the income for transition programs until after the programs cease to exist. In other words, if a program will be phased out over three years, then income from that program may be delayed until the beginning of the fourth year in order to spread the income over more tax years.

Table of Contents

List of Tables

List of Figures

Impact of the APF-Business Risk Management Programs on Ontario Agriculture

Larry Martin and Al Mussell

GEORGE MORRIS CENTRE

1.0 Introduction

The Business Risk Management (BRM) program that is proposed under the Federal-Provincial Agricultural Policy Framework (APF) presents a fundamental change from existing safety net programming. It shifts programming from a blend of programs, provincial and national, to one with only two national components after a three-year transition period. Effectively, this will eliminate region-specific programming. The proposed program will also firmly establish producer participation (through cash deposits), and will be governed under a firmer funding envelope than previously.

At a broad level, the proposed BRM program has been reviewed by a third party (Martin, Brown-Andison, Stoddart, Mussell) and found to be consistent with the objectives laid out for safety net programs by the federal and provincial ministers of agriculture. Based on the information and terms of reference presented to them, the third party review concluded that the proposed BRM program is likely to obtain the objectives laid out by the agriculture ministers at least as well, if not better, than current safety net programming.

However, while the third party analysis provides an assessment of the proposed programs at a broad level, it contains gaps that can be only be filled with additional applied research. These include:

- Impact of the proposed BRM program on specific commodity segments in Ontario agriculture
- Impact of the proposed BRM program on trade disputes, and the potential for program design to mitigate trade disputes

Thus, the purpose of this project is to build on the recently completed third party analysis to consider issues that are important to Ontario agriculture.

1.1 Objectives

The overall objective of this study is to determine the impact of the proposed Business Risk Management Program on Ontario agriculture, given the objectives agreed to by the federal and provincial ministers, and the terms of reference specified by OMAF in conjunction with Ontario's farm commodity organizations. Thus, the general objective is to identify the potential effects on specific segments of Ontario agriculture, to test whether some program parameters can affect those impacts, and recommend changes to the proposal that would improve program

performance. The specific objectives are to analyze the extent to which the proposed programs would:

- Stabilize individual farm incomes in Ontario for the various sectors;
- Change the distribution of government funds between sectors, regions, and farmers with varying level of income decline and impact on the competitive advantage of Ontario producers versus those in other regions of Canada;
- Reduce program overlap, maintain appropriate linkages between government programs and with private risk management mechanisms, and support good risk management practices;
- Appropriately treat farms with supply managed production;
- Offset the impact of programs in competing jurisdictions;
- Incorporate insurance-like principles;
- Distort production or marketing decisions;
- Reduce the potential for trade disputes;
- Be easy for farmers to understand and participate in, in a cost effective manner;
- Provide a smooth transition from present programming; and
- Contribute to better farm management decision making and planning.

1.2 Approach

To meet the above objectives, the following approach is employed.

A brief description of the proposed program is developed. The conceptual basis for the program, and an illustration of how the program would perform on a stylized farm is presented to provide context.

To determine the empirical implications of the proposed program on income stabilization, Ontario data from the NISA and OFIDP programs are used in models constructed to simulate the proposed BRM program and current programs. The results of these simulations are interpreted in the context of average farm incomes and appropriate measures of risk in farm incomes across commodities, and farm sizes. In addition, multi-year data from individual farm records are analyzed to understand the implications of the proposed program at a detailed level.

The results of the above analysis are aggregated to determine the anticipated cost of the proposed BRM program. This is compared with the funding envelope that is available, and the cost of current programs. The results are interpreted in the context of total funding received by individual commodity segments under the current and proposed BRM program. In particular, very little is known about how well the proposed program will perform as a replacement for SDRM in the horticultural industry. One aspect of the analysis will be to specifically compare the two and compare the proposed program with and without hired labour as an eligible expense.

A conceptual analysis of the impact of the proposed BRM program on farms with supply managed products will be conducted. This will be done to understand the impacts on supply managed and non-supply managed products produced on the same farm, and the relative ease of reporting supply managed earnings separately from non-supply managed earnings. This will be

bolstered by empirical examples drawn from farm records on farms with supply managed and non-supply managed income.

In addition, one issue is whether the BRM program meets the objectives of supply-managed industries from the perspective of potential international trade conflicts. This will be addressed in the research, at least to the extent of understanding the amount of government money that would support supply management.

The BRM is intended to be a risk management program. It contains production insurance and has the intent of developing additional "production insurance" products. In addition, there is interest in adding "insurance-like" principles to the transfer payment component. One possibility is to replace the deposit with an insurance or option instrument. The study considers potential extensions of insurance products, and an option concept to replace the deposit.

Distortion of production, marketing, and farm structure decisions relates to the extent to which the proposed BRM program influences decisions made by farmers on intensity and scale in the production of a product, or on which products to produce. A conceptual analysis will be completed of the incentives in the proposed BRM program to distort these decisions, building on the analysis in the recent third party review.

To assess the extent to which the proposed BRM program could cause trade disputes, payouts by various components of the program and by commodity sector over the past five years are estimated. This is done to determine the distribution of payments under the green and amber aspects, and by industry to test the possibility of triggering a dispute.

Less is known about the specifics of the design of safety net programs during the transition period between the current programs and the proposed BRM program. To assess alternatives for the design of the transition programming, focus groups will be conducted with the working group on companion programs and OMAF administrators to understand the alternatives, constraints, and funding issues that will occur in the transitional period. The findings of these focus groups will be documented and assessed. Based on the results, alternatives for transitional programming will be developed. If appropriate, the databases described above will be used to simulate the impact and cost of the transitional funding.

Similarly, the proposed program promises to broaden and enhance the range and depth of production insurance. Moreover, government has promised to "link" production insurance and payments under the Business Risk Management program. We will conduct interviews with program administrators to determine what is feasible in these two areas.

1.3 Organization of the Report

Section 2.0 of the report provides an overview and description of the mechanics of operation of the proposed program. Section 3.0 provides a summary and analysis of the distribution of support under the proposed program relative to current programs. Section 4.0 provides an analysis of the effectiveness of the proposed program in stabilizing farm income. The impact of the proposed programs in conveying incentives for risky farm enterprises is presented in Section 5.0. Section 6.0 considers the differences between cash-basis and accrual accounting in interpreting the comparison between the proposed program and current programs. Section 7.0 provides a description and analysis of the proposed program as it will operate for farms with production of supply managed products. The potential for the proposed program to trigger trade disputes is assessed in Section 8.0. Section 9.0 discusses the impact of other jurisdictions' farm policies on the effectiveness of the proposed program. Section 10.0 considers the linkage between the proposed program and crop/production insurance programs. Section 11.0 considers the impact of the proposed program on farmer decision-making and the costs of application and compliance. Section 12.0 provides an analysis of alternatives for transition programming between current and proposed programs. Finally, Section 13.0 provides observations, suggestions for improvement, and conclusions of the study.

2.0 The Proposed Business Risk Management Program[1]

The proposed BRM program has two components. One is production insurance. It consists of currently existing production insurance products, as well as still-to-be-defined additional production insurance products. The second is a transfer payment component – i.e. a program that transfers money from government (shared by producers) when producers experience a loss of "income" as defined by an accounting margin.

Potential new insurance products will be discussed in later sections of this report. In the evaluation of the program in this and the next three sections, we assume that the existing production insurance programs remain in place, and that their payouts are not affected by the transfer component.

The proposed BRM transfer component differs from the current suite of programs in several ways:

- The suite of disaster, income stabilization and companion programs is replaced by a single mechanism with both "disaster" and "stabilization" components.
- The measure of income that is used to trigger government payments differs from the suite that is currently being used.
- The cost sharing relationship between governments' and farmers' contributions differs between the proposed program and current programs.
- The producer financing of program payments differs between the proposed program and current programs.

The remainder of section 2.0 explains the transfer component of the proposed BRM.

2.1 The Measure of Producer Income

Under the proposed program, the measure of income that is used to trigger payments is the *production margin*, calculated using modified accrual accounting procedures. Payments can occur in a year when an individual farmer's production margin falls below a reference margin (explained in section 2.2). With the BRM, there will be only one triggering mechanism. It will replace the current suite of programs that have a variety of triggering mechanisms:

- The disaster (OFIDP in Ontario) program triggers payments with a *gross margin*, also based on modified accrual accounting, but somewhat different than the modification in BRM.
- NISA triggers government contributions into a fund, to a limit based on net sales, that match producer contributions. A producer can access the government contribution when they experience a loss measured by a gross margin calculated using *cash* accounting, or when the

[1] Portions of this section are adapted from the Third party Review by Martin, Brown-Andison, Stoddart, Mussell

producer retires. Therefore, the "entitlement" Appendix 1 provides a detailed list of expense items that are deductible under the proposed program, and of the relationship between NISA gross margin and production margin.

- Self-Directed Risk Management (SDRM) is a companion program available to the horticultural industry in Ontario. It is a top up to NISA that allows horticultural producers to have a higher limit than other producers. This was done as a substitute for what is perceived as inadequate production insurance for that industry. The top up was based on the government portion of production insurance premiums.

- Market Revenue Insurance (MRI) is a companion program focused specifically on the grain and oilseed industry in Ontario to protect them from price declines. The triggering mechanism is a decline below a 15-year moving average of the price of the grain.

2.2 Trigger Mechanism of Proposed Program

Program payments with the BRM will be triggered if the production margin in the current year falls below the reference 5-year Olympic average[2] production margin. This situation represents a "loss" under the BRM.

The specific size of the claim and the cost share associated with it is determined by the magnitude of the production margin loss and the amount that the producer has on deposit. Payments covering the first 15% of income loss would be funded equally from producer deposits and government contribution; the next 15% of loss (between 85% and 70% of reference) would be funded 30% from producer deposits and 70% by government. Income losses of greater than 30% (less than 70% of reference) would be covered 20% by producer deposits and 80% by government.

2.3 Operation of the Proposed Program

The proposed BRM would operate as follows:

- Farmers would choose to place funds on deposit in the program. The deposit would be proportional to a particular percentage of the historic production margin, ranging from 14% to 26%.

- The farmer could take up to three years to cash flow the desired deposit.

- Under the proposed program there are "layers" of income loss: two stabilization layers and one disaster layer. The relevant components, from an eligibility perspective, are 70%, 85%, and 100% of the five-year average Olympic average Production Margin. In essence, the

[2] The Olympic average is computed by dropping the high and the low production margin in the past five years, and then averaging the remaining 3 years

smaller the decline in production margin, the smaller the governments'[3] share of payments. As the loss in production margin increases, the governments' share of the coverage increases.

To understand the program better, consider a farm with an Olympic average Production Margin (i.e. a reference margin) of $100,000. The farm will have the choice to contribute anywhere from 14% to 26% of its reference margin. The percentages result from the three tiers of cost sharing, which are referred to in program descriptions as "coverage" levels, although this is a misnomer. We prefer to think of them as simply bench marks used to calculate producers' deposits. With this example:

- If the farmer chooses 14%, then obviously the deposit is $14,000. This comes from the fact that the cost-shares are 20/80 below 70% of the reference margin. The farmer's 20% is $14,000. Looked at differently, if a farm whose reference margin is $100,000 had $0 in a given year, then the farm's deposit of $14,000 would be matched 4:1 by the government in the disaster tier, and the farm would be restored to $70,000 of margin.

- If the farmer chooses 18.5% deposit, then the farmer's deposit is $18,500. If this farm had a complete loss to $0 margin in a year, then the farm would be restored to 85% of the reference margin - $70,000 as above, and $15,000 from the lower stabilization tier. Of this $15,000, $4,500 is from the producer deposit, $10,500 is from the government, and the ratio is 30/70. 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).

- If the farmer chooses the 26% deposit, (i.e. a $26,000 deposit), and if the farm has a complete loss of the reference margin, then the farm should be restored to 100% of the reference margin, 85% as above and the remainder shared half and half between the farmer and the government. However, one of the interesting aspects of the BRM is that the total government payment is limited to 70% of a farmer's loss. This is to comply with WTO requirements.

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 the 14% deposit).

An important aspect of the proposed program design is that payouts will be done on a "bottom up" basis. 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 farm's production margin is 60% of the reference (i.e.

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

the farm has a 40% loss), which in this example is a $40,000 loss. How much will a farmer receive with 14, 18.5 and 26% deposits?

- The farmer with a 14% deposit 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 18.5% and 26% deposits would not need to use their additional deposits. Therefore, they could be used to secure subsequent levels of protection. In this example, a farmer with an 18.5% deposit has $4,500 left on deposit, while the farmer with a 26% deposit has $12,000 left. This money can then be used as part or all of the deposit for subsequent years' coverage under the program.

Thus, the proposed program is significantly different than the NISA, OFIDP, and companion programs currently in use.

3.0 Relative Effectiveness of the Proposed Program

This section describes the databases, analyses, and results of analyses comparing the proposed program with current programs. Section 3.1 provides a description of the OFIDP database and how it is used to analyze the proposed program. Section 3.2 presents and interprets the results of OFIDP simulations. Section 3.3 provides a description of the NISA database and how it is used to analyze the proposed program. Section 3.4 presents the results of the NISA simulations and interprets their results. The description, analyses, and results using individual farm data are contained in Section 3.5.

3.1 Analyses of Proposed Program Using OFIDP Database

OFIDP provides payments to producers when their accrual gross margin falls below 70% of the five-year moving average gross margin. Applicants apply when they believe they have suffered a loss of that magnitude. The sample of farms that apply to OFIDP changes from year to year because only farms with greater than a 30% gross margin loss are eligible. The implication is that it is inappropriate to consider data from OFIDP in a time series; i.e. different farms are in the base from which data are drawn in each year. It should be noted that the data accessed are derived from OFIDP applicants, not strictly those that were approved for payment. The database of applicants therefore contains farms that experienced more than a 30% gross margin loss, and others that applied but were found not to have experienced a 30% gross margin loss. Hence it represents a very large sample. It is therefore quite useful so long as it is treated as a cross section (not a time series).

Applicants to OFIDP submit accrual farm records. For the purposes of analysis, these records were associated with applicants' NISA government contributions, MRI payments, SDRM benefits, and crop insurance through the OMAF database. The aggregate data were broken down into farm types according to the dominant percentage of sales. The analysis was undertaken under the following assumptions:

- NISA government matching contributions were measured as government assistance under NISA; this includes SDRM benefits and any other NISA top-ups.
- Crop insurance benefits were assumed the same under current and proposed programs
- Beef operations were divided into cow-calf and feedlot, by sorting "cattle" farms into those with sales greater than $1 million into a feedlot category, and those with sales less than $1 million into the cow-calf category. This division will undoubtedly mean that a few feedlots will be included in the cow-calf category. But at recent prices, this division would place any farm with over approximately 900 head per year in the feedlot category.
- "Mixed" farms had no enterprise that represented more than 50% of sales.
- The proportion of support paid out as "green" payments was taken as the magnitude of government payments triggered by losses of 30% relative to reference or more.
- In 1998 and 1999, additional payments outside the set program parameters were made under the auspices of OFIDP. This included a rebate of 3% of eligible net sales and coverage for negative margins for the federal government portion of funding. For the purposes of comparison between current and proposed programs, these were removed.

- Under OFIDP, adjustments were made for farm expansions of 15% or more. These adjustments were not removed from current programs, and the simulation of the proposed program did not contain provisions for expansions. Thus, as it pertains to farm expansions, the comparison is somewhat biased in favour of current programs.

3.2 Comparison of Current and Proposed Programs

Based on the above assumptions and data, analyses were conducted of the current programs in each of 1998, 1999, 2000, and 2001, with the proposed program simulated over the same period. Table 3.1 presents a description of the farms in the database in each year. It shows that cash crop farms were heavy applicants in each year; other farm types are cyclical applicants, such as hogs, which were significant applicants in 1998 and 1999, but applied much less frequently in 2000 and 2001.

The results of the analysis across all farm types are reported in Table 3.2 below. The relevant basis for comparison between current programs and the proposed program is within a given year (as explained above); thus the comparisons are made across columns rather than rows in the table. Table 3.2 presents the levels of payments made under each of the programs currently in operation; the sum of these payments is given in the first bolded column. The government share of payments given under the proposed APF-BRM program is given, with the sum of these payments and crop insurance given in the second bolded column. Thus, the bolded columns are the basis on which to interpret total government payments paid under current and proposed programs.

Table 3.2 shows that, in aggregate, in 1998, more support was paid out to OFIDP applicants under the current programs than would have been paid out under the proposed programs. In 1999, 2000, and 2001, the opposite result was observed.

Tables 3.3-3.14 below provide comparisons of average payments per farm under the proposed program relative to current programs for specific commodities. The tables interpret the aggregate results in Table 3.2 on the basis of average payments per farm for farms that received payments. The specific impacts on farms in each commodity type are diverse; however, the following observations can be made:

- The average payment per farm is at least as high under the proposed program as it is under the current programs (i.e. in the majority of the years analyzed, the proposed program would have paid out more to producers) for the following commodities:
    - Apples
    - Cow-calf
    - Dairy
    - Feedlot
    - Mixed farms
    - Hogs
    - Tobacco
    - Other horticulture

    - Other livestock.
- The total amount of support paid out appears similar (or cannot clearly be ranked as either higher or lower) under the proposed program as it is under the current programs for the following:
    - Cash crop
    - Greenhouse crops
    - Poultry

Table 3.1 Composition of Farms in OFIDP Applicant Database, 1998-2001

	1998	1999	2000	2001
Apples	85	144	215	200
Cow Calf	958	813	750	736
Feedlot	46	54	38	35
Dairy	228	108	206	253
Cash Crop	2,222	2,383	3,279	3,045
Greenhouse	28	88	150	180
Mixed	1,863	736	853	879
Other Horticultural		212	412	448
Other Livestock		42	47	40
Poultry	45	32	45	30
Hog	1,180	1,065	430	326
Tobacco	129	192	618	545
Total	**6,784**	**5,869**	**7,043**	**6,717**

Table 3.2 Payments Made Under Current and Proposed Programs, OFIDP Database- All Farm Types, 1998-2001

	Crop Insurance	OFIDP	MRI	Matching NISA Contribution	Total Current Program Payments	BRM	Total APF Payments (incl Crop Insurance)	Total Green Box Payments under BRM
	Total $	Total $	Total $	Total $	Total $	Total $	Total $	
1998	$7,916,305	$93,190,085	$1,966,487	$21,920,023	**$124,992,901**	$106,734,851	**$114,651,155**	$98,318,021
1999	$7,394,053	$78,137,816	$13,177,478	$11,064,806	**$109,774,154**	$125,861,774	**$133,255,827**	$116,620,628
2000	$18,335,828	$75,905,252	$31,773,282	$23,333,283	**$149,347,644**	$145,518,169	**$163,853,997**	$133,971,724
2001	$50,434,776	$53,140,143	$29,569,408	$26,250,509	**$159,394,835**	$125,081,206	**$175,515,982**	$114,647,853

Table 3.3 Payments Made Under Current and Proposed Programs, OFIDP Database- Apple Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	**Prod Margin**	**Crop Ins**	**OFIDP**	**MRI**	**NISA Match**	**Total Current**	**BRM**	**Total APF**
1998	$109,588	$123,699	$4,242	$40,304	$81	$9,543	**$54,171**	$40,073	**$44,315**
1999	-1,335	$60,219	$4,673	$15,863	$576	$3,915	**$25,028**	$43,800	**$48,473**
2000	54,092	$152,231	$7,287	$10,506	$658	$6,379	**$24,830**	$25,617	**$32,904**
2001	84,162	$115,457	$12,497	$11,684	$3,310	$7,406	**$34,896**	$24,541	**$37,038**

Table 3.4 Payments Made Under Current and Proposed Programs, OFIDP Database- Cow-Calf Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	-$61	$10,873	$386	$10,628	$91	$1,416	**$12,521**	$11,838	**$12,224**
1999	$4,348	$18,739	$415	$8,344	$861	$1,228	**$10,847**	$11,278	**$11,693**
2000	$21,205	$21,287	$594	$7,442	$2,239	$1,340	**$11,615**	$12,653	**$13,247**
2001	$32,004	$37,822	$1,970	$5,798	$1,706	$1,827	**$11,301**	$11,007	**$12,977**

Table 3.5 Payments Made Under Current and Proposed Programs, OFIDP Database- Feedlot Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	$89,006	$151,026	$514	$76,565	$1,190	$9,430	**$87,699**	$225,361	**$225,875**
1999	$129,064	$139,303	$250	$54,730	$5,127	$2,782	**$62,890**	$82,646	**$82,896**
2000	$150,186	$284,567	$957	$41,751	$13,993	$5,640	**$62,341**	$72,576	**$73,532**
2001	$169,574	$193,488	$29,716	$19,745	$14,050	$5,682	**$69,192**	$31,068	**$60,783**

Table 3.6 Payments Made Under Current and Proposed Programs, OFIDP Database- Dairy Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	$37,252	$60,918	$777	$6,360	$44	$649	**$7,830**	$18,313	**$19,090**
1999	$45,127	$105,054	$295	$12,136	$1,298	$958	**$14,687**	$18,234	**$18,529**
2000	$73,368	$94,246	$819	$8,284	$3,289	$999	**$13,391**	$25,620	**$26,439**
2001	$64,364	$79,211	$3,754	$7,769	$2,826	$1,004	**$15,353**	$21,868	**$25,623**

Table 3.7 Payments Made Under Current and Proposed Programs, OFIDP Database- Cash-crop Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	$42,999	$67,067	$2,720	$8,173	$6,836	$2,366	**$20,095**	$16,575	**$19,295**
1999	$27,172	$42,225	$1,233	$8,451	$3,053	$1,693	**$14,431**	$15,018	**$16,251**
2000	$42,999	$67,067	$2,720	$8,173	$6,836	$2,366	**$20,095**	$16,575	**$19,295**
2001	$38,970	$53,517	$7,390	$5,435	$6,102	$2,734	**$21,661**	$14,532	**$21,922**

Table 3.8 Payments Made Under Current and Proposed Programs, OFIDP Database- Greenhouse Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	$161,443	$213,684	$1,899	$30,170	$103	$8,662	**$40,834**	$22,337	**$24,236**
1999	$95,942	$177,023	$3,883	$17,852	$9,546	$4,283	**$35,564**	$31,576	**$35,458**
2000	$111,345	$160,617	$3,948	$20,266	$1,955	$8,163	**$34,332**	$55,698	**$59,646**
2001	$117,316	$167,715	$8,930	$17,143	$4,246	$11,774	**$42,093**	$41,469	**$50,399**

Table 3.9 Payments Made Under Current and Proposed Programs, OFIDP Database- Mixed Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	$16,789	$31,781	$693	$11,905	$180	$2,860	**$15,638**	$5,963	**$6,656**
1999	$19,014	$58,230	$1,388	$11,215	$1,863	$1,586	**$16,052**	$16,876	**$18,264**
2000	$37,063	$50,224	$2,601	$9,402	$3,594	$2,918	**$18,515**	$17,454	**$20,054**
2001	$38,671	$62,115	$7,576	$7,983	$3,811	$3,669	**$23,039**	$15,752	**$23,328**

Table 3.10 Payments Made Under Current and Proposed Programs, OFIDP Database- Hog Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	$41,134	$69,878	$684	$27,111	$195	$3,428	**$31,418**	$18,669	**$19,353**
1999	$31,293	$79,445	$784	$25,964	$2,160	$2,084	**$30,991**	$36,509	**$37,293**
2000	$51,826	$83,384	$1,723	$10,219	$4,420	$2,617	**$18,979**	$22,225	**$23,948**
2001	$58,366	$139,316	$5,387	$6,486	$4,273	$3,611	**$19,756**	$18,436	**$23,823**

Table 3.11 Payments Made Under Current and Proposed Programs, OFIDP Database- Poultry Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	$8,999	$24,671	$284	$6,071	$23	$504	**$6,883**	$13,421	**$13,705**
1999	$26,359	$41,908	$256	$4,896	$211	$802	**$6,165**	$5,229	**$5,485**
2000	$66,451	$122,242	$242	$12,264	$4,710	$3,964	**$21,180**	$16,324	**$16,567**
2001	$47,290	$71,476	$918	$7,788	$2,973	$711	**$12,389**	$22,411	**$23,328**

Table 3.12 Payments Made Under Current and Proposed Programs, OFIDP Database- Other Livestock Farms, 1999-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1999	$12,531	$37,137	$9,299	$20,122	$243	$993	**$30,656**	$26,833	**$36,132**
2000	$11,942	$27,217	$47	$5,344	$1,159	$1,631	**$8,179**	$5,794	**$5,840**
2001	$13,741	$45,102	$636	$5,003	$232	$1,305	**$7,176**	$9,569	**$10,205**

Table 3.13 Payments Made Under Current and Proposed Programs, OFIDP Database- Tobacco Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1998	$93,357	$119,839	$1,838	$9,792	$23	$4,631	**$16,284**	$7,864	**$9,702**
1999	$44,092	$132,852	$1,708	$15,193	$489	$3,154	**$20,544**	$31,210	**$32,918**
2000	$77,058	$97,947	$4,214	$22,850	$554	$5,676	**$33,294**	$37,768	**$41,982**
2001	$90,716	$104,918	$17,841	$13,795	$626	$6,230	**$38,493**	$25,557	**$43,398**

Table 3.14 Payments Made Under Current and Proposed Programs, OFIDP Database- Other Horticultural Farms, 1998-2001

	Current Programs							Proposed Program	
	Gross Margin	Prod Margin	Crop Ins	OFIDP	MRI	NISA Match	Total Current	BRM	Total APF
1999	$75,219	$117,111	$2,242	$15,422	$376	$3,666	**$21,705**	$32,066	**$34,308**
2000	$102,911	$187,236	$2,499	$18,434	$1,118	$10,136	**$32,188**	$26,671	**$29,170**
2001	$105,385	$177,001	$4,897	$15,986	$4,278	$10,396	**$35,557**	$42,185	**$47,082**

3.3 Analyses of Proposed Program Using the NISA Database

Farmers participating in NISA make deposits (up to 3% of eligible net sales) that are matchable by government, and can be withdrawn as program payments when the current year's gross margin falls below the five-year average gross margin. Individual NISA accounts are maintained on an ongoing basis, with deposits, government matching, and withdrawals occurring over a period of years. Thus, the government matching contribution (which is the government stabilization assistance paid out under the program) can be tracked for a sample of individual farms over time.

Applicants to NISA typically submit cash-basis information from which gross margins and production margins can be calculated. For the purposes of analysis, a group of NISA participants that continuously participated in NISA, between 1994 – 2001, and can be accurately linked to the crop insurance and market revenue insurance databases were isolated. In many cases, individual farms were split into multiple NISA accounts; in the analysis, multiple accounts for the same farm were combined so that each record represents a farm. This gave 11,034 farm records. Based on this sample, total payments for 1998 to 2001 under the current programs were calculated, with total payments for the period simulated under the proposed program. Table 3.15 presents the distribution of this sample according to farm type.

3.4 Comparison of Current and Proposed Programs

Table 3.16 below presents the results of the analysis described above. The rows in the table refer to commodity groups, with the columns giving the payments under current and proposed programs. The bottom row in the table gives the total payments under current and proposed programs. It shows that the proposed program would provide more funding overall than the current programs. The table shows that, over the four-year period, total funding would have increased to $669 million from $643 million. Within this increase, total funding for safety net program payments would increase within the cash crop, poultry, cow-calf, feedlot, and tobacco segments. Less funding would be available for fruits and vegetables, greenhouse crops, dairy, and swine. The results are restated on a four-year cumulative average per farm basis in Table 3.17.

Table 3.16 presents some results that are surprising. It is surprising that, with higher payment caps under the proposed program, swine and horticultural operations receive less support under the proposed program. This is particularly notable for hogs when feedlots, which face similar issues to hog and large horticultural operations with regard to contribution and payment caps under current programs, receive significantly higher payments under the proposed program.

A large part of the reason for this is the expansions that occurred over the period of the analysis, which are accounted for under current programs but not under the proposed program. Particularly for hogs and greenhouse vegetables, expansions were significant. Under current programs, structural change adjustments are made for expansions of greater than 15%. This materially increases the reference margins for farms that expand. The database does not provide enough information to simulate structural adjustment under the proposed program. Therefore, the

results are biased in favour of the current programs. Interestingly, under the proposed program, structural change adjustments would apply for expansions over 5%.

A second reason for the result in swine is that in the OFIDP program, there was a change made during 1998 and 1999 to allow modified accrual adjustments to take place. The change during those two years was for those producers whose cash accounting data understated their loss in financial position either because of expansion or significant accrual changes from the beginning to the end of the reference period. A large portion of this adjustment was used by hog producers, and it increased payments under the current programs by about $40 mil.

These two factors can easily explain the apparent decline in support for hogs for the proposed program. Given these matters as well as the results of the other two aspects of the analysis, we do not believe that the hog industry would have been worse off under the proposed program.

Table 3.15 Composition of Farms in the NISA Database

Farm Type	Number of Farms
Field Crops	6,158
Vegetables and Fruit	993
Green House (F&V)	123
Poultry	101
Dairy	435
Swine	900
Beef Cow-calf	1,452
Feedlot	163
Tobacco	709
Total	**11,034**

A caveat to observe in interpreting the above observations relates to the effect of cash rather than accrual margins. In order to complete the analysis it is necessary to consider cash-basis data in triggering the proposed program, along with OFIDP under the current program. Since margins on a cash-basis are likely to be less volatile than they are on an accrual basis, the use of cash basis information probably understates the true advantage of the proposed program over the current programs.

Table 3.16 Total Payments by Segment, 1998-2001, Current and Proposed Programs

	Current Programs						Proposed Program		
	Crop Insurance	OFIDP	MRI	NISA	Total	Distribution	BRM Payments	Total (with CI)	Distribution
Field Crops	$93,225,668	$49,732,391	$89,942,910	$89,704,066	**$322,605,036**	50.2%	$249,747,398	**$342,973,066**	51.2%
Vegetables and Fruit	$13,138,856	$10,956,210	$1,897,539	$65,517,663	**$91,510,268**	14.2%	$70,716,123	**$83,854,979**	12.5%
Greenhouse (F&V)	$1,171,658	$1,315,056	$301,323	$8,859,236	**$11,647,273**	1.8%	$9,497,083	**$10,668,740**	1.6%
Poultry	$732,672	$541,620	$1,021,671	$928,525	**$3,224,488**	0.5%	$4,418,989	**$5,151,661**	0.8%
Dairy	$3,536,712	$941,981	$4,136,828	$4,612,271	**$13,227,791**	2.1%	$6,095,634	**$9,632,345**	1.4%
Swine	$11,437,022	$29,039,255	$11,069,979	$30,954,171	**$82,500,427**	12.8%	$57,383,239	**$68,820,261**	10.3%
Cow-Calf	$8,390,176	$12,970,158	$9,352,226	$15,764,137	**$46,476,698**	7.2%	$45,952,207	**$54,342,383**	8.1%
Feedlot	3,996,673	6,589,010	3,301,125	7,598,712	**$21,485,520**	3.3%	31,819,045	**$35,815,718**	5.3%
Tobacco	$9,568,405	$11,713,938	$734,103	$27,903,888	**$49,920,335**	7.8%	$49,263,702	**$58,832,107**	8.8%
Total	**145,197,842**	**123,799,619**	**121,757,705**	**251,842,670**	**642,597,835**	**100.0%**	**524,893,420**	**670,091,261**	**100.0%**

Table 3.17 Average Payment per Farm by Segment, 1998-2001, Current and Proposed Programs

	Current Programs					Proposed Program	
	Crop Insurance	OFIDP	MRI	NISA	Total	BRM Payments	Total (including Crop Insurance)
Field Crops	$15,139	$8,076	$14,606	$14,567	**$52,388**	$40,557	**$55,696**
Vegetables and Fruit	$13,231	$11,033	$1,911	$65,980	**$92,155**	$71,215	**$84,446**
Greenhouse (F&V)	$9,526	$10,692	$2,450	$72,026	**$94,693**	$77,212	**$86,738**
Poultry	$7,254	$5,363	$10,116	$9,193	**$31,926**	$43,752	**$51,007**
Dairy	$8,130	$2,165	$9,510	$10,603	**$30,409**	$14,013	**$22,143**
Swine	$12,708	$32,266	$12,300	$34,394	**$91,667**	$63,759	**$76,467**
Cow-Calf	$5,778	$8,933	$6,441	$10,857	**$32,009**	$31,648	**$37,426**
Feedlot	$24,519	$40,423	$20,252	$46,618	**$131,813**	$195,209	**$219,728**
Tobacco	$13,496	$16,522	$1,035	$39,357	**$70,409**	$69,483	**$82,979**
Total	**13,159**	**11,220**	**11,035**	**22,824**	**58,238**	**47,571**	**60,730**

3.5 Current and Proposed Programs Across Farm Size Ranges

The NISA database analyzed in section 3.4 above was fragmented according to participant sales level to determine the impact of the proposed program across farm sizes. Applicants were classified into the following sales ranges: 0-25,000, 25,000-50,000, 50,000-100,000, 100,000-250,000, 250,000-500,000, 500,000-1,000,000, and over 1,000,000. This provided a comparison of current and proposed programs across both farm type and size.

The results are presented in Tables 3.18 to 3.25. The tables reflect the general trend illustrated in Table 3.16, with discrepancies within certain sales ranges. As a general observation, the greatest advantage of the proposed program over the current programs occurs at the lower and higher income ranges. The current programs either provide more support, or are at the least disadvantage in the mid-size farm ranges.

General interpretations of the relative benefit of the proposed program across sales ranges are difficult because, the payments are determined by a mix of the following considerations:

- Under current programs, the benefit from NISA is determined by eligible net sales up to the $250,000 cap; no reference is made to actual losses. Thus, the benefit of the proposed program should increase with farm size up to the cap.
- Under the proposed program, farms must trigger a loss to receive a government payment. Thus, if a given farm size experiences a greater frequency or severity of losses, it will tend to receive relatively more payment than other farm sizes under the proposed program. OFIDP is similar to this under current programs, however it does not provide payment for the first 30% of gross margin losses.

Thus, there is a trade-off between eligibility for NISA matching under the current program and the frequency and size of production margin losses

Based on the above, the following interpretation of the results across farm sizes is evident:

- Smaller farms have less eligibility to contribute to NISA. If they commonly experience production margin losses, they are likely to receive more benefit under the proposed program.
- Larger farms have more eligibility to contribute to NISA. If they do not commonly experience production margin losses, they are likely to receive more benefit under the current program.
- The largest farms are limited in their ability to contribute to NISA by the $250,000 ENS cap. If they commonly experience production margin losses, they are likely to receive more benefit under the proposed program.

The data indicate that the relative outcomes for the various sizes and types of farms are dependent on the situations for farms. In some industries, smaller farms receive more from the proposed program, while in others, larger farms receive more. No discernible relationship

between size and the relative benefits is clear – it would appear that the proposed program pays out when there is a need, which is its intent.

Table 3.18 Support Under Current and Proposed Programs, Field Crop Farms, 1998 - 2001

		Current Programs					Proposed Program	
Income Range	Number	Crop Ins	OFIDP	MRI	NISA Match	Total	BRM	Total
$0 - $25,000	1,761	$5,639,647	$7,707,588	$7,192,403	$5,734,468	**$26,274,107**	$29,414,814	**$35,054,461**
$25,000 - $50,000	1,358	$9,999,926	$8,379,879	$12,027,179	$9,469,236	**$39,876,220**	$36,432,102	**$46,432,028**
$50,000 - $100,000	1,334	$18,126,032	$11,444,112	$19,798,999	$16,590,495	**$65,959,638**	$45,902,080	**$64,028,112**
$100,000 - $250,000	1,186	$31,031,369	$12,874,418	$28,001,934	$29,105,305	**$101,013,026**	$71,178,306	**$102,209,675**
$250,000 - $500,000	348	$14,604,419	$5,517,272	$12,813,558	$15,979,193	**$48,914,442**	$35,965,405	**$50,569,824**
$500,000 - $1,000,000	128	$11,101,799	$3,100,833	$8,505,090	$8,626,912	**$31,334,633**	$19,295,764	**$30,397,563**
>$1,000,000	43	$2,722,476	$708,289	$1,603,747	$4,198,458	**$9,232,970**	$11,558,928	**$14,281,404**

Table 3.19 Support Under Current and Proposed Programs, Fruit and Vegetable Farms

		Current Programs					Proposed Program	
	Number	Crop Ins	OFIDP	MRI	NISA Match	Total	BRM	Total
$0 - $25,000	138	$474,364	$378,021	$64,894	$982,803	**$1,900,083**	$4,579,225	**$5,053,589**
$25,000 - $50,000	101	$420,359	$433,270	$83,037	$1,155,874	**$2,092,541**	$3,279,131	**$3,699,490**
$50,000 - $100,000	137	$1,665,576	$1,046,035	$206,856	$2,739,749	**$5,658,216**	$3,652,305	**$5,317,882**
$100,000 - $250,000	232	$3,756,754	$2,137,960	$495,354	$10,532,836	**$16,922,905**	$10,746,013	**$14,502,768**
$250,000 - $500,000	146	$3,701,982	$1,443,830	$465,977	$12,090,736	**$17,702,525**	$8,265,504	**$11,967,485**
$500,000 - $1,000,000	130	$2,059,731	$3,530,167	$288,522	$17,292,997	**$23,171,416**	$13,298,777	**$15,358,507**
>$1,000,000	109	$1,060,090	$1,986,927	$292,899	$20,722,667	**$24,062,582**	$26,895,168	**$27,955,258**

Table 3.20 Support Under Current and Proposed Programs, Greenhouse Fruit and Vegetable Farms

		Current Programs					Proposed Program	
	Number	Crop Ins	OFIDP	MRI	NISA Match	Total	BRM	Total
$0 - $25,000	16	$22,246	$24,866	$3,946	$133,196	**$184,254**	$687,278	**$709,524**
$25,000 - $50,000	10	$106,669	$21,477	$72,312	$127,584	**$328,041**	$391,231	**$497,899**
$50,000 - $100,000	23	$157,325	$125,885	$27,551	$473,564	**$784,326**	$638,087	**$795,411**
$100,000 - $250,000	19	$97,637	$93,585	$11,245	$1,035,825	**$1,238,291**	$1,114,378	**$1,212,015**
$250,000 - $500,000	21	$663,370	$435,913	$136,948	$1,901,305	**$3,137,536**	$2,312,607	**$2,975,977**
$500,000 - $1,000,000	17	$124,412	$134,467	$14,855	$2,419,622	**$2,693,356**	$2,013,486	**$2,137,898**
>$1,000,000	17	$0	$478,863	$34,465	$2,768,140	**$3,281,468**	$2,340,015	**$2,340,015**

Table 3.21 Support Under Current and Proposed Programs, Poultry Farms

		Current Programs					Proposed Program	
	Number	Crop Ins	OFIDP	MRI	NISA Match	Total	BRM	Total
$0 - $25,000	9	$2,568	$79,226	$9,812	$25,529	**$117,135**	$616,807	**$619,375**
$25,000 - $50,000	5	$5,041	$74,025	$40,132	$22,639	**$141,838**	$290,589	**$295,630**
$50,000 - $100,000	5	$10,343	$30,422	$110,693	$43,289	**$194,747**	$847,214	**$857,557**
$100,000 - $250,000	23	$165,672	$33,151	$239,751	$152,841	**$591,415**	$546,843	**$712,515**
$250,000 - $500,000	28	$172,302	$133,376	$247,802	$298,865	**$852,346**	$1,019,979	**$1,192,281**
$500,000 - $1,000,000	27	$358,889	$191,420	$359,425	$320,640	**$1,230,374**	$1,074,722	**$1,433,610**
>$1,000,000	4	$17,857	$0	$14,055	$64,722	**$96,634**	$22,836	**$40,693**

Table 3.22 Support Under Current and Proposed Programs, Dairy Farms

		Current Programs					Proposed Program	
	Number	Crop Ins	OFIDP	MRI	NISA Match	Total	BRM	Total
$0 - $25,000	4	$0	$4,037	$18,122	$13,448	**$35,607**	$283,673	**$283,673**
$25,000 - $50,000	6	$44,357	$0	$24,870	$20,887	**$90,114**	$244,614	**$288,970**
$50,000 - $100,000	25	$56,330	$34,213	$146,727	$85,446	**$322,716**	$274,248	**$330,578**
$100,000 - $250,000	147	$865,001	$524,581	$1,275,156	$838,388	**$3,503,126**	$2,737,832	**$3,602,833**
$250,000 - $500,000	167	$1,588,553	$230,690	$1,808,808	$1,667,000	**$5,295,051**	$1,428,877	**$3,017,429**
$500,000 - $1,000,000	70	$982,471	$123,069	$709,442	$1,419,455	**$3,234,436**	$432,782	**$1,415,252**
>$1,000,000	16	$0	$25,391	$153,704	$567,646	**$746,740**	$693,609	**$693,609**

Table 3.23 Support Under Current and Proposed Programs, Hog Farms

		Current Programs					Proposed Program	
	Number	Crop Ins	OFIDP	MRI	NISA Match	Total	BRM	Total
$0 - $25,000	20	$96,341	$89,444	$112,718	$114,564	**$413,068**	$1,090,069	**$1,186,411**
$25,000 - $50,000	33	$111,377	$265,995	$159,717	$176,235	**$713,325**	$973,538	**$1,084,916**
$50,000 - $100,000	71	$286,270	$966,495	$446,816	$630,495	**$2,330,076**	$2,176,417	**$2,462,687**
$100,000 - $250,000	243	$2,020,418	$5,866,586	$2,461,667	$4,259,467	**$14,608,138**	$10,016,009	**$12,036,427**
$250,000 - $500,000	252	$3,660,443	$6,622,823	$3,337,669	$8,186,714	**$21,807,649**	$12,967,464	**$16,627,907**
$500,000 - $1,000,000	158	$3,004,854	$6,236,777	$2,407,743	$8,225,866	**$19,875,239**	$11,812,035	**$14,816,888**
>$1,000,000	123	$2,257,319	$8,991,134	$2,143,650	$9,360,829	**$22,752,933**	$18,347,707	**$20,605,026**

Table 3.24 Support Under Current and Proposed Programs, Beef Farms

		Current Programs					Proposed Program	
	Number	Crop Ins	OFIDP	MRI	NISA Match	Total	BRM	Total
$0 - $25,000	206	$450,728	$537,688	$539,679	$574,871	**$2,102,966**	$4,026,332	**$4,026,332**
$25,000 - $50,000	256	$483,826	$768,896	$597,198	$1,240,816	**$3,090,736**	$3,827,608	**$3,827,608**
$50,000 - $100,000	308	$992,673	$1,367,295	$1,330,273	$2,423,295	**$6,113,537**	$6,019,378	**$6,019,378**
$100,000 - $250,000	394	$2,440,795	$3,982,683	$3,170,635	$5,087,980	**$14,682,093**	$14,655,054	**$14,655,054**
$250,000 - $500,000	197	$2,788,049	$3,707,648	$2,383,627	$3,973,238	**$12,852,561**	$10,797,093	**$10,797,093**
$500,000 - $1,000,000	91	$1,234,106	$2,605,948	$1,330,814	$2,463,938	**$7,634,806**	$6,626,742	**$6,626,742**
>$1,000,000[4]	163	3,996,673	$6,589,010	$3,301,125	$7,598,712	**$21,485,520**	$31,819,045	**$35,815,718**

Table 3.25 Support Under Current and Proposed Programs, Tobacco Farms

		Current Programs					Proposed Program	
	Number	Crop Ins	OFIDP	MRI	NISA Match	Total	BRM	Total
$0 - $25,000	47	$221,310	$160,780	$26,688	$535,316	**$944,094**	$4,182,153	**$4,403,463**
$25,000 - $50,000	33	$221,558	$270,044	$19,566	$458,765	**$969,933**	$2,006,944	**$2,228,503**
$50,000 - $100,000	83	$865,665	$1,145,080	$88,277	$1,708,159	**$3,807,181**	$4,744,689	**$5,610,354**
$100,000 - $250,000	297	$4,658,039	$4,760,027	$283,717	$9,806,148	**$19,507,930**	$18,002,802	**$22,660,842**
$250,000 - $500,000	195	$2,822,157	$4,006,986	$242,930	$10,215,220	**$17,287,293**	$13,346,919	**$16,169,076**
$500,000 - $1,000,000	48	$426,331	$1,187,877	$52,284	$4,199,151	**$5,865,643**	$5,462,523	**$5,888,853**
>$1,000,000	6	$353,345	$183,145	$20,640	$981,130	**$1,538,261**	$1,517,671	**$1,871,016**

[4] Sales above $1,000,000 are used as the definition for feedlots (as distinct from cow-calf operations)

3.5 Margin Stability Under Current and Proposed Programs

The above analyses considered the level of payments made to farmers under current and proposed programs. As such, it provides a necessary measure of government transfers to support margins under programming alternatives. However, it does not provide the timing context necessary to understand the income stabilizing value of the proposed program relative to current programs. That is, it does not measure the extent to which either current programs or the proposed program provided payments to farmers at times of adversity (rather than providing payments in periods when margins are high). To the extent that a program matches payments with the timing and severity of margin losses, it will stabilize margins over time.

The best measure of a program's stabilization ability is the extent to which it decreases variation in margins below the average. It is less relevant to measure the overall variation in margins (using a measure such as variance or standard deviation) because variations in margins above the average have the same influence on the measure as variations in margin below the average; meaningful stabilization relates to reduction in variation *below* the average.

As such, the measure of stabilization used to compare current and proposed programs considers variation below the average. The measure used here is a variant of semi-variance in which the standard deviation of the semi-variance is computed to give a result measured in dollars (rather than dollars squared); this measure is referred to as semi-deviation. This semi-deviation is measured relative to average margins with no programs. Thus, the comparison of stabilization between current and proposed programs starts with the average margin with no programs. Using this benchmark, the semi-deviation with no programs, with current programs, and with the proposed program is calculated. The program that gives the smallest semi-deviation provides the best level of stabilization.

Using the above approach, the information from the NISA database, with data fragmented to the level of farm type and size, was used to compare stabilization under the current and proposed programs. The analysis was related back to both average production margin and average gross margin. We measured both because it is important to understand what is being stabilized. The proposed program triggers payments with variations in the production margin, while the current programs tend to be triggered by variations in gross margin. Gross margin is likely a better proxy for net income. Therefore it is of interest to determine whether a program triggered by production margin stabilizes gross margin.

The results are presented in Tables 3.26-3.34. In each of the tables, the top panel provides a comparison between current and proposed programs on a gross margin basis[5], with the bottom panel providing the comparison on the basis of production margin. As indicated in the tables, the additional payments made under OFIDP in 1998 and 1999 have been excluded from the analysis. The proposed program is labeled as "BRM" in the tables.

[5] The program payments were related back to farm gross margins; current programs operate as they do currently and payments under the proposed program were determined on the basis of production margin

The tables show that, across a broad section of farm types and sizes, production margin is more variable than gross margin. This can be seen by comparing "normal deviation below average, no programs", for a given sales level under gross margin, with its counterpart under production margin. This is a critical finding because, in order for the trigger in the proposed program to be more sensitive than under OFIDP or NISA, production margin must be more variable than gross margin. There were sporadic sales levels at which gross margin was more volatile than production margin, notably in fruits and vegetable. However, these were exceptions to a visible trend.

In almost all cases, the proposed program gives a much lower normal deviation below the average margin than either no safety net programs or the current program. This observation holds with few exceptions across both gross margin and production margin – i.e. gross margins are stabilized by the BRM program.

Table 3.26 Margin Stability, Cash Crop Farms

Cash Crops	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$4,181	$7,532	$10,569	$4,824	$3,165	$844
$25,000 - $50,000	$9,967	$17,139	$18,530	$7,126	$3,627	$1,284
$50,000 - $100,000	$22,360	$34,478	$34,360	$10,542	$4,520	$1,963
$100,000 - $250,000	$50,771	$72,064	$71,262	$19,595	$8,820	$3,702
$250,000 - $500,000	$110,913	$146,053	$145,446	$37,622	$19,845	$9,405
$500,000 - $1,000,000	$197,773	$258,974	$252,261	$64,154	$30,989	$14,283
>$1,000,000	$405,806	$459,486	$488,837	$132,939	$100,466	$49,441

Cash Crops	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$10,553	$13,912	$16,949	$4,692	$3,100	$411
$25,000 - $50,000	$20,736	$27,893	$29,284	$6,973	$3,580	$782
$50,000 - $100,000	$37,532	$49,650	$49,532	$10,363	$4,585	$1,274
$100,000 - $250,000	$73,211	$94,503	$93,702	$18,640	$8,296	$2,332
$250,000 - $500,000	$149,238	$184,378	$183,771	$34,620	$17,480	$5,978
$500,000 - $1,000,000	$248,236	$309,437	$302,724	$62,865	$30,794	$9,812
>$1,000,000	$474,829	$528,509	$557,861	$121,689	$90,094	$25,590

Table 3.27 Margin Stability, Fruit and Vegetable Farms

Fruit & Veg	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$6,329	$9,771	$15,484	$7,946	$6,562	$1,694
$25,000 - $50,000	$8,564	$13,743	$17,721	$8,153	$4,984	$2,494
$50,000 - $100,000	$21,222	$31,547	$30,926	$11,695	$6,838	$5,107
$100,000 - $250,000	$44,681	$62,917	$60,309	$22,704	$13,366	$9,617
$250,000 - $500,000	$89,088	$119,401	$109,580	$36,378	$20,346	$18,456
$500,000 - $1,000,000	$189,532	$234,093	$219,068	$69,829	$42,360	$39,214
>$1,000,000	$518,523	$573,713	$582,641	$207,097	$166,540	$142,448

Fruit & Veg	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$15,168	$18,610	$24,323	$8,387	$7,027	$1,272
$25,000 - $50,000	$25,565	$30,744	$34,722	$8,157	$5,455	$2,024
$50,000 - $100,000	$41,679	$52,004	$51,383	$11,156	$6,601	$3,827
$100,000 - $250,000	$88,632	$106,868	$104,260	$24,274	$14,794	$9,161
$250,000 - $500,000	$162,586	$192,899	$183,079	$35,531	$19,639	$16,086
$500,000 - $1,000,000	$338,490	$383,050	$368,025	$65,693	$39,952	$32,634
>$1,000,000	$912,283	$967,472	$976,400	$205,923	$169,601	$130,933

Table 3.28 Margin Stability, Greenhouse Farms

Greenhouse	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$8,557	$11,436	$19,643	$6,497	$5,133	$1,367
$25,000 - $50,000	$21,142	$29,343	$33,590	$11,445	$9,081	$1,587
$50,000 - $100,000	$17,784	$26,309	$26,430	$8,240	$4,241	$2,767
$100,000 - $250,000	$60,515	$76,808	$76,463	$28,483	$19,215	$14,312
$250,000 - $500,000	$86,644	$123,996	$122,073	$36,923	$15,353	$10,652
$500,000 - $1,000,000	$177,964	$217,572	$209,403	$63,743	$38,577	$32,238
>$1,000,000	$587,646	$635,903	$622,058	$161,666	$126,848	$125,864

Greenhouse	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$18,596	$11,436	$19,643	$8,598	$12,725	$6,620
$25,000 - $50,000	$33,722	$29,343	$33,590	$11,841	$17,804	$9,077
$50,000 - $100,000	$38,396	$26,309	$26,430	$8,660	$18,245	$16,728
$100,000 - $250,000	$104,376	$76,808	$76,463	$32,177	$51,459	$47,270
$250,000 - $500,000	$160,036	$123,996	$122,073	$39,895	$65,718	$59,790
$500,000 - $1,000,000	$305,314	$217,572	$209,403	$64,626	$128,258	$126,278
>$1,000,000	$971,408	$635,903	$622,058	$188,898	$433,321	$437,092

Table 3.29 Margin Stability, Poultry Farms

Poultry	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$1,395	$4,649	$18,600	$8,123	$6,572	$517
$25,000 - $50,000	$32,950	$40,042	$47,731	$19,774	$16,398	$6,180
$50,000 - $100,000	$40,421	$50,158	$83,299	$16,854	$11,095	$1,240
$100,000 - $250,000	$55,748	$62,176	$63,493	$9,873	$6,896	$4,971
$250,000 - $500,000	$101,899	$109,509	$112,544	$26,099	$21,174	$17,885
$500,000 - $1,000,000	$177,733	$189,126	$191,008	$32,662	$24,198	$18,987
>$1,000,000	$398,815	$404,855	$401,359	$69,911	$67,556	$68,732

Poultry	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$12,349	$15,602	$29,553	$8,401	$7,058	$68
$25,000 - $50,000	$51,894	$58,986	$66,675	$21,162	$17,633	$5,083
$50,000 - $100,000	$63,894	$73,631	$106,772	$23,421	$18,022	$1,691
$100,000 - $250,000	$85,748	$92,176	$93,492	$11,763	$8,748	$4,822
$250,000 - $500,000	$147,594	$155,204	$158,239	$23,449	$19,446	$14,303
$500,000 - $1,000,000	$259,954	$271,347	$273,228	$36,943	$29,646	$21,399
>$1,000,000	$566,992	$573,032	$569,536	$72,952	$70,817	$71,704

Table 3.30 Margin Stability, Dairy Farms

Dairy	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$28,307	$30,532	$46,036	$13,862	$12,306	$2,341
$25,000 - $50,000	$32,581	$36,336	$44,621	$10,359	$9,258	$1,147
$50,000 - $100,000	$37,516	$40,743	$40,821	$6,102	$4,187	$2,874
$100,000 - $250,000	$66,127	$72,085	$72,254	$10,207	$6,936	$5,866
$250,000 - $500,000	$126,289	$134,216	$130,806	$16,700	$12,136	$12,938
$500,000 - $1,000,000	$221,070	$232,622	$226,125	$26,029	$19,765	$21,955
>$1,000,000	$453,408	$465,076	$464,246	$67,446	$59,513	$51,403

Dairy	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$42,495	$44,720	$60,224	$19,817	$18,574	$759
$25,000 - $50,000	$48,219	$51,973	$60,259	$15,923	$14,809	$1,365
$50,000 - $100,000	$53,503	$56,730	$56,809	$6,895	$5,271	$3,049
$100,000 - $250,000	$102,488	$108,446	$108,615	$10,495	$7,477	$5,431
$250,000 - $500,000	$196,716	$204,643	$201,233	$17,289	$13,356	$13,226
$500,000 - $1,000,000	$341,979	$353,531	$347,034	$27,531	$22,391	$23,255
>$1,000,000	$758,944	$770,612	$769,781	$79,563	$73,448	$61,124

Table 3.31 Margin Stability, Hog Farms

Hogs	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM
$0 - $25,000	$9,402	$14,565	$24,232	$7,370	$5,014	$189
$25,000 - $50,000	$6,054	$11,458	$14,273	$6,032	$4,314	$1,447
$50,000 - $100,000	$14,844	$23,048	$23,515	$9,337	$5,552	$1,968
$100,000 - $250,000	$32,111	$46,420	$44,494	$12,740	$6,091	$2,929
$250,000 - $500,000	$66,399	$88,034	$82,895	$22,021	$11,865	$7,400
$500,000 - $1,000,000	$112,574	$144,023	$136,019	$44,692	$28,468	$20,155
>$1,000,000	$314,838	$359,052	$356,719	$143,412	$115,094	$87,351

Hogs	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM
$0 - $25,000	$17,885	$23,049	$32,716	$9,226	$7,076	$135
$25,000 - $50,000	$16,636	$22,040	$24,855	$6,670	$4,793	$1,454
$50,000 - $100,000	$28,424	$36,628	$37,095	$9,040	$5,277	$1,415
$100,000 - $250,000	$53,391	$67,700	$65,774	$13,386	$6,698	$2,778
$250,000 - $500,000	$105,792	$127,426	$122,288	$24,511	$14,321	$8,684
$500,000 - $1,000,000	$188,093	$219,541	$211,538	$46,405	$30,332	$20,170
>$1,000,000	$532,062	$576,275	$573,942	$166,924	$134,809	$108,089

Table 3.32 Margin Stability, Cow-Calf Farms

Cow Calf	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$2,566	$5,118	$7,999	$5,414	$4,316	$1,637
$25,000 - $50,000	$8,015	$11,034	$12,226	$5,470	$3,951	$2,270
$50,000 - $100,000	$15,149	$20,111	$20,841	$8,771	$6,270	$3,363
$100,000 - $250,000	$24,203	$33,519	$35,051	$14,252	$9,752	$4,353
$250,000 - $500,000	$38,100	$53,649	$55,340	$26,029	$17,980	$10,310
$500,000 - $1,000,000	$55,540	$73,768	$77,136	$29,416	$21,591	$8,988

Cow Calf	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$9,509	$12,061	$14,942	$5,307	$4,278	$1,131
$25,000 - $50,000	$17,846	$20,864	$22,056	$5,455	$4,026	$1,988
$50,000 - $100,000	$27,887	$32,849	$33,579	$8,718	$6,251	$2,883
$100,000 - $250,000	$41,243	$50,559	$52,090	$14,248	$9,867	$3,820
$250,000 - $500,000	$63,794	$79,343	$81,034	$26,149	$17,981	$8,475
$500,000 - $1,000,000	$85,953	$104,180	$107,548	$31,546	$23,533	$9,406

Table 3.33 Margin Stability, Feedlot Farms

Feedlot	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
>$1,000,000	$138,880	$175,950	$204,718	$113,717	$94,181	$42,716

Feedlot	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
>$1,000,000	$216,522	$175,950	$204,718	$111,861	$149,201	$95,523

Table 3.34 Margin Stability, Tobacco Farms

Tobacco	Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$30,710	$35,732	$54,133	$21,865	$20,270	$2,164
$25,000 - $50,000	$39,582	$46,930	$56,465	$20,012	$17,720	$3,564
$50,000 - $100,000	$54,382	$65,849	$71,281	$23,839	$18,685	$4,252
$100,000 - $250,000	$74,722	$91,143	$93,797	$32,241	$23,696	$10,517
$250,000 - $500,000	$119,307	$141,470	$140,036	$44,478	$29,984	$19,729
$500,000 - $1,000,000	$236,962	$267,513	$267,634	$68,233	$46,593	$35,701
>$1,000,000	$504,925	$569,019	$582,884	$181,208	$136,582	$103,008

Tobacco	Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$46,941	$51,962	$70,363	$25,821	$24,361	$3,003
$25,000 - $50,000	$57,195	$64,543	$74,078	$21,553	$19,366	$4,022
$50,000 - $100,000	$74,190	$85,658	$91,089	$25,560	$20,445	$5,148
$100,000 - $250,000	$108,016	$124,437	$127,091	$31,510	$23,324	$8,761
$250,000 - $500,000	$180,498	$202,661	$201,227	$42,176	$28,530	$15,761
$500,000 - $1,000,000	$363,322	$393,872	$393,993	$63,734	$43,377	$28,101
>$1,000,000	$707,794	$771,888	$785,753	$130,018	$91,870	$49,736

3.6 Refined Analysis With Accrual Data Using OFIDP Database

To provide a more refined analysis of how the proposed program will operate relative to the current programs, a subset of data from consistent OFIDP applicants was isolated and analyzed[6]. The data represent records from farms that had applied to the OFIDP program consistently from 1998 to 2001. These farms provide a source of time series, accrual-adjusted records that can be used to compare the proposed program using accrual data with current programs using the mix of cash-basis and accrual data that is applied in practice. Thus, the sample provides the most accurate comparison possible given the data available.

The database yielded 662 farms that applied to OFIDP consistently from 1998 to 2001. Table 3.35 below provides the breakdown of farms in the sample according to farm type. About two-thirds of the farms were cash-crop farms, with smaller numbers of cow/calf, hog, and vegetable/fruit farms. Only small numbers of tobacco and feedlot farms were available, and greenhouse, dairy, and poultry farms had to be combined into a single category. Thus, the sample is not representative, and is biased toward cash-crop farms.

The comparison of the proposed program on an accrual basis with the current programs (OFIDP-accrual, other programs- cash basis) presented in Table 3.36 below. As indicated above, Table 3.36 provides the most accurate comparison possible between current and proposed programs, because all the data are presented on the accounting basis that is actually used. The table gives the total payments for the period 1998-2001, on an average per farm basis, by farm type under the current and proposed programs. It shows that, under the proposed program, about $6000 more per farm would have been paid out over the four-year period than under the current programs. The largest increases in payments under the proposed program were estimated experienced for feedlots, followed by cow-calf, tobacco farms, and cash-crop farms. Fruit and vegetable operations had a cumulative average reduction in payments of about $6700, with hog farms seeing an average reduction in payments of about $700[7]. Payments to the greenhouse-dairy-poultry group of farms are estimated to decrease by over $18,000 per farm over the period.

[6] This is the same database that was used to analyze the differences in the proposed program on a cash vs. accrual basis.

[7] Again, remembering that the current programs were enriched in order, mainly, to assist hog farms in 1998 and 1999. This could also easily have occurred under the proposed program, but cannot be done in the database. We do believe this analysis understates the relative benefits of the proposed BRM to hog operations.

Table 3.35 Breakdown of OFIDP Sample

Farm Type	Number of Producers
Cash Crop	424
Vegetables and Fruit	50
Greenhouse / Dairy / Poultry	4
Hogs	74
Cow/Calf	76
Feedlot (Beef)	12
Tobacco	22
Total	**662**

Table 3.36 Comparison of Program Payments Between Current and Proposed Programs, Average per farm 1998-2001 Total

	Current Programs					Proposed Program		
Farm Type	Crop Insurance	OFIDP	MRI	NISA	Total	Crop Insurance	Program Payments	Total
Cash Crop	$15,946	$27,157	$13,062	$10,070	$66,235	$15,946	$51,408	$67,353
Vegetables and Fruit	$12,902	$31,836	$1,481	$31,781	$78,000	$12,902	$58,418	$71,320
Greenhouse/Dairy/Poultry	$34,604	$64,373	$17,190	$18,059	$134,226	$34,604	$81,088	$115,692
Hogs	$18,578	$57,339	$11,571	$19,171	$106,659	$18,578	$87,343	$105,921
Cow/Calf	$6,570	$42,141	$8,023	$9,300	$66,034	$6,570	$68,170	$74,740
Feedlot (Beef)	$22,359	$153,743	$16,362	$31,139	$223,603	$22,359	$435,362	$457,721
Tobacco	$9,671	$20,582	$900	$16,650	$47,803	$9,671	$61,288	$70,959
Total	**$14,954**	**$34,906**	**$11,123**	**$13,288**	**$74,270**	**$14,954**	**$65,346**	**$80,300**

4.0 Distribution of Program Benefits Under Proposed Program

Because of the difference in the structure of the proposed program relative to current programs, the incidence of program benefits is liable to differ from current programming. This arises from multiple sources:

- The aggregate level of support will differ between current and proposed programs.
- The level of support directed at a given commodity will differ between current and proposed programs.
- The level of support allocated to each province will differ between current and proposed programs.

The purpose of this section is to provide an analysis of the distributional effects of the proposed program. Section 4.1 describes the approach and data used to analyze the distribution of program payments. The results of this analysis are presented in Section 4.2. Section 4.3 interprets the distribution of program payments in the context of total farm cash receipts. The observations and discussion based on the distribution of program payments are presented in Section 4.4.

4.1 Analysis of Distributional Consequences of Proposed Program

The share of program funding that is allocated to a given commodity type or region is a function of program design, the frequency and magnitude of claims that trigger a payment, and the number of farms within a given commodity type and region. To provide an assessment of payment shares under the proposed and current programs, data was accessed from the federal NISA database by AAFC staff. Information in the NISA database was isolated for producers that were continuous participants in NISA for the period 1996-2000. In cases where accrual data were 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. The 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.

Given this data, the total government payments under current programs (CFIP, NISA, production insurance, and companion programs) were summarized to give the five-year average. Companion program payments were taken based on reportings in the designated space on the NISA form. Production insurance payments were realized in the year payment was received (rather than the year that the year the indemnities were incurred).

Thus, the simulation provides a representation of what the total average annual payment to producers from government would have been under the current and proposed programs, respectively. The data were fragmented according to commodity type and converted to a percentage of total payments nationally. This provides a framework within which to understand the distribution of payments under the proposed program.

4.2 Distribution of Payments Under Current and Proposed Program

Tables 4.1 and 4.2 below present the results of the above analysis. Table 4.1 presents provincial and commodity funding shares as percentages of total national funding; Table 4.2 presents the raw funding levels. In each case, the top panel of the table gives the distribution of funds according to province and commodity based on current programs, and the bottom panel provides the distribution under the proposed program. The bottom row of each panel gives the total allocation of support funding according to province, and the final column provides the total support according to commodity type.

Table 4.1 shows that under the proposed program, Ontario farmers would receive a slightly lower share of total national safety net funds than they do under current programs. However, the distribution differs across commodity type. Under the proposed program, grains and oilseeds, cattle, and hog segments of Ontario agriculture would see an increasing share of total national funding. The Ontario fruit, vegetable, and potato segments would see a decreasing share of total funding. At the national level, the proposed program would see a slight redistribution in safety net support toward Saskatchewan from other provinces. This is a consequence of the fact that, relative to current programs, the proposed program would result in a greater allocation of support to grains and oilseeds, cattle, and hogs. Thus, the results for Ontario mirror the national picture. Table 4.2 presents the payment data underlying Table 4.1. It shows increases in funding for Ontario cash crops and cattle, with decrease in payments to horticultural and other industries.

Table 4.2 suggests that total funding to Ontario would fall under the proposed program. This is surprising, given that literally all of the detailed analysis completed on Ontario farm sectors in Section 3 suggests precisely the opposite. However, the data prepared by AAFC covers the 1996-2000 time period, while that analyzed by OMAF covers the period 1998-2001. This has important implications in interpreting the results:

- The 1996-2000 period stretches back prior to the existence of the current suite of programs (notably CFIP/OFIDP). AAFC simulated CFIP/OFIDP payments throughout the period (rather than just for 1996 and 1997). This by itself increases the payments attributed to current programs, because some farmers that could have obtained payments from CFIP/OFIDP, did not apply to CFIP/OFIDP.

- The simulations for 1996 and 1997 used reference margins based on a shorter time period than that which would have been applied in practice. In particular, 1996 and 1997, which were exceptionally high margin years for farmers, would tend to bias in favour of programs that provide payment on the basis of sales (as the NISA matching contribution does) rather than a program that triggers payment on the basis of actual margin losses

- AAFC staff indicated that, had their analysis used 1998 as the first year, the average payment to Ontario based on 1998, 1999, and 2000 would have been higher under the proposed program than under current programs

Other findings in Table 4.2 are consistent with components of the analyses in Section 3 regardless of the differences discussed above. In particular, it suggests that more funding will

flow to grains and oilseeds and cattle (in Ontario and nationally), and, that less funding will flow to horticultural farms under the proposed program.

Finally, payments to Quebec agriculture are conspicuously absent from Table 4.2. This is because the funding for the Quebec ASRA program, which is supported by the federal government, does not flow through the NISA or CFIP funds that form the basis for Table 4.1.and 4.2. Thus, an accurate comparison of total funding for safety nets across all provinces and farm commodities (including ASRA) is not possible from Tables 4.1 and 4.2.

In interpreting the distributional results, there are some critical caveats to observe. First, the timing of payments is likely to be at least as important as the magnitudes of the payments themselves. In other words, payments received in periods of great need have more value as stabilization than payments received under less adverse circumstances. Secondly, looking only at the magnitude of payments without reference to the frequency of payments vs. magnitude of payments can be misleading. For example, a farm that on average receives small payments but occasionally triggers a very large payment under adverse circumstances may be better served in stabilization than another farm the regularly triggers small program payments. This latter farm could easily show up as receiving a higher share of payments than the former.

4.3 Distribution of Proposed Program Payments Relative to Farm Cash Receipts

It is difficult to place program payments across commodity sectors in context, because the different commodities have different relative profitability and margin volatility. The notion of "fairness" in the allocation of program payments is inherently subjective, and a number of rationales exist on which to interpret payments. One basis for comparison is farm cash receipts. Table 4.3 below plots farm cash receipts by product type. It shows that dairy products are typically the largest source of farm sales, followed by grains and oilseeds, beef, and fruits and vegetables.

Table 4.4 relates total farm cash receipts by product type to shares of payments under the proposed program. In some cases, the share of program payments appears to correspond with farm cash receipts. Payments to cattle, hog, and fruit and vegetable farms correspond reasonably closely with the shares of total farm cash receipts. Payments to grains and oilseeds are much greater than their share of cash receipts. Payments to the "other" segment are much lower than their share of cash receipts. There is a number of ways to interpret this latter category:

- Grains and oilseeds tend to be a volatile and relatively low margin segment
- The "other" products category includes supply managed products which are implicitly supported outside of program payments

Thus, while farm cash receipts provides a context within which to interpret the distribution of farm program payments, it is of limited use in making broad generalizations about how program payments are, or should, be allocated.

Table 4.1 Distribution of Government Payments to Producers by Commodity Type and Province, 1996-2000 Average Shares

Current Programs		BC	AB	SK	MB	ON	QC	NB	NS	PEI	NFLD	CANADA
	Grains and Oilseeds	0.25%	12.92%	27.69%	8.34%	7.20%	0.04%	0.00%	0.00%	0.03%	0.00%	**56.49%**
	Cattle	0.11%	5.98%	5.50%	2.75%	2.45%	0.00%	0.02%	0.07%	0.06%	0.00%	**16.93%**
	Hogs	0.15%	0.97%	0.30%	1.42%	2.37%	0.02%	0.02%	0.13%	0.12%	0.00%	**5.50%**
	Fruit, Vegetable and Potato	1.25%	0.30%	0.13%	0.29%	4.04%	1.02%	0.33%	0.24%	1.02%	0.02%	**8.65%**
	Other	0.68%	2.67%	1.87%	1.46%	5.15%	0.14%	0.03%	0.32%	0.09%	0.02%	**12.43%**
	Total	2.45%	22.84%	35.49%	14.25%	**21.21%**	1.21%	0.41%	0.78%	1.31%	0.04%	100.00%
Proposed Program												
	Grains and Oilseeds	0.26%	12.71%	30.02%	7.71%	8.75%	0.05%	0.00%	0.00%	0.03%	0.00%	**59.55%**
	Cattle	0.12%	5.56%	6.33%	2.69%	2.92%	0.00%	0.03%	0.07%	0.05%	0.00%	**17.76%**
	Hogs	0.14%	1.01%	0.31%	1.66%	2.39%	0.03%	0.02%	0.10%	0.12%	0.00%	**5.78%**
	Fruit, Vegetable and Potato	1.42%	0.22%	0.16%	0.15%	2.46%	0.47%	0.20%	0.24%	0.76%	0.02%	**6.08%**
	Other	0.41%	2.52%	2.13%	1.36%	4.02%	0.06%	0.03%	0.22%	0.07%	0.00%	**10.82%**
	Total	2.34%	22.02%	38.96%	13.57%	**20.53%**	0.61%	0.29%	0.65%	1.02%	0.02%	100.00%

Source: NISA Database, AAFC

Table 4.2 Distribution of Government Payments to Producers by Commodity Type and Province, 1996-2000 Average Amounts

Current Programs

	BC	AB	SK	MB	ON	QC	NB	NS	PEI	NFLD	CANADA
Grains and Oilseeds	2,042,700	104,592,458	224,180,543	67,486,968	58,260,853	291,727	0	0	227,474	0	457,273,145
Cattle	922,194	48,402,615	44,498,357	22,250,194	19,807,745	0	139,838	584,006	471,624	0	137,079,588
Hogs	1,186,864	7,872,801	2,459,624	11,462,997	19,207,544	149,685	190,576	1,070,777	945,780	0	44,547,936
Fruit, Vegetable and Potato	10,145,214	2,423,340	1,013,080	2,341,879	32,723,856	8,278,734	2,679,336	1,959,194	8,247,600	173,391	69,985,624
Other	5,535,385	21,620,421	15,139,561	11,793,494	41,724,500	1,110,583	223,109	2,625,465	722,438	151,672	100,646,627
Total	19,832,357	184,911,634	287,291,165	115,335,532	171,724,498	9,833,613	3,335,678	6,327,045	10,614,915	326,484	809,532,921

Proposed Program

	BC	AB	SK	MB	ON	QC	NB	NS	PEI	NFLD	CANADA
Grains and Oilseeds	**2,029,525**	99,614,541	235,388,908	60,467,756	68,566,679	415,063			203,609		466,928,828
Cattle	**944,259**	43,607,706	49,652,011	21,106,357	22,857,397		204,427	533,032	360,725		139,270,190
Hogs	**1,086,255**	7,925,593	2,453,247	12,996,945	18,736,070	196,094	178,918	788,990	931,568		45,293,680
Fruit, Vegetable and Potato	**11,105,929**	1,734,647	1,225,228	1,142,485	19,265,591	3,665,128	1,547,342	1,905,111	5,940,039	166,137	47,697,639
Other	**3,177,215**	19,744,649	16,737,902	10,650,148	31,507,756	493,870	205,034	1,758,225	572,873	18,790	84,866,460
Total	**18,343,184**	172,627,136	305,457,296	106,363,691	160,933,493	4,773,823	2,248,148	5,115,678	8,008,813	185,536	784,056,797

Source: NISA Database, AAFC

Table 4.3 Ontario Commodity Shares of Farm Cash Receipts, 1998-2002 (Thousand Dollars)

	1998	1999	2000	2001	2002	Average Share
Cattle and Calves	931,004	994,791	1,069,278	1,226,128	1,145,672	15.03%
Grain & Oilseeds	1,232,134	1,116,852	1,130,507	976,726	1,185,687	15.80%
Hogs	589,661	601,127	831,107	956,406	817,877	10.63%
Dairy Products	1,277,740	1,280,810	1,319,954	1,369,058	1,357,337	18.50%
Fruits & Vegetables	896,893	949,138	988,581	1,093,346	1,119,768	14.14%
Floriculture & Nursery	577,397	664,640	811,333	842,310	925,270	10.70%
Poultry	568388	537,014	564,892	622,297	601,702	8.11%
Eggs	182,292	188,335	197,134	210,597	211,800	2.77%
Sheep	2,590	2,391	3,069	2,821	2,275	0.04%
Tobacco	342,307	338,960	346,771	245,697	257,913	4.29%

Table 4.4 Farm Cash Receipts Relative to Program Payments

	Total Sales 98-02, ($thousand)		Payments ($)	
Grains and Oilseeds	5,641,906	15.80%	68,566,679	42.61%
Cattle	5,366,873	15.03%	22,857,397	14.20%
Hogs	3,796,178	10.63%	18,736,070	11.64%
Fruit, Vegetable and Potato	5,047,726	14.14%	19,265,591	11.97%
Other	15,855,094	44.40%	31,507,756	19.58%
Total	35,707,777	100.00%	160,933,493	100.00%

4.4 Summary

The foregoing indicates:

- Distribution of funds nationally are difficult to calculate because the data do not account correctly for crop insurance, and because federal contributions to Quebec's ASRA program.
- Based on numbers that do no reflect the foregoing, and using 1996 – 2000, it would appear that Ontario's share of total program spending would have declined marginally with the proposed program. This implicitly differs from the analysis in Section 3.0, likely because of the time period. The most relevant conclusion is that regional proportions vary at different times because of relative need.
- Similarly, in this time period, the portion of funds flowing from the program to grains, oilseeds, and beef.

5.0 Implications of the "Olympic Average Concept"

The proposed BRM program will provide incentives that differ from current programs due to the design of the program. The purpose of this section, in conjunction with Appendix I, is to explore in technical detail, how the structure of the proposed program will affect farm management incentives, and to interpret the implications.

One of the key components in the success of any farm program is that it achieve its stated goals while minimizing the extent to which it induces perverse or opportunistic behaviour. Conceivably, this behaviour could include the following:

- Intentionally inducing production margin losses to trigger program payments (moral hazard)
- Altering output level or farm input use in order to access program payments
- Altering the product mix in order to access program payments

To consider these incentives, a conceptual model of the proposed program was developed and analyzed in Appendix I. Viewed in abstract, the mechanism of the proposed program has two components:

- The current year payment function
- Next year's reference margin function

As shown in the appendix, the payment calculation determines a farmer's program payment at a single point in time. To understand the incentives under the program, the payment function must be considered in the context of next year's reference margin. Changes in program payments in the current year will be reflected in future reference margin levels.

The payment function shows that a payment can be triggered if the current year production margin falls below the reference production margin. Farmers may perceive an incentive to intentionally trigger a payment under the proposed program. The rationale for this is that they can access government payments and meet cash flow needs from their own deposit. In a sense, the proposed program allows the producer to experience a loss that is partially funded by government with no loss in cash flow, because of the cash flow on deposit that becomes accessible. The primary factor mitigating this incentive (besides detection and enforcement from program administrative staff) is that the reference margin in the next year adjusts in response to current year production margin. In other words, a farmer who intentionally triggered a payment under the program would see his or her reference production margin decrease in the future, thereby decreasing future margin coverage. However, the implication of the intentionally triggered production margin loss depends on the extent to which the next year's production margin adjusts in response.

The sensitivity of the subsequent year's reference margin to changes in the current year production margin depends on the effect of an incremental change in the current year's production on the reference margin. This is explored in Appendix I. It shows that:

- A producer who is intentionally trying to trigger a payment will attempt to do so in such a way that there is minimal reduction in the reference margin.

- The sensitivity of next year's reference margin to the current year reference margin is disjoint. For large production margin losses that are not registered as a 5-year minimum, the impact on the reference is in proportion to one-third of the margin loss. However, if the loss is significant enough to be registered as a minimum, then there is no change. So the incentive is to make the current year's production margin loss sufficient to be registered as a 5-year minimum.
- The reference margin will ultimately be more sensitive to price decreases than output decreases. So someone who is intentionally attempting to trigger a payment (and have a minimal impact on the reference margin) has every incentive to avoid good price risk management and use negative movements in price as means to register a 5-year minimum production margin.
- In the case of a farm with multiple enterprises, the enterprise with the greater per unit production margin will give the greater incremental change in the reference margin (i.e. give the greater probability of registering the current year as the minimum). Thus, a desire to intentionally trigger claims without changing next year's reference margin would push farmers toward relatively risky enterprises.

5.1 Summary and Implications

There are differences in incentives between the proposed program and the current NISA and OFIDP programs, because of the following:

- Under OFIDP, the producer must lose 30% of average gross margin before a payment is made. This deductible limits opportunistic behaviour. The proposed program has no such deductible provision.
- Under NISA, an entitlement is created. It is generally not in the producer's best interest to orchestrate a loss to access an entitlement that will ultimately be his or her own regardless.

Thus, there are reasons to be more concerned about producers behaving perversely to intentionally trigger a payment under the proposed program than under the current programs. To the extent that farmers can influence production margin to intentionally trigger a loss, they have an incentive to make the loss sufficient to register that year's production margin as a five-year minimum, so that it is essentially removed from any influence over the next year's reference production margin. A producer could periodically (every 5 years) intentionally trigger a production margin loss of such a magnitude that a significant program payment would be received, without any loss of coverage through a reduction in the reference production margin.

- Under a simple average reference concept (such as the 3-year average reference gross margin applied under OFIDP) this incentive does not apply; production margin losses would be reflected in downward adjustments to the reference margin in subsequent periods.
- Producers have an incentive to manipulate the aspects of the production margin calculation that have the greatest probability of being registered as a minimum so that the next year's reference does not change. It appears that the easiest way to produce this outcome is to experience a reduction in production margin due to low prices. At a minimum, producers attempting to intentionally trigger a payment will not use price risk management tools.

- Because the proposed program is whole-farm in nature, with assistance available without a deductible, there is a reduced incentive to diversify under the proposed program. One potential manifestation of this is, if one's expectation of substantial payout for production insurance is once every five years, then the Olympic average provides a tremendous disincentive to enrol.
- Producers attempting to intentionally trigger a payment will tend to increase their involvement in riskier enterprises. Production margin losses created by relatively risky enterprises have a greater potential of being registered as minimums, leaving reference production margins unchanged.
- Under the current programs (notably OFIDP) the principal source of moral hazard is in manipulating expenses in the gross margin calculation that are largely overhead in nature. Under the proposed program, there is a greater potential that moral hazard behaviour on behalf of producers will lead to manipulations in agronomic practices.
- The foregoing criticisms could be largely removed if the reference margin were converted to a 5-year simple average from an Olympic average.

6.0 Interpreting the Proposed Program under Cash-basis vs. Accrual Accounting

To determine the role of accrual adjustments in interpreting comparisons between the current and proposed programs, a detailed analysis was made of farms that had applied to the OFIDP program consistently from 1998 to 2001. These farms provide a source of time series, accrual-adjusted records that can be used to compare the simulations of the proposed program on a cash basis and an accrual basis.

The database yielded 662 farms that applied to OFIDP consistently from 1998 to 2001. Table 6.1 below provides the breakdown of farms in the sample according to farm type. About two-thirds of the farms were cash-crop farms, with smaller numbers of cow/calf, hog, and vegetable/fruit farms. Only small numbers of tobacco and feedlot farms were available, and greenhouse, dairy, and poultry farms had to be combined into a single category. Thus, the sample is not representative, and is biased toward cash-crop farms.

Table 6.1 Breakdown of OFIDP Sample

Farm Type	Number of Producers
Cash Crop	424
Vegetables and Fruit	50
Greenhouse / Dairy / Poultry	4
Hogs	74
Cow/Calf	76
Feedlot (Beef)	12
Tobacco	22
Total	**662**

To determine the implication of cash vs. accrual records in interpreting the proposed program, the proposed program was simulated for the above farms using both cash records and accrual records. In each case, linkages to the production insurance database were maintained to account for receipts from production insurance.

Table 6.2 below presents the results of the simulation under cash and accrual based records. The table shows that across farm types and across years, the accrual-based payments under the proposed were about 18% higher than the payments triggered from cash-basis farm records. The implications of the accrual adjustments appear to vary on the basis of farm type. The accrual adjustments had the largest effect on feedlot and tobacco farms, causing an increase in program payments of over 30%. Most other farm types experienced increased payments of 15-19%. The greenhouse, dairy and poultry category experienced an increase in payments of only about 5% due to accrual adjustments; however, given the mix of types and small number of farms in this category, no generalization is possible.

Table 6.2 Payments Under Proposed Program on Cash vs. Accrual Basis, Total 1998-2001

Farm Type	Total Payments-Cash basis	Total Payments-Accrual basis	Percentage Change-Cash to Accrual
Cash Crop	$24,828,014	$28,557,836	15.0%
Vegetables and Fruit	$3,050,259	$3,565,996	16.9%
Green House / Dairy / Poultry	$438,878	$462,770	5.4%
Hogs	$6,720,873	$7,838,175	16.6%
Cow/Calf	$4,790,561	$5,680,244	18.6%
Feedlot (Beef)	$4,216,406	$5,492,655	30.3%
Tobacco	$1,151,989	$1,561,090	35.5%
Total	**$45,196,980**	**$53,158,765**	**17.6%**

The results presented in the table are significant because the proposed program will operate using accrual farm records. The implication is that in interpreting the results of the analysis derived from the NISA database (which is overwhelmingly populated with cash-basis information), the payments under the proposed program should be increased by about 18% to be reflective of the actual payments that would be made under the proposed program.

7.0 Supply Managed Industries Under the Proposed Program

The purpose of this section is to provide a description and implications of the operation of the proposed program for supply managed products. Under the current NISA program, supply managed commodities are not eligible commodities. Producers of supply managed products are eligible for support under OFDIP. The defence of the current programs and the treatment of farms with supply managed products relates to their need for stabilization and disaster coverage. Volatility in price as a source of instability in incomes is not the threat in supply managed industries that it is in other sectors. Supply managed industries employ a variety of measures that prevent a surging supply or declining demand from adversely affecting price. Similarly, increases in cost are at least partially considered in arriving at prices. Thus, NISA coverage has not been extended to supply-managed products, and through OFIDP (as with all farm types), income coverage is provided, but with the equivalent of a 30% deductible provision.

The proposed program will be available for farms that produce supply managed commodities. Because it replaces NISA (which has not been extended to supply managed farms), OFIDP and Market Revenue Insurance, the proposed program applies to supply managed farms, but with some refinements. This section provides an analysis of these refinements and the implications for supply managed industries.

7.1 Needs of Supply Managed Sectors

As discussed above, the needs for stabilization and disaster relief (unlike other 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 OFDIP. However, OFDIP only covers losses of more than 30%; it is likely that many production losses are of less than 30% and are thus not covered, despite the fact that the losses are substantial.

A second source of need relates to diversified farms with supply managed products under the current programs. Under the current NISA, sales of supply managed products are ineligible sales, while other farm sales (such as cash crops, for example) are eligible sales. However, some of the direct expenses related to ineligible sales are either eligible purchases or eligible expenses. In many cases, the magnitude of eligible purchases or expenses associated with supply managed product (such as purchased feed) is large relative to eligible sales, making the effective coverage for eligible sales small (or even negative). This masks the potential need for stabilization on the sales of non-supply managed products from farms that have supply-managed product sales.

Table 7.1 below provides some context for the second source of need for stabilization. The table presents the sources of total farm revenue on farms that reported sales of supply managed production in NISA. The table shows that, across all sales categories, sales of supply managed product formed about 55% of farm sales, with cattle sales forming 22%, sales of grain and oilseeds 14%, and sales of other products about 10%. There was a sharp distinction in diversification according to sales level. The table indicates that, at an aggregate level, farms with $0-$25,000 in supply managed sales are not small farms; only 7% of sales came from supply managed products, with the majority in cattle, grain/oilseed, or other farm sales. For farms with supply managed sales above $25,000, the case is entirely different. For these farms, sales of

supply managed products are the largest single source of farm sales. For the most part, as the farm size increases (level of sales increases) farms become more specialized in sales of supply managed product. Thus, farms with supply managed sales are highly diversified into other enterprises, especially at lower sales levels.

Tables 7.2 and 7.3 present a breakdown of the data in Table 7.1 into dairy and poultry farms. The trends noted above are reflected in both the dairy and poultry data. In particular, the farms at the lowest levels of supply managed sales are highly diversified. Even at the lowest level of supply managed sales, the farms with dairy sales of less than $25,000 have total farm sales of almost $100,000. In contrast, the poultry farms with less than $25,000 in supply managed sales have total farm sales of only about $17,000.

Table 7.1 Diversification of Farms With Supply Managed Sales Based on 2001 Tax Year NISA Data

Income Range (Sales Exclusively from Supply Managed Sector)	No. of Participants	Sales from SM Sectors	Sales of G&O	Sales of Cattle	Sales from All Other Sector*	Total Sales (Sales from all sectors including SM)
$ 0 to $25,000	2,603	5,324,561	16,960,900	33,124,323	21,993,722	77,403,506
		6.9%	**21.9%**	**42.8%**	**28.4%**	**100.0%**
$25,000 to $50,000	288	11,245,243	4,076,084	7,897,554	2,833,607	26,052,489
		43%	**16%**	**30%**	**11%**	**100%**
$50,000 to $100,000	719	53,616,651	13,994,184	17,333,812	7,795,386	92,740,034
		57.8%	**15.1%**	**18.7%**	**8.4%**	**100.0%**
$100,000 to $250,000	977	152,118,620	29,601,534	59,352,414	14,593,586	255,666,154
		59.5%	**11.6%**	**23.2%**	**5.7%**	**100.0%**
$250,000 to $500,000	356	123,855,003	29,142,171	39,754,007	18,216,280	210,667,461
		58.8%	**13.8%**	**18.9%**	**8.6%**	**100.0%**
$500,000 to $1,000,000	92	59,665,921	13,176,496	7,871,108	4,258,050	84,971,575
		70.2%	**15.5%**	**9.3%**	**5.0%**	**100.0%**
> $1,000,000	18	23,828,649	3,574,535	3,157,784	7,299,356	37,860,324
		62.9%	**9.4%**	**8.3%**	**19.3%**	**100.0%**
Total	**5,053**	**429,654,651**	**110,525,905**	**168,491,003**	**76,989,988**	**785,361,549**
% of Sales		**54.7%**	**14.1%**	**21.5%**	**9.8%**	**100.0%**

* includes sales from hogs, tobacco, vegetables & fruit and all other sectors

Note: % of sales by sector and by SM income range is shown underneath the total sales in each cell.

Table 7.2 Diversification of Farms With Dairy Sales Based on 2001 Tax Year NISA Data

Income Range (Income Exclusively from Dairy Sector)	No. of Participant	Sales from Dairy	Sales from G&O	Sales from Cattle	Sales from All Other Sector*	Total Sales(Sales from all sectors including SM)	Average Farm Sales
$ 0 to $25,000	236	1,821,465	3,877,108	14,914,118	2,227,334	22,840,025	96,780
		8.0%	**17.0%**	**65.3%**	**9.8%**	**100.0%**	
$25,000 to $50,000	118	3,528,447	1,896,678	4,305,529	802,632	10,533,286	89,265
		33.5%	**18.0%**	**40.9%**	**7.6%**	**100.0%**	
$50,000 to $100,000	255	15,780,815	3,552,129	7,124,427	1,996,336	28,453,707	111,583
		55.5%	**12.5%**	**25.0%**	**7.0%**	**100.0%**	
$100,000 to $250,000	1,393	161,076,695	26,100,479	56,514,553	9,363,295	253,055,022	181,662
		63.7%	**10.3%**	**22.3%**	**3.7%**	**100.0%**	
$250,000 to $500,000	762	97,790,486	25,555,621	46,169,602	7,584,853	177,100,562	232,415
		55.2%	**14.4%**	**26.1%**	**4.3%**	**100.0%**	
$500,000 to $1,000,000	144	51,717,524	8,769,291	8,265,713	1,732,662	70,485,190	489,480
		73.4%	**12.4%**	**11.7%**	**2.5%**	**100.0%**	
> $1,000,000	16	14,593,753	3,295,183	3,264,140	7,296,484	28,449,560	1,778,098
		51.3%	**11.6%**	**11.5%**	**25.6%**	**100.0%**	
Total	**2,924**	**346,309,188**	**73,046,490**	**140,558,084**	**31,003,596**	**590,917,358**	**202,092**
% of Sales		**58.6%**	**12.4%**	**23.8%**	**5.2%**	**100.0%**	

* includes sales from hogs, tobacco, vegetables & fruit and all other sectors

Note: % of sales by sector and by dairy income range are been shown underneath the total sales in each cell.

Table 7.3 Diversification of Farms With Poultry Sales Based on 2001 Tax Year NISA Data

Income Range (Income Exclusively from Poultry Sector)	No. of Participant	Sales from Poultry	Sales from G&O	Sales from Cattle	Sales from All Other Sector*	Total Sales(Sales from all sectors including SM)	Average Farm Sales
$ 0 to $25,000	1,582	4,232,086	5,231,732	13,805,172	3,644,426	26,913,416	17,012
		15.7%	**19.4%**	**51.3%**	**13.5%**	**100.0%**	
$25,000 to $50,000	60	1,823,565	2,717,615	1,948,768	1,930,502	8,420,450	140,341
		21.7%	**32.3%**	**23.1%**	**22.9%**	**100.0%**	
$50,000 to $100,000	87	5,280,027	3,642,183	2,444,978	2,211,196	13,578,384	156,073
		38.9%	**26.8%**	**18.0%**	**16.3%**	**100.0%**	
$100,000 to $250,000	168	22,418,585	6,575,786	4,435,671	8,159,410	41,589,452	247,556
		53.9%	**15.8%**	**10.7%**	**19.6%**	**100.0%**	
$250,000 to $500,000	185	27,509,659	15,383,374	3,190,826	13,959,454	60,043,313	324,558
		45.8%	**25.6%**	**5.3%**	**23.2%**	**100.0%**	
$500,000 to $1,000,000	42	21,053,329	3,658,839	1,134,862	1,927,790	27,774,820	661,305
		75.8%	**13.2%**	**4.1%**	**6.9%**	**100.0%**	
> $1,000,000	6	13,759,435	997,983	821,083	541,794	16,120,295	2,686,716
		85.4%	**6.2%**	**5.1%**	**3.4%**	**100.0%**	
Total	**2,130**	**96,076,689**	**38,207,513**	**27,781,361**	**32,374,573**	**194,440,136**	**91,286**
% of Sales		**49.4%**	**19.7%**	**14.3%**	**16.7%**	**100.0%**	

* Includes sales from hogs, tobacco, vegetables & fruit and all other sectors

Note: % of sales by sector and by poultry income range are shown underneath the total sales in each cell.

7.2 Support to Supply Managed Industries Under Current Programs

To interpret the implications of the proposed program on supply management, it is useful to consider the support that farmers with sales of supply managed commodities receive under current programs. Farmers who produce supply managed commodities are eligible for payments under OFIDP, for NISA benefits on sales of non-supply managed products, for crop insurance, and for MRI on sales of eligible products. Table 7.2 below gives the magnitude of payments to producers with sales of supply managed products that constituted the majority of farm sales over the period 1998-2001. The table shows that support to farms with supply managed sales under current programs has been increasing. Total support paid to farms with supply managed production was over $12 million in 2001, with the majority of support paid to dairy. Support under OFIDP has been relatively steady over the period. However, government matching shares of NISA have more than doubled, and MRI payments increased almost six fold between 1998 and 2001.

Table 7.4 does not account for support of farms that have sales of supply managed products as a minority of total farm sales. In 2001, there were 2,102 dairy and poultry farms in this category that received total NISA government matching shares of $4,723,928.

Table 7.5 below presents the NISA Fund 1 and Fund 2 balances for farms with sales of supply managed products for the 2001 tax year broken down by supply managed sales level. The table shows that producers with supply managed sales had $63 million in NISA accounts in 2001. The majority of this balance was held by farms in the $100,000-250,000, $0-25,000, and $250,000-$500,000 sales categories. As indicated above, the farms with less than $25,000 in sales are very different than those above $100,000 in sales, although they are not small farms.

Also apparent from Table 7.5, is that the NISA accounts held by producers with supply managed sales, in aggregate, are not being drawn down. This can be seen by comparing the Fund 2 balance with the Fund 1 balance, within a sales category. Since withdrawals must occur from Fund 2 first, if stabilization needs were triggering withdrawals, one would expect Fund 2 balances to be less than Fund 1. Based on this logic, it appears that only the farms in the $25,000 to $50,000 in supply managed sales have been triggering NISA withdrawals.

Table 7.4 Payments Under Current Programs, Farms with Supply Managed Sales>51% Farm Sales

	1998		1999		2000		2001	
	Dairy	**Poultry**	**Dairy**	**Poultry**	**Dairy**	**Poultry**	**Dairy**	**Poultry**
NISA	1,694,056	365,627	2,156,736	460,977	2,397,328	454,013	3,458,698	995,491
MRI	566,682	141,671	2,974,375	743,594	5,087,727	1,271,932	4,914,961	1,228,740
OFIDP	1,550,000	331,000	1,171,000	342,000	1,173,000	182,000	1,317,000	411,000
Total	3,810,738	838,298	6,302,111	1,546,571	8,658,055	1,907,945	9,690,659	2,635,231
Total SM	4,649,036		7,848,682		10,566,000		12,325,890	

Source: Ontario NISA database

Table 7.5 NISA Fund Balances For Supply Managed Operations, 2001 Tax Year

Income Range (Income Exclusively from Supply Managed Sector)	No. of Participant	Fund 1 Total (Producer)	Fund 2 Total(Govt.)	Total Fund Balance	Avg. Fund 1	Avg. Fund 2	Avg. Total Fund
$ 0 to $25,000	2,603	7,237,105	7,596,228	14,833,333	2,780	2,918	5,699
		48.8%	**51.2%**				
$25,000 to $50,000	288	1,595,660	1,505,547	3,101,207	5,540	5,228	10,768
		51.5%	**48.5%**				
$50,000 to $100,000	719	4,522,117	4,989,382	9,511,499	6,289	6,939	13,229
		47.5%	**52.5%**				
$100,000 to $250,000	977	7,760,071	8,364,217	16,124,288	7,943	8,561	16,504
		48.1%	**51.9%**				
$250,000 to $500,000	356	6,712,572	7,260,582	13,973,154	18,856	20,395	39,250
		48.0%	**52.0%**				
$500,000 to $1,000,000	92	2,289,387	2,777,468	5,066,855	24,885	30,190	55,075
		45.2%	**54.8%**				
> $1,000,000	18	535,061	627,237	1,162,298	29,726	34,847	64,572
		46.0%	**54.0%**				
Total	**5,053**	**30,651,976**	**33,120,664**	**63,772,634**	**6,066**	**6,555**	**12,621**
% of Sales		**48.1%**	**51.9%**				

Note: % distribution of total fund balances by producer and govt. fund are shown underneath the each cell of fund 1 and fund 2.

Table 7.6 NISA Fund Balances For Dairy Operations, 2001 Tax Year

Income Range (Income Exclusively from Dairy Sector)	No. of Participant	Fund 1 Total (Producer)	Fund 2 Total (Govt.)	Total Fund Balance	Avg. Fund 1	Avg. Fund 2	Avg. Total Fund
$ 0 to $25,000	236	1,126,460	1,253,037	2,379,497	4,773	5,309	10,083
		47.3%	**52.7%**				
$25,000 to $50,000	118	440,769	452,060	892,829	3,735	3,831	7,566
		49.4%	**50.6%**				
$50,000 to $100,000	255	1,088,099	1,292,322	2,380,421	4,267	5,068	9,335
		45.7%	**54.3%**				
$100,000 to $250,000	1,393	7,496,198	8,114,038	15,610,236	5,381	5,825	11,206
		48.0%	**52.0%**				
$250,000 to $500,000	762	6,144,919	6,820,692	12,965,611	8,064	8,951	17,015
		47.4%	**52.6%**				
$500,000 to $1,000,000	144	1,674,761	2,212,934	3,887,695	11,630	15,368	26,998
		43.1%	**56.9%**				
> $1,000,000	16	505,486	624,681	1,130,167	31,593	39,043	70,635
		44.7%	**55.3%**				
Total	**2,924**	**18,476,695**	**20,769,767**	**39,246,456**	**6,319**	**7,103**	**13,422**
% of Sales		**47.1%**	**52.9%**				

Note: % distribution of total fund balances by producer and govt. fund are shown underneath the each cell of fund 1 and fund 2.

7.3 Operation of the Proposed Program on Farms with Supply Managed Products

As identified above, there are refinements in the application of the proposed program to supply managed programs. Implicitly, the program design refinements relate to the proportion of the farm's reference production margin derived from supply managed product sales. The intent is to prevent payments from being made based on losses in supply managed enterprises on the farm (as distinct from other enterprises) in the stabilization layers. Payments are to be made based on losses in non-supply managed enterprises in the stabilization layers, with payments to both supply managed and non-supply managed enterprises in the disaster layer. To accomplish this, the following design is employed:

- The deposit levels, reference production margin, and payment cost shares are as described above, for all other commodities.
- Based on history, farm revenues are broken down into supply managed and non-supply managed sources.
- Within the two stabilization layers of income loss, payments triggered would be pro-rated based on the share of non-supply managed product revenue.
- For losses that reach the disaster layer, there would be no pro-rating; the full value of the payment would be triggered, with no pro-rating in any of the layers.

Consider a stylized example. Suppose a farm had a historic production margin of $100,000, 75% sales received from supply managed product, and 25% from sales of non-supply managed product. Assume the farm had $14,000 on deposit, so it was effectively covered for a 70% loss.

If the farm experienced a 20% loss in production margin, the following would occur:

- A program claim of $20,000 would be triggered. Ordinarily, the $5000 loss below $85,000 would be paid $3500 from government and $1500 from the producer deposit. The loss between $85,000 and $100,000 would be evenly split $7500 each between producer and government. The farm would receive $11,000 from government and deduct $9000 from its own account.
- In this case however, the program claim would be pro-rated according to the 25% share of non-supply managed sales. The $5000 loss below $85,000 would be pro-rated at 25%, so the producer would receive $875 from government and withdraw $375 from his deposit. The loss between $85,000 and $100,000 would be evenly split $1875 each between producer and government
- Thus, the farmer would receive $1875+$875 = $2750 from government and deduct $1875+$375 = $2250 from his deposit. The farmer would have $11,750 ($14,000 – $2250) remaining in his account.

Suppose, instead, that the farm experienced a loss of 40%. Then the situation changes markedly:

- There is no pro-rating of the payments, because the loss reaches the disaster layer. The farmer receives $26,000 (or 65% of the total loss) in government payments and receives 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.

Thus, the operation of the program and the support paid changes markedly based on the dimension of loss. Furthermore, net of program payments, there are ranges of loss at which the producer is better off having an increased loss of production margin and triggering additional program payouts. This is illustrated in Figure 7.1 below. The figure reflects results for a farm with $100,000 reference production margin, 75% of farm sales from supply managed product, and $14,000 on deposit (which protects 70% coverage, as described above). The figure shows that, moving from right to left on the production margin scale (so losses are increasing), the production margin with program payments (from government) takes the production margin with the proposed program above the production margin without protection, and that the production margins with and without the proposed program are downward sloping.

However, as the losses cross into the disaster layer, the production margin with the proposed program kinks up. This is because, once losses take the production margin into the disaster level, the pro-rating component disappears. Looking at Figure 7.1, the apparent implication is that the producer's production margin with the proposed program is largest for small losses down to between $85,000 to $90,000, but then, because of the kink, at levels of $65,000. Thus, a farmer would be better off with a production margin of $69,000 than with a production margin of $75,000. This represents a moral hazard problem within the program.

- Interaction between proposed program and COP formulae
- Splitting farms into SM and non-SM segments
- Animal health catastrophes

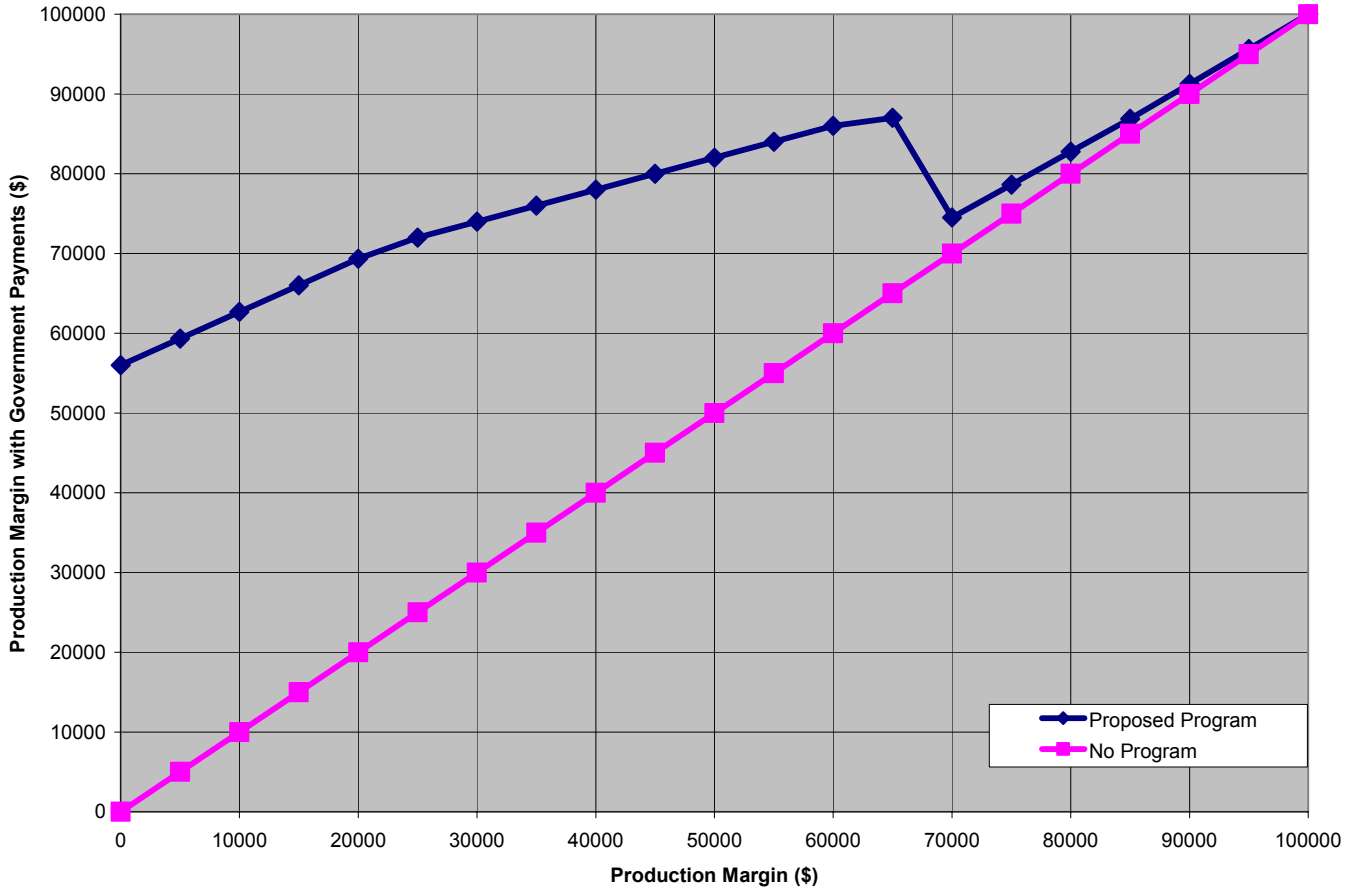
7.4 Trade Risk and Program Design

Given the moral hazard problem discussed above, the obvious question to ask is whether the program can be re-designed for supply managed commodities. The rationale for the design of the proposed program for farms with supply-managed sales is the following:

- According to federal government trade experts, once losses have penetrated the disaster tier, all payments made by government (in the disaster and stabilization layers) would be ruled "green" under the WTO.

- In contrast, if the program involved pro-rating in the stabilization layers when the losses had penetrated the disaster layer, the payments in the disaster layer would be ruled green, but payments in the stabilization layers would be ruled "amber" under WTO.

Figure 7.1 Program Payments triggered According to Production Margin Loss for a Farm With Supply Managed Product Sales



Thus, the design allows the proposed program to be more "trade friendly". Also, the design allows the producer to make full use of their deposit when losses push income into the disaster tier. The pro-rating otherwise limits the access the producer has to deposits when losses fall within the stabilization layers.

7.5 Program Design Alternatives for Supply Management

The discussion above suggests that the proposed program contains fundamental design difficulties as it relates to supply management. The apparent problems with the design under the proposed BRM program are the following:

- Moral hazard related to pro-rating within stabilization tiers relative to losses in the disaster layer
- Funding for stabilization of non-supply managed enterprises on farms with supply managed production relative to those without supply managed production
- Perceived or real trade threats resulting from payments to farms with supply managed production

Alternatives to the design contained in the proposed BRM program must address these issues.

In this regard, several alternatives are evident. These are presented in Table 7.7 below. The first alternative would reinstate the pro-rating in the stabilization layers for margin losses that penetrate the disaster layer. This would clearly address the moral hazard problem, and effectively remove the "kink" depicted in Figure 7.1. Producers that sustained a margin loss would not have the incentive to intensify the margin loss into the disaster layer as a means to recover the pro-rated payments in the stabilization layer. However, it does not address the fact that, for a given loss in a non-supply management enterprise, a farm with supply managed production would only receive a fraction of the portion of the payment that a farm with only non-supply managed production did. From the trade retaliation perspective, it would appear that this alternative would be an improvement. This is because it would pay out less to farmers that triggered payments in the disaster layer compared with the proposed design; however, it would do little in terms of matching payments with the enterprise that triggered it. Stabilization payments could be triggered by either supply managed or non-supply managed enterprises in the stabilization tiers, with the pro-rating applying regardless.

The second alternative is the moral equivalent of the current OFIDP program converted to a production margin basis with eligibility for crop insurance and an MRI replacement. It would clearly reduce the moral hazard problem, because it only provides payments below 70% of reference. So, it has a 30% "deductible". It would also reduce the trade threat, because it would only trigger a payment below 70% of reference. The MRI replacement could be conceived as a potential trade irritant, but it is not a trade threat to supply management *per se*. However, this approach would not provide any stabilization support for non-supply managed enterprises on farms with supply managed production. This is in clear conflict with the second bullet above.

The third alternative would see only costs and returns from non-supply managed enterprises used in the production margin calculation. This would reduce the moral hazard problem relative to the BRM proposal, because there would be no incentive to intensify a production margin loss.

Table 7.7 Alternatives for Supply Management Under Proposed Program

1. Re-instate the pro-rating in the stabilization layers for claims that penetrate the disaster layer
2. Convert current OFIDP coverage to production margin basis, with an MRI replacement and crop insurance
3. Make supply management ineligible for proposed program, non-SM enterprises eligible

However, it is evident that there could be significant potential for moral hazard or manipulation of costs to trigger a payment, particularly when the supply-managed enterprise is the customer for the product of the non-supply managed enterprise. For example, on a dairy farm with cash crop sales, under this approach it would appear that if hay acreage were expanded (with a corresponding reduction in cash crop acreage) depending upon the hay price quoted to the dairy enterprise, a payment could be triggered. This would particularly be the case if the hay were transferred at cost. There would also be a tendency to transfer expense items from the dairy enterprise to the crop enterprise opportunistically. Conceivably, these distortions could be managed and enforced by program administration, but probably only at additional expense. It appears that the supply managed boards' proposal would give equivalent protection for non-supply managed sales regardless of whether it occurs on a farm with supply managed sales or not. It would also seem that the supply managed boards' claim that their proposal provides a clear indication that support can be more closely related to products with losses and not paid to supply managed enterprises is probably correct. At the same time, supply managed enterprises would lose any support in the disaster layer.

7.6 Ontario Supply Management Boards' Proposal

Supply management groups have indicated concerns about the proposed program. These include:

- Lack of recognition of the three pillars of supply management in the APF
- Perceived risks of trade retaliation resulting from inclusion of supply management in the BRM program

The supply management boards feel that the three pillars of supply management (import controls, production controls, price setting) provide adequate support for supply managed enterprises. As such, under their proposal, supply management commodities would be excluded from the proposed program. Non-supply management enterprises on farms with sales of supply managed products would be eligible for the proposed program. This design would be administered by either:

- Producers operating supply management enterprises as distinct business entities from non-supply management enterprises, subject to audit by program administration, or
- Pro-rate sales and eligible expenses on farms that have supply managed and non-supply managed sales based on industry average production margin ratios for supply managed commodities.

As described, the supply management boards' proposal is essentially equivalent to alternative 3 above.

As a consequence of this design, the supply management boards argue that a penalty exists against non-supply management enterprises on farms with supply managed sales under the proposed BRM design will be removed. They also argue that their proposed design more closely relates program payments to individual products (rather than whole-farm, on the basis of the majority of sales), which would be more defensible in the face of trade retaliation.

7.7 Observations

It appears that any of the alternatives described in sections 7.5 or 7.6 would improve upon the design in the proposed BRM program. However, none of them appears to entirely address the three concerns described above. Under the first design alternative, non-supply managed products produced on farms with supply managed sales are at a disadvantage relative to the same products produced on farms without supply management. This is also true under the second alternative. The third alternative effectively puts non-supply managed products on equal footing regardless of whether the farm producing them has supply managed sales; however this comes at the cost of lost disaster support for supply managed enterprises, and some potential for opportunistic allocation of costs. It appears that those representing supply management favour the third alternative.

The only question about the third alternative is whether it may call into question the "whole farm" concept, thereby jeopardizing another commodity in a trade action. In other words, if dairy and poultry were not included in the program, then another country may question whether the program is generally available to all farms in Canada in a trade action against another product. This would make the program amber, and therefore, countervailable. If it is clear that this is not a risk, then we would favour making supply managed commodities ineligible for support under the program, as the supply management boards have suggested. If not, then we would recommend that they be eligible for the disaster portion only, and payments be pro-rated in the stabilization tiers, as is currently done.

8.0 Potential for Trade Disputes Under Proposed Program

Among the concerns with any new safety net program, is its potential to cause retaliatory trade actions from other countries. The purpose of this section is to consider the potential for the proposed program to cause trade disputes, relative to current programs. Section 8.1 considers the distribution of support levels between "green" and "amber" categories. The potential for the proposed program to trigger countervailing duty action from the US is considered in Section 8.2.

8.1 Green and Amber

As indicated above, concern that has been expressed about the proposed Business Risk Management program is that it may invite a trade dispute. This concern has at least three elements:

- The distinction between "green" and "amber" payments and Canada's limits on aggregate support. AAFC proposes to change the definition of what is green and what is amber in reporting payments to farmers under the new program.
- A possible US countervailing duty action.
- Possible implications for supply managed commodities because of the definition of green and amber. (This issue was discussed in section 7.0).

The first of these issues stems, in part, from the definitions of what is green and what is amber under the proposed programs, a distinction defined under the 1995 WTO agreement. ***Green*** instruments are those that governments could continue to use without having to reduce their expenditure, and without concern about countervailing duties being imposed by importers of the product whose producers are the beneficiaries in the domestic market. ***Amber*** instruments are those for which government spending was supposed to be reduced after the 1995 agreement, and which remained countervailable[8]. Governments are required to report to the WTO each year the amount of expenditure on amber instruments. They each have a limit on the amount of money that can be spent on amber instruments, so the reporting mechanism is the way that the WTO monitors compliance with the agreement.

A government program that directly compensates farmers for "losses" is defined as green under the 1995 WTO agreement if two requirements are met:

- Compensation must be generally available for losses to the entire farm, not to an individual commodity.
- Compensation must be for losses of 30 percent or more of "income" during a base period.

Based on these requirements, Canada historically classified payments under NISA as amber and those under the Disaster program as green. This is because, by definition, NISA withdrawals from Fund 2 could be made in a year when a farmer's net income was lower than in a reference period by less than 30%. Disaster payments were regarded as green because they were made

[8] This is true under the so-called "peace clause", but it is due to expire at the end of 2003.

when income in a given year declined by more than 30% from a reference period[9]. An important distinction is that, under the existing programs, payments under the disaster portion restored producers' incomes to 70% of the reference margins.

The proposed program essentially integrates the disaster and NISA concepts into a single new structure. Therefore, the definitions of amber and green are not so clear because a loss of more than 30% now triggers a payment that can restore a farmer to 100% of a reference. For example, a loss of 40% of the reference margin will trigger a payment that would restore a farmer's income to 100% of the reference, so long as the farmer's deposit is sufficient. So the issue arises with the proposed program as to whether, when a payment is triggered by a loss greater than 30% of the reference, the payment is green or amber.

AAFC has chosen, on the basis of a legal opinion, to argue that the definition should be based on *what triggers a payment.* Therefore, a payment triggered by a loss of less than 30% remains amber. But a payment triggered by a loss of more than 30% is regarded as green, whether the payment is in the portion of the program that is shared 80/20, or the portions that are shared 70/30 or 50/50.

This means that a higher portion of the proposed program will be regarded as green if Canada's definition is accepted. The upside of this is that Canada will be better able to ensure that its Aggregate Measure of Support limit is met. We estimated the difference in the simulation of the proposed program for Ontario, as reported in section 3.0, compared to payments from the existing program under NISA and MRI. Green payments with the current programs were for about $123 mil from 1998 – 2001. Under the proposed program, they are estimated at $455 mil for the same period, based on the NISA database.

The issues are whether this is the correct definition of green and amber and, if not, what might be the consequences. The first question is not answerable according to information from Canadian trade officials. To date, each country has interpreted the WTO rules and submitted their data accordingly. To date, no country has appealed another's definition. Moreover, the European Union recently changed the nature of its farm programs to decouple payments from production. This will materially redistribute its payments to farmers from amber to green. This decision is regarded as a major breakthrough that will lead to progress in the current round of negotiations. The proposed Canadian program is less questionable than the EU's. While there are no guarantees, we do not perceive that there is a substantial risk.

Another way to look at this question is to estimate the impact if the definition is questioned. If so, then we assume that Canada would need to amend its definition to include only the portion of payments triggered by losses greater than 30% of the reference margin that bring farmers back to 70% of the reference. It was possible to estimate this in the simulations for the proposed program. The simulation shows that, with this alternative definition, the estimated green payments for Ontario would have been $224 million from 1998 – 2001.

[9] Of course, income was measured on a cash basis for NISA, and on a modified accrual basis for the disaster component, so less than or greater than 30% was of two different levels of income.

8.2 The Countervail Issue

The countervail issue is much less about the definition of green and amber than about the distribution of payments among commodities. The idea of countervail under international law is that an importing country may impose a tariff on an exporter if the exporting country provides subsidies to its producers, the effects of which causes injury to producers in the importing country.

One way to avoid countervailing duties is to provide financial assistance through whole-farm programs – i.e. program whose payments are not triggered by factors that occur in a commodity's market. With a whole-farm program, it is perceived that payments do not encourage production of a specific product. For example, if a countervail action was initiated against a grain commodity, there is little doubt that the Market Revenue Insurance program would be countervailable because its payments are triggered by events in the grain markets. With a NISA or BRM program, it is much more difficult to countervail.

Nevertheless, Canada has experienced a number of countervail cases brought by the US, and it is important to understand US practice. A case in point was the countervail case brought against Canada by the US on beef and cattle. In their final determination for part of this case, the US Commerce Department explains its concept of "disproportionate use" of a program. The relatively vague explanation amounts to a case-by-case examination to determine whether an industry under examination obtains more benefits from a program than others relative to the importance of the industry. In addition, a general program would likely be countervailable if the triggering mechanism for one industry was different than for another.

There is also some unofficial information to suggest that the US tends to judge a general program as countervailable if around 15% of its benefits go to an industry that is being investigated.

All of this suggests that the proposed BRM program is an issue if it materially changes the distribution of benefits among industries. If it does then it may increase the likelihood of being countervailed if an investigation is launched. It is possible, at least for the Ontario data, to obtain a view of the risk of countervail. Again, returning to the simulation in section in section 3.0 it is possible to compare the distribution of benefits from the actual and proposed programs. The estimates of the share of payments to various commodity groups is shown in Table 8.1 for the period 1998 - 2001.

The data show that the proposed programs would increase the portion of benefits that go to the beef and grain industries, while the proportion to horticulture falls. The differences are relatively minor and do not appear to be enough different to have a material impact on the interpretation.

A final thought on this subject is that the proposed program's structure may have an advantage in avoiding countervail. In the event that the peace clause expires at the end of 2003 and is not renewed, there is no guarantee that green programs will not be countervailed. OFIDP was green. As the simulations of programs show, farms in most industries can trigger payments in the upper 30% of the range of the reference margin at any time. However, payments triggered

for losses greater than 30% tend to occur either because of a disaster on an individual farm, or because of an industry disaster. Therefore, specific industries tend to dip into the region greater than 30% losses only periodically because of events in their business cycles. Therefore, the proportion of benefits accruing to individual industries from the disaster portion is much more variable than the proportion from the combined program. By integrating the disaster and stabilization portions, the proposed BRM may actually reduce the risk of countervail.

Table 8.1 Estimate of the Share of Payments to Various Commodities Under the Current and Proposed Programs, 1998 – 2001 NISA Participants

	Current Program		Proposed Program	
	Total Payments	**Share of Total Payments**	**Total Payments**	**Share of Total Payments**
Field Crops	$322,605,036	50.2%	$342,973,066	51.2%
Vegetables and Fruit	$91,510,268	14.2%	$83,854,979	12.5%
Green House (F&V)	$11,647,273	1.8%	$10,668,740	1.6%
Poultry	$3,224,488	0.5%	$5,151,661	0.8%
Dairy	$13,227,791	2.1%	$9,632,345	1.4%
Swine	$82,500,427	12.8%	$68,820,261	10.3%
Beef	$46,476,698	7.2%	$54,342,383	8.1%
Feedlot (Beef)	$21,485,520	3.3%	$35,815,718	5.3%
Tobacco	$49,920,335	7.8%	$58,832,107	8.8%
Total All Sectors	**642,597,835**	**100.0%**	**670,091,261**	**100.0%**

8.3 Summary

The foregoing discussion suggests that the proposed program is not likely to be any less "green" than its predecessors. At most, the objection could be raised that payments in the stabilization portion of the program that are triggered by losses in the disaster portion are amber. Even if this question was raised and Canada lost, the proposed program would continue to have a higher portion of green payments. Given the major changes that are about to occur in the EU's programs, and the fact that to date all countries have been allowed their own interpretation of their own programs, it is doubtful that any objection would be raised.

Similarly, there seems to be very little additional issue about countervailability of the proposed program. Estimated proportions of payout under the proposed program would not materially change the distribution and, therefore, would not likely cause a difference in the interpretation by the US in terms of "disproportionate use".

9.0 Impact of Other Jurisdictions' Farm Policies Under the Proposed Program

Economic injury because of other countries', especially US, agricultural policy is a major preoccupation of many people in the Canadian grain industry. This type of injury can occur on a one-off basis, such as dumping, or it can occur systematically over time. The latter would occur if subsidies in a competing nation encourage excess production that systematically drives down prices relative to what they would have been absent the subsidy.

Members of the grain industry in Canada have long held that they suffer from systematic injury. Their argument results from the high levels of subsidy that continue to be paid by the US and EU governments (Table 9.1) to grain producers. The table shows the percentages that subsidies represented of total revenues before and after the most recent round of WTO trade negotiations. They also show that subsidies were nearly as great after as before. While there are many other factors that affect prices, subsidies by these two powers are certainly among them. Part of the reason for the Market Revenue Insurance program is to deal with this problem. The MRI does so by making payments to farmers when the price in Canada is below a 15-year moving average. The industry has concerns that the BRM will not be effective in dealing with systematic injury as well as the MRI does.

Table 9.1 Producer Subsidy Equivalents for the US and the EU, 19886-1988 and 1999-2001, Percentage

	United States		European Union	
	1986-1988	1999-2001	1986-1988	199-2001
Wheat	49	46	52	48
Maize	38	31	52	40
Oilseeds	8	26	59	39

It is not obvious how to make a conclusion about this allegation. It is clearly true the MRI addresses prices in the industry directly. However, farms are rarely specialized in one or two enterprises. Therefore, the effects of interaction among commodities on a farm's risk profile are important, and MRI does not account for this.

Moreover, the use of a 15-yr average is not necessarily a better or worse basis than some other base – whether it is good or not depends on what has happened recently. For example, corn prices were relatively high in 1996 and 1997. Because of lags and inertia, these prices will never have a large impact on a 15-yr average, but their effects will be in the average for 15 years. On the other hand, they will have a large impact on the support prices until 2002 for the five-year average, but will not affect them at all thereafter. Of course, the same is true of exceptionally low prices.

In addition, to the foregoing is the practical question of how much relationship grain prices and production margins have to each other. If they are highly correlated, then a price stabilization

program such as MRI would be an effective stabilization tool. If they are not correlated, then an instrument such as MRI would not be effective.

Accordingly, we tested the correlation between grain prices and production margins. The procedure used is as follows.

The NISA database for Ontario of 13,757 accounts has 7,452 cash crop accounts. Of the 7,452, a sample of 5,347 was chosen because more than 75% of their total farm revenue is from the sale of cash crops. The production margins for each of these farms were calculated for each of 1994 through 2001. Each farm's production margin was expressed as a percentage of the farm's sales and then expressed as production margin per $1000 of farm sales.

For a representation of the crop market price, average Ontario yields and prices for each of 1994-2001 for corn, soybeans and wheat were multiplied to estimate per acre revenue for each crop. Then, based on a 2:2:1 corn:soybean:wheat acreage allocation with normal rotation, crop revenue per acre was estimated for 1994-2001. Using the latter as a price variable, correlation coefficients were estimated between each farm's production margin over this period and the crop basket's revenue per acre. The simple average correlation coefficient was -0.1573. Subsequently, the per acre revenue estimate was normalized for yield by using the 1994-2001 average yield and annual prices. The resulting estimates were then correlated with each farm's production margin over 1994 – 2001 and averaged. The resulting coefficient was -0.1553.

Correlations were also calculated between farm sales - i.e. total revenue – and the two estimates of per acre revenues (using actual yields and normalized yields). The resulting correlations were -0.1751 and -0.2234, respectively.

These results say that, from 1994 – 2001 there was very little correlation between either farm sales or production margins for Ontario grain farms and annual average prices of corn, soybeans and wheat. In fact, the correlations were weakly negative: ie sales and margins were higher when prices were lower. This surprising result likely occurs over 5,400 farms for a number of reasons, including: even relatively specialized grain farms are relatively diversified; they don't sell on annual averages, but rather have a wide array of ways to sell; they have flexibility in the timing of sales.

Whatever the cause, the data show little correlation between prices and the end result shows little to no correlation between margins over time. By inference, there is a direct correlation between total revenue and production margin. Therefore, it can be concluded that the BRM program will be more effective in providing support when revenue is down in the short term. A stabilization program is, by definition, designed to reduce income instability. It is not designed to provide long-term income support. The two results are two alternative policy objectives.

10.0 Insurance – Issues and Opportunities

Several insurance issues and opportunities presented themselves as this project unfolded. One is that the APF promises a number of additional "production" insurance products will be introduced over the next five years, but there is no indication of what they may be. We conducted a number of focus groups and interviews with farmers and insurance providers to identify some potentially feasible alternatives. This is also an important consideration in the transition period.

A second issue is the linkage between insurance and the transfer component of the BRM program. The proposed linkage is that production insurance payments are regarded as income, and production insurance premiums are regarded as expenses. To some extent, this means that insurance and the BRM may be regarded as substitutes for each other, and there is concern that enrolment in production insurance will decline. Hence, this section explores alternate linkages.

A third issue is the development of an insurance/option instrument that could replace cash deposits by farmers. They are addressed in section 10.3.

10.1 Enhanced Insurance Products

Based on discussions with farmers and insurance providers, it would appear that there is potential to initiate production insurance products in the following areas.

Livestock

The livestock industry currently has no production insurance, except for relatively extreme insurance against death loss for high value animals (e.g. prize breeding stock, race horses). With the advent of the BRM program, two potential products are suggested:

- *Mortality insurance*. This product would most likely be based on each individual producer's own history of mortality, and would pay off if mortality increased substantially. It might be limited to specific or sets of perils – e.g. disease outbreaks. To be practical, it would likely carry a deductible – e.g. if your historical mortality is 5%, the instrument would not pay unless mortality increased to some specified percentage such as 8% or 10%. It might be segmented for various stages of productions – e.g. sows, weanlings, nursery, finishing – because of differential risks at the various stages.

  A product of this sort, like production insurance, would provide risk management for uncontrollable events. The only negative that was mentioned by our focus groups from a farm management perspective is that it might reward poor husbandry. However, with a deductible, specific perils, and the requirement of actuarial soundness (i.e. premiums increase if performance worsens), there should be no more reward than is provided by any other type of insurance.

- *Negative margin insurance*. There is no question that livestock operations, especially those that focus on finishing cattle, hogs or sheep, have a higher probability than other farms of a negative production margin under the proposed BRM. This is

because these operations buy feeders and sell finished animals. The cost of feeders is an eligible expense in the BRM and, therefore, cash costs are relatively high compared to revenue. Hence there is more probability that these operations could experience negative production margins. The proposed BRM does not compensate for losses greater than the reference margin. Therefore, livestock producers are less well protected than other farmers.

The recent outbreak of BSE illustrates the problem with this and, therefore, a gap in the BRM program. As one observer said, "there are disasters and there are disasters". One such as the BSE problem can't likely be handled by this program because it is unprecedented – a combination of a small disease outbreak and the closing of borders for an exported product. If borders remain closed for a protracted period of time, then both the negative margin component and the spending cap of $1.1 bil of federal money will likely be restrictions.

There are at least two potential solutions to the issue of negative margins. The first is to define production margin differently for the livestock industries. While this may be intuitively appealing, it likely invites the US to include any payments to these industries in any countervail action in the future because the program would likely be deemed to be not generally available.

The second is to develop a negative margin insurance product specifically for the livestock industries. Again, this likely would need to be associated with specific hazards to distinguish between the uncontrollable risk such as a border closing and simply overpaying for inputs.

Although the foregoing discussion is couched in terms of livestock, it is also possible to develop negative margin insurance for farms with other specializations as well. The feasibility probably depends on the specificity of the perils, and the number potential clients over which the risks are shared.

Horticulture

This is also a "transition" issue. The reason SDRM exists is that production insurance was not adequate for many horticultural products and the four percent top-up in SDRM was perceived to provide a degree of equity with government's contribution to production insurance in the field crop industry. It is clear from the analysis in section 3.0 that horticultural producers will be less well off under the proposed BRM, assuming there is no replacement for SDRM, and assuming that market conditions for horticulture remain as stable as during 1998 – 2001.

Over the past decade the horticultural industry has grown and matured. It is possible that additional insurance products can now be developed to replace some or all of SDRM. Horticulture is complex, and many parts are small, thereby providing few farm units over which to spread risk in calculating premiums. So, the opportunities need to focus on areas that have the highest potential payoff for production insurance products. One possibility is to introduce weather derivative products that insure against rainfall, temperature, or frost. If they could be applied to a range of products, they could be far more cost effective than more general coverage

of individual crops. Despite the foregoing statement, other possibilities include extending more traditional crop insurance to additional crops whose acreage has expanded in recent years.

Replacing Market Revenue Insurance (MRI)

MRI is a companion program that will be phased out over three years and replaced after the transition period. It is specific to the grain and oilseed industries.

The Province of Alberta introduced[10], for the current fiscal year, an insurance product that insures a price or a minimum price for farm products. It has some similarities to the MRI concept. But it is insurance, not an income transfer instrument. Its pay out is not based on an historic average. But it does provide a floor under prices.

There are alternative ways that a price insurance mechanism could be established and several are likely candidates for insurance. This is an area where the private sector is very much involved because the grain handling industry offers forward pricing services, and has an interest in procuring supplies. As a transitional idea, it would seem appropriate for an insurance provider such as AGRICORP to work with grain and oilseed producers and the handling industry to develop appropriate insurance products to replace MRI.

10.2 Linkages Between Production Insurance and BRM Transfer Payments

A major concern about the BRM program is that farmers may reduce their use of production insurance because it directly covers the loss of margin no matter the source of the loss, at a lower cost than production insurance. This is especially important for the horticultural processing industry because production insurance facilitates the industry's efficient operation.

Five alternative linkages between the proposed program and production insurance were discussed:

- The one currently proposed, in which the production insurance premium is an eligible expense and payments are eligible revenues. With this linkage, production insurance can provide protection from negative margins, the BRM program pays out after production insurance payments have been received, and the revenue from production insurance adds to the farmer's future reference margin[11].
- Make production insurance mandatory in order to enrol in the proposed program.
- "Impute" the value of production insurance (regardless of whether it was taken) and adjust payments under the proposed program. (This is a variant on the foregoing alternative).

[10] See Appendix II for a comparison of the Alberta program and MRI.

[11] A variant to this alternative that has been suggested to us is (since production insurance is expected to be actuarially sound and farmers share the cost with government), make only the farmer's portion of production insurance an eligible revenue and eligible expense. This may be a useful interim measure for horticultural producers.

- Use an incentive scheme to induce farmers to continue to take production insurance. For example, if, as a result of production insurance, payments under the proposed BRM program are saved, a rebate could be issued for up to the amount of the Production Insurance premiums.[12]

The relationship that is currently proposed is extremely important to understand because including any payout from production insurance affects the reference margin. For example, assume a farm has a $100,000 reference margin and, before production insurance, experiences a $40,000 loss in a given year (i.e. $60,000 production margin). Now assume the farm receives a production insurance payment of $25,000. Adding this to $60,000 brings the production margin in that year to $85,000. This is included in the Olympic average to calculate the new reference margin, which means a higher potential level of support for the farm in future years because the insurance payment is included.

The idea of rebating the farm by the amount of the savings to the BRM is appealing on a number of grounds. Return to the foregoing example, and add the assumption that the farm's premium for production insurance is $2500.

Now, let's look at the outcome from the farmer's perspective. The farmer would receive $25,000 from insurance, and $15,000 from the BRM. The farmer's "cost" would be the insurance premium of $2500 the farmer's share of the top tier of the program – i.e. $7500. The farm would use $85,000 in calculating the reference margin next year.

What if the farm did not have production insurance? In this case, the farm receives $40,000 from BRM, of which the farmer's cost is $14,000 (i.e. $2000 from the disaster tier, $4500 from the second tier, and $7500 from the top tier of the program). The farm would use $60,000 to calculate the reference margin in the future. In other words, the farm is worse off by the difference between the production insurance premium and the farmer's share of the BRM, as well as by the loss in the reference margin.

Of course, the outcome changes in the example if the insurance premium is higher. In any event, it's not possible to determine the optimum decision before the fact because the outcome can't be predicted in a given year. However, if one expects a significant loss one year in five from natural causes, then this argument breaks down because the Olympic average is used in the program. In other words, if I only expect to have a substantial claim on my crop insurance one year in five, then that year is the one I would drop from the Olympic average. So, the inability to claim on production insurance does not decrease my reference margin, but paying crop insurance premiums every year is a cost and it does reduce my reference margin. Therefore, if this is my expectation, then there is no incentive to take insurance even with the link to rebate the premium. Once again, the problem here is the use of the Olympic average.

From the BRM's perspective, especially with a relatively fixed funding envelope, the difference between the two situations is substantial. If the farmer enrols in production insurance, the cost to

[12] Since this project started, apparently this proposal has been accepted by the federal government and will be implemented.

the BRM of this example is $7500. If not, the cost is $26,000. From both the perspective of the ability of public funds to assist more people and fiscal responsibility, there is incentive to encourage farmers to enrol in insurance. Moreover, farmers can see that, from a community perspective, enrolling in insurance provides more opportunity for the BRM program to assist other people. Overall, it would appear sensible to rebate the insurance premium back to the farmer because of the savings to the BRM program. In this example the program still makes a $23,500 savings. Moreover, we would recommend that the rebate be added to the calculation of the reference margin – either as an additional insurance payment or as a reduction of the eligible expense. Also, for a number of reasons, this being one, we recommend that the Olympic average not be used to calculate the reference margin.

There seems to be little appetite among either most farm organizations or politicians to require farmers to enrol in production insurance and/or to deem that they have to. However, the processing vegetable industry in Ontario feels quite strongly that production insurance should be mandatory for participation in the BRM program, especially if the Olympic average is used as proposed. That industry needs crop insurance is an integral part of the supply chain. The Processing Vegetable Board fears that the rebate mechanism will not be enough to encourage all growers to take crop insurance if the Olympic average remains. We concur that it should be mandatory when industry representatives feel it is important to do so to ensure efficient operations.

10.3 Developing A Deposit Instrument

One of the criticisms of the BRM program is that it requires a large amount of capital to be tied up unproductively. One farmer summed up the reaction quite nicely in a focus group. "We were told that NISA has to go because there is too much money sitting in NISA accounts. Now we find out it's being replaced by a program that ties up even more!"

In earlier sections we discussed the possibility that balances in NISA accounts could be rolled over to provide the financing for farmers' deposits, and the possibility of using loans or letters of credit. A third alternative is to develop an insurance "option" for the deposit. Based on discussions to date with an insurer, this option would have the following characteristics:

- It would be a Call on the issuer for 18.5% of the producer's reference margin.
- 18.5% is chosen because it represents a "deductible" of 7.5%. The maximum producer deposit to the program is 26%, and the top tier of the program requires a producer deposit of 7.5%. So, the deductible portion essentially means that the producer would be responsible for the top tier – including the deposits and the claims.[13] A deductible of this nature would substantially reduce both claims and transactions costs on the part of the insurer, thereby materially reducing the premium required to fund it.

[13] If the program was changed to a 40/60 producer/government cost sharing arrangement, then the deductible would be 6% instead of 7.5%.

- The Call would then be exercised any time a producer has a claim of more than 15% of the reference margin. The producer would receive any money from the insurer that is required, above 7.5%, to provide the producer's deposit. So, if a producer with a $100,000 reference margin experienced a $50,000 loss in a claim year, the producer would have provided $7500 in deposit, would exercise the Call and receive $8500 from the insurer. This would be forwarded to the government which would write the producer a cheque for $50,000 – i.e. $34,000 for the government's portion, $8500 representing the Call, and $7500 representing the producer's deposit.

Note that the difference between the Call and a letter of credit from a lender is that the farmer would pay back the lender when a claim is paid (who would then issue a new letter of credit), but would not repay the insurer. Presumably, the producer would buy a new Call for the following year or years.

10.4 The Option As an Administration Fee

The foregoing implies that requiring a producer deposit is for the program is needed. We see no reason why a deposit is necessary. An alternative is to simply charge an administration fee for the program based on the likely use of it by an industry or individual. If a fee was to be charged on this basis, its calculation would require the same information as for calculating the premium for an option – i.e. what is the frequency that one would use the various tiers of the program.

This would be particularly intriguing if the same organization that delivers production insurance also has responsibility for administering the BRM program because of the interaction between BRM and insurance. This would influence the premiums for insurance, as well as the premium cost to use the BRM program.

Whether one sees this as an option provided by an underwriter, or an administration fee, it is possible and likely that appropriate pricing procedures would result in different premiums/fees for different industries. It is clear that different industries would have different risk profiles with some using the disaster portion more fairly frequently, while others would likely use the stabilization portion heavily. Given the differences in the ratio of government matching, one would expect different probabilities of draws on the Call or different relative costs to government by industry.

Although it is not as intuitively clear as for industries, it is also possible that there would be different distributions for various size categories.

10.5 Summary

- This section suggests that there are several potential applications of insurance principles and linkages to existing insurance programs that can and should be made in the BRM program. They include Mortality insurance for livestock
- Specific risk negative margin insurance for livestock and, theoretically, for other products
- Weather derivatives and additional crop insurance products for horticulture

- An insurance product to replace MRI
- An option to provide the producer deposit for the BRM program, or
- An administration fee based on insurance principles to participate in the program
- A rebate of production insurance premiums when insurance saves money for the BRM program
- Mandatory crop insurance for participation by processing vegetable producers in BRM, especially if the Olympic average method is used to calculate the reference margin.

11.0 Program Administration Under Proposed Program

The effectiveness of the proposed program will be determined by both the design of the program and the means in which producers apply and have their applications processed by government. This section addresses an important issue about the administration of the proposed program regarding the timing of filing and provision of information.[14]

Producer Application and Compliance Under the Proposed Program

From the design of the proposed program discussed in earlier sections, it is clear that the proposed program will have some differences in regard to producer application and timing relative to current programs:

- Producers will apply to the program every year, not just when they believe they are in a claim position. This is similar to NISA, but unlike OFIDP.
- Producers will submit accrual farm records. This is similar to OFIDP, but unlike NISA.
- Under current programs, NISA applications must be submitted by June, with OFIDP applications submitted by October. Under the proposed program, there would be one submission deadline in June.
- Under current programs, the NISA "DWON" forms are issued to producers in July or August, with processing completed and withdrawals issued in the fall. Under OFIDP, processing occurs in the fall, with payments typically occurring early in the next year.
- Under the proposed program, there would be additional contact between producer and government to declare "coverage" levels and submit deposits

Thus, the proposed program requires annual submissions of accrual data, with a single deadline and payment period, and additional provisions to declare coverage and submit deposits.

The specific dates at which program activities would be due under the proposed program are still under discussion. The administration of the program proposed by OMAF has the following provisions:

- Producers would sign up for the program, declare coverage levels, make deposits, and submit beginning year accrual data by March 31 before a crop year begins.
- By June 30th of the following year, after receipt of tax information by CCRA, the information required to administer the proposed program would be completed.
- Payments under the proposed program would be made by September.

The proposal for administration from the federal government appears similar to the above, with the following difference:

[14] At very literally the 11th hour, we received a communication from an accountant about the way the accrual adjustment procedure for inventories will be implemented in the proposed program. It was far too late to do any analysis on the concern. Therefore, the communications about the issue has been passed on to OMAF officials.

- Producers would declare coverage levels by March 31, but deposits would not be due until December. Accrual information would also not be due until December of the following year.

We see no advantage to the federal proposal on this issue. In fact the federal proposal likely has two downsides. The first is that declaring the deposit level in March and collecting it in December means that the farmer will not know much about the outcome of a crop year when the deposit is declared, but will know a lot about it when the deposit is made. This will surely give rise to issues when things have gone more poorly than expected; reluctance to make the deposit if there is no chance of a payout, and a desire for more deposit when there is a high probability. Why set up the opportunity for conflict?

The second is that the federal proposal gets money in producers' hands much later.

We see no down side to the Ontario proposal. In fact, it has the additional advantage of providing producers who file on a cash basis with accrual accounting information in a timely manner that could help them make better management decisions. This is because it will provide accounting information much earlier than the CCRA process that is currently suggested.

12.0 Variants to the Proposed Program

In addition to the analyses of measures included in the proposed program, there are potential variations on the proposed program brought forward that deserve analysis. These include the impact of making hired labour an ineligible expense, and the impact of averaging the two stabilization layers into a single stabilization under the proposed program, and aspects of an industry-proposed alternative to the proposed program (NISA 1-2-3). The purpose of this section is to provide an analysis of these variants or alternative to the proposed program. Section 12.1 considers the impact on payments and margin stability under the proposed program of excluding hired labour as an eligible expense. Section 12.2 considers the impact on average payment and the stability of margins of merging the stabilization layers under the proposed program. Section 12.3 considers the entitlement aspect of the industry proposal relative to the payments within the stabilization layers of the proposed program. Observations and conclusions are drawn in Section 12.4.

12.1 Treatment of Labour in Proposed Program

The treatment of labour as an eligible expense under the proposed program is of critical importance in specific sectors. The issues around labour relate to the sensitivity of the payment trigger, and the potential for moral hazard. In the first case, if labour costs are relatively fixed and are counted as eligible expenses, then in a year in which farm revenue falls and/or production expenses increase, decreases in labour costs will decrease program payments. In the second case, if a crop failure occurs such that the crop is not worth harvesting (so less labour is required) then maintaining labour as an eligible expense could give the farmer the incentive to hire labour when it is not required.

Fundamentally, whether labour should be an eligible expense or not really depends on the nature of work in an industry and/or an individual farm, as we suggested in our federal report (Martin, et al). From a management perspective, the program should not discourage managers from hiring labour when it should be hired, nor from reducing labour expenses when they should be reduced. If the normal relationship for a farm or industry is a positive correlation between farm revenue and labour cost (i.e. as production or price rises, more labour is hired and vice versa), then the farm is better off if labour cost is not an eligible expense. If the relationship is the opposite, then the farm is better off if labour cost is eligible.

In general, it is not possible to generalize about whether hired labour should be an eligible expense or not – it is an empirical question. The purpose of this section is to investigate the impact of including labour as an eligible expense. Section 12.1 considers the impact on payments under the proposed program of including or excluding labour as an eligible expense. Section 12.2 considers the impact on stability of margins of including or excluding labour as an eligible expense.

To assess the impact of excluding labour as an eligible expense under the proposed program, the following analysis was conducted. Using the NISA database described in Section 3, the proposed program was simulated with labour as an eligible expense and with labour as an

ineligible expense. These were compared, and contrasted against the current programs for the cumulative total of payments for the period 1998-2001, and for each year individually.

Table 12.1 below presents the aggregate payments for 1998-2001 by farm type. The first three columns reproduce results obtained from the analyses in Section 3. The last two columns give the results with labour as an ineligible expense. The results show that, overall, payments under the proposed program would increase by about $6 million under proposed program with labour as an ineligible expense. These results differed markedly across farm types:

- Field crops, poultry, dairy, cow-calf, and tobacco farms appear to benefit from labour being removed as an eligible expense
- Vegetable and fruit farms and greenhouses appeared to be significantly worse off as a result of removing labour as an eligible expense

Tables 12.2 to 12.10 present the comparison for each farm type. Here, the conclusion is quite interesting. For those industries that receive more funding overall, the benefits accrue to most farm size groups. There is no discernible pattern of winners and losers. But for fruit and vegetable farms and greenhouses, most size categories receive more funding with labour as an ineligible expense, but the largest operations are much worse off. In fact, the two industries would receive more funding with labour as an ineligible expense but, because of the substantial effects on the largest operations, the two are far worse off.

The largest operations are undoubtedly involved in packing and, perhaps, processing to some extent. The only general explanation that can be made for these curious results, without looking at individual records, is that the largest operations have a strong positive correlation between labour expense and revenue. Hence, not including labour as an eligible expense works against them.

Table 12.1 Comparison of Program Payments With and Without Labour as an Eligible Expense, 1998-2001 Combined Total

		Arm's Length Labour as an Eligible Expense		Arm's Length Labour as an In-Eligible Expense	
	Total Current	BRM Payments	Total APF	BRM Payments	Total APF
Field Crops	$322,605,036	$249,747,398	$342,973,066	$257,524,901	$350,750,569
Vegetables and Fruit	$91,510,268	$70,716,123	$83,854,979	$61,365,215	$74,504,071
Green House (F&V)	$11,647,273	$9,497,083	$10,668,740	$8,698,721	$9,870,379
Poultry	$3,224,488	$4,418,989	$5,151,661	$4,910,914	$5,643,586
Dairy	$13,227,791	$6,095,634	$9,632,345	$5,460,016	$8,996,728
Swine	$82,500,427	$57,383,239	$68,820,261	$55,693,808	$67,130,830
Cow-calf	$46,476,698	$45,952,207	$54,342,383	$46,543,381	$54,933,557
Feedlot	$21,485,520	31,819,045	$35,815,718	$30,191,577	$34,188,250
Tobacco	$49,920,335	$49,263,702	$58,832,107	$58,816,346	$68,384,751
Total	**642,597,835**	**524,893,420**	**670,091,261**	**529,204,878**	**674,402,720**

Table 12.2 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Field Crop Farms

		Current Programs	Proposed Program: Labour Eligible Expense	Proposed Program: Labour Ineligible Expense
Income Range	Number	Total	Total	
$0 - $25,000	1,761	$26,274,107	$35,054,461	$37,247,826
$25,000 - $50,000	1,358	$39,876,220	$46,432,028	$48,184,999
$50,000 - $100,000	1,334	$65,959,638	$64,028,112	$67,779,046
$100,000 - $250,000	1,186	$101,013,026	$102,209,675	$101,917,157
$250,000 - $500,000	348	$48,914,442	$50,569,824	$51,146,658
$500,000 - $1,000,000	128	$31,334,633	$30,397,563	$30,102,017
>$1,000,000	43	$9,232,970	$14,281,404	$14,372,865

Table 12.3 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Fruit and Vegetable Farms

		Current Programs	Proposed Program: Labour Eligible Expense	Proposed Program: Labour Ineligible Expense
Income Range	Number	Total	Total	Total
$0 - $25,000	138	$1,900,083	$5,053,589	$5,620,646
$25,000 - $50,000	101	$2,092,541	$3,699,490	$4,334,779
$50,000 - $100,000	137	$5,658,216	$5,317,882	$5,986,446
$100,000 - $250,000	232	$16,922,905	$14,502,768	$15,171,267
$250,000 - $500,000	146	$17,702,525	$11,967,485	$11,736,945
$500,000 - $1,000,000	130	$23,171,416	$15,358,507	$15,507,258
>$1,000,000	109	$24,062,582	$27,955,258	$16,146,731

Table 12.4 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Greenhouse Farms

		Current Programs	Proposed Program: Labour Eligible Expense	Proposed Program: Labour Ineligible Expense
Income Range	Number	Total	Total	Total
$0 - $25,000	16	$184,254	$709,524	$817,836
$25,000 - $50,000	10	$328,041	$497,899	$577,557
$50,000 - $100,000	23	$784,326	$795,411	$995,552
$100,000 - $250,000	19	$1,238,291	$1,212,015	$1,421,001
$250,000 - $500,000	21	$3,137,536	$2,975,977	$3,147,861
$500,000 - $1,000,000	17	$2,693,356	$2,137,898	$1,648,746
>$1,000,000	17	$3,281,468	$2,340,015	$1,261,825

Table 12.5 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Poultry Farms

		Current Programs	Proposed Program: Labour Eligible Expense	Proposed Program: Labour Ineligible Expense
Income Range	Number	Total	Total	Total
$0 - $25,000	9	$117,135	$619,375	$618,111
$25,000 - $50,000	5	$141,838	$295,630	$382,544
$50,000 - $100,000	5	$194,747	$857,557	$1,001,947
$100,000 - $250,000	23	$591,415	$712,515	$654,550
$250,000 - $500,000	28	$852,346	$1,192,281	$1,438,304
$500,000 - $1,000,000	27	$1,230,374	$1,433,610	$1,501,234
>$1,000,000	4	$96,634	$40,693	$46,896

Table 12.6 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Dairy Farms

		Current Programs	Proposed Program: Labour Eligible Expense	Proposed Program: Labour Ineligible Expense
Income Range	Number	Total	Total	Total
$0 - $25,000	4	$35,607	$283,673	$288,925
$25,000 - $50,000	6	$90,114	$288,970	$289,272
$50,000 - $100,000	25	$322,716	$330,578	$333,369
$100,000 - $250,000	147	$3,503,126	$3,602,833	$3,654,331
$250,000 - $500,000	167	$5,295,051	$3,017,429	$2,725,754
$500,000 - $1,000,000	70	$3,234,436	$1,415,252	$1,314,678
>$1,000,000	16	$746,740	$693,609	$390,399

Table 12.7 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Hog Farms

		Current Programs	Proposed Program: Labour Eligible Expense	Proposed Program: Labour Ineligible Expense
Income Range	Number	Total	Total	Total
$0 - $25,000	20	$413,068	$1,186,411	$1,201,492
$25,000 - $50,000	33	$713,325	$1,084,916	$1,099,772
$50,000 - $100,000	71	$2,330,076	$2,462,687	$2,457,559
$100,000 - $250,000	243	$14,608,138	$12,036,427	$12,014,221
$250,000 - $500,000	252	$21,807,649	$16,627,907	$16,620,976
$500,000 - $1,000,000	158	$19,875,239	$14,816,888	$14,444,936
>$1,000,000	123	$22,752,933	$20,605,026	$19,291,872

Table 12.8 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Beef Cow-calf Farms

		Current Programs	Proposed Program: Labour Eligible Expense	Proposed Program: Labour Ineligible Expense
Income Range	Number	Total	Total	Total
$0 - $25,000	206	$2,102,966	$4,477,059	$4,634,754
$25,000 - $50,000	256	$3,090,736	$4,311,433	$4,323,586
$50,000 - $100,000	308	$6,113,537	$7,012,052	$7,108,766
$100,000 - $250,000	394	$14,682,093	$17,095,849	$17,443,585
$250,000 - $500,000	197	$12,852,561	$13,585,142	$13,517,751
$500,000 - $1,000,000	91	$7,634,806	$7,860,848	$7,905,117

Table 12.9 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Beef Feedlot Farms

			Proposed Program	
		Current Programs	Labour Eligible Expense	Labour Ineligible Expense
Income Range	Number	Total	Total	Total
> $1,000,000	163	$21,485,520	$35,815,718	$34,188,250

Table 12.10 Support Under Current and Proposed Programs With and Without Labour as an Eligible Expense, Tobacco Farms

			Proposed Program	
		Current Programs	Labour Eligible Expense	Labour Ineligible Expense
Income Range	Number	Total	Total	Total
$0 - $25,000	47	$944,094	$4,403,463	$6,777,826
$25,000 - $50,000	33	$969,933	$2,228,503	$3,103,875
$50,000 - $100,000	83	$3,807,181	$5,610,354	$7,586,684
$100,000 - $250,000	297	$19,507,930	$22,660,842	$26,276,853
$250,000 - $500,000	195	$17,287,293	$16,169,076	$17,384,084
$500,000 - $1,000,000	48	$5,865,643	$5,888,853	$5,812,366

Stability Impact of Removing Labour as an Eligible Expense

The analysis above shows that removing labour as an eligible expense affects payments under the proposed program. To determine whether removing labour impacts the stability of margins, the following analysis was completed. Using the NISA database, the proposed program was simulated with labour as an ineligible expense, and the semi-deviation calculated (as described in Section 3.0 above). This semi-deviation was then compared against the semi-deviation under the proposed program with labour as an eligible expense, the semi-deviation under current programs, and the semi-deviation under no program.

Tables 12.11 to 12.19 present the results of this analysis across farm types and across income ranges. To compare the stability between the proposed program with and without labour as an eligible expense, compare the furthest right bolded column under *Hired Arms Length Labour as an Eligible Expense* with *Hired Arms Length Labour as an Ineligible Expense*. For each income level, the column that gives the lower semi-deviation provides the more stability.

The results show that semi-deviation is generally lowered by making labour an ineligible expense for cash crop farms. Vegetable and fruit, and greenhouse farms have a higher semi-deviation when labour expenses are ineligible. For other farm types, difference in semi-deviation resulting from the exclusion of labour expenses depends on income levels. Generally, any advantage in terms of decreased semi-deviation from removal of labour as an eligible expense occurred at the lower levels of sales. In most cases, farms with sales over $1,000,000 had an increase in semi-variance when labour was excluded as an expense. As farm size increased, any stability benefit of excluding labour as an eligible expense under the proposed program decreased.

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Table 12.11 Margin Variability With and Without Labour as Eligible Expense, Cash Crop Farms 1998-2001

	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$4,181	$7,532	$10,569	$4,824	$3,165	$844	$4,181	$7,532	$10,880	$4,824	$3,165	$804
$25,000 - $50,000	$9,967	$17,139	$18,530	$7,126	$3,627	$1,284	$9,967	$17,139	$18,853	$7,126	$3,627	$1,221
$50,000 - $100,000	$22,360	$34,478	$34,360	$10,542	$4,520	$1,963	$22,360	$34,478	$34,688	$10,542	$4,520	$1,887
$100,000 - $250,000	$50,771	$72,064	$71,262	$19,595	$8,820	$3,702	$50,771	$72,064	$71,622	$19,595	$8,820	$3,506
$250,000 - $500,000	$110,913	$146,053	$145,446	$37,622	$19,845	$9,405	$110,913	$146,053	$146,219	$37,622	$19,845	$8,815
$500,000 - $1,000,000	$197,773	$258,974	$252,261	$64,154	$30,989	$14,283	$197,773	$258,974	$254,707	$64,154	$30,989	$14,437
>$1,000,000	$405,806	$459,486	$488,837	$132,939	$100,466	$49,441	$405,806	$459,486	$489,369	$132,939	$100,466	$47,582

	Average Production Margin			Normal Deviation Below Average			Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$10,553	$13,912	$16,949	$4,692	$3,100	$411	$10,987	$14,347	$17,695	$4,860	$3,259	$396
$25,000 - $50,000	$20,736	$27,893	$29,284	$6,973	$3,580	$782	$21,632	$28,789	$30,502	$7,124	$3,702	$733
$50,000 - $100,000	$37,532	$49,650	$49,532	$10,363	$4,585	$1,274	$38,980	$51,097	$51,307	$10,685	$4,834	$1,287
$100,000 - $250,000	$73,211	$94,503	$93,702	$18,640	$8,296	$2,332	$77,793	$99,086	$98,644	$19,393	$8,942	$2,502
$250,000 - $500,000	$149,238	$184,378	$183,771	$34,620	$17,480	$5,978	$163,195	$198,334	$198,501	$36,581	$19,185	$6,568
$500,000 - $1,000,000	$248,236	$309,437	$302,724	$62,865	$30,794	$9,812	$292,301	$353,501	$345,235	$65,290	$32,910	$12,300
>$1,000,000	$474,829	$528,509	$557,861	$121,689	$90,094	$25,590	$593,988	$647,668	$677,551	$130,673	$97,727	$31,905

Table 12.12 Margin Variability With and Without Labour as Eligible Expense, Fruit and Vegetable Farms 1998-2001

	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$6,329	$9,771	$15,484	$7,946	$6,562	$1,694	$6,329	$9,771	$16,511	$7,946	$6,562	$1,473
$25,000 - $50,000	$8,564	$13,743	$17,721	$8,153	$4,984	$2,494	$8,564	$13,743	$19,293	$8,153	$4,984	$2,482
$50,000 - $100,000	$21,222	$31,547	$30,926	$11,695	$6,838	$5,107	$21,222	$31,547	$32,146	$11,695	$6,838	$4,892
$100,000 - $250,000	$44,681	$62,917	$60,309	$22,704	$13,366	$9,617	$44,681	$62,917	$61,029	$22,704	$13,366	$9,948
$250,000 - $500,000	$89,088	$119,401	$109,580	$36,378	$20,346	$18,456	$89,088	$119,401	$109,185	$36,378	$20,346	$18,903
$500,000 - $1,000,000	$189,532	$234,093	$219,068	$69,829	$42,360	$39,214	$189,532	$234,093	$219,354	$69,829	$42,360	$40,482
>$1,000,000	$518,523	$573,713	$582,641	$207,097	$166,540	$142,448	$518,523	$573,713	$555,557	$207,097	$166,540	$168,969
	Average Production Margin			Normal Deviation Below Average			Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$15,168	$18,610	$24,323	$8,387	$7,027	$1,272	$19,110	$22,552	$29,292	$9,433	$8,050	$1,393
$25,000 - $50,000	$25,565	$30,744	$34,722	$8,157	$5,455	$2,024	$31,596	$36,776	$42,326	$8,688	$6,154	$2,050
$50,000 - $100,000	$41,679	$52,004	$51,383	$11,156	$6,601	$3,827	$54,508	$64,833	$65,432	$11,850	$7,484	$4,246
$100,000 - $250,000	$88,632	$106,868	$104,260	$24,274	$14,794	$9,161	$124,394	$142,630	$140,742	$25,836	$16,520	$10,461
$250,000 - $500,000	$162,586	$192,899	$183,079	$35,531	$19,639	$16,086	$233,943	$264,255	$254,040	$38,938	$22,878	$19,660
$500,000 - $1,000,000	$338,490	$383,050	$368,025	$65,693	$39,952	$32,634	$471,734	$516,294	$501,555	$73,256	$45,717	$39,067
>$1,000,000	$912,283	$967,472	$976,400	$205,923	$169,601	$130,933	$1,573,197	$1,628,387	$1,610,231	$211,730	$174,653	$164,606

Table 12.13 Margin Variability With and Without Labour as Eligible Expense, Greenhouse Farms 1998-2001

	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$8,557	$11,436	$19,643	$6,497	$5,133	$1,367	$8,557	$11,436	$21,336	$6,497	$5,133	$1,227
$25,000 - $50,000	$21,142	$29,343	$33,590	$11,445	$9,081	$1,587	$21,142	$29,343	$35,581	$11,445	$9,081	$2,121
$50,000 - $100,000	$17,784	$26,309	$26,430	$8,240	$4,241	$2,767	$17,784	$26,309	$28,605	$8,240	$4,241	$2,610
$100,000 - $250,000	$60,515	$76,808	$76,463	$28,483	$19,215	$14,312	$60,515	$76,808	$79,213	$28,483	$19,215	$13,155
$250,000 - $500,000	$86,644	$123,996	$122,073	$36,923	$15,353	$10,652	$86,644	$123,996	$124,119	$36,923	$15,353	$10,146
$500,000 - $1,000,000	$177,964	$217,572	$209,403	$63,743	$38,577	$32,238	$177,964	$217,572	$202,210	$63,743	$38,577	$39,815
>$1,000,000	$587,646	$635,903	$622,058	$161,666	$126,848	$125,864	$587,646	$635,903	$606,202	$161,666	$126,848	$141,069
	Average Production Margin			Normal Deviation Below Average			Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$18,596	$11,436	$19,643	$8,598	$12,725	$6,620	$22,675	$11,436	$21,336	$10,726	$16,184	$8,476
$25,000 - $50,000	$33,722	$29,343	$33,590	$11,841	$17,804	$9,077	$38,910	$29,343	$35,581	$13,289	$21,940	$11,192
$50,000 - $100,000	$38,396	$26,309	$26,430	$8,660	$18,245	$16,728	$51,656	$26,309	$28,605	$9,531	$29,298	$26,262
$100,000 - $250,000	$104,376	$76,808	$76,463	$32,177	$51,459	$47,270	$136,771	$76,808	$79,213	$36,789	$78,108	$71,213
$250,000 - $500,000	$160,036	$123,996	$122,073	$39,895	$65,718	$59,790	$234,509	$123,996	$124,119	$45,633	$128,685	$121,025
$500,000 - $1,000,000	$305,314	$217,572	$209,403	$64,626	$128,258	$126,278	$423,333	$217,572	$202,210	$67,227	$229,385	$238,698
>$1,000,000	$971,408	$635,903	$622,058	$188,898	$433,321	$437,092	$1,420,211	$635,903	$606,202	$199,400	$835,194	$861,395

Table 12.14 Margin Variability With and Without Labour as Eligible Expense, Poultry Farms 1998-2001

Poultry	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$1,395	$4,649	$18,600	$8,123	$6,572	$517	$1,395	$4,649	$18,565	$8,123	$6,572	$468
$25,000 - $50,000	$32,950	$40,042	$47,731	$19,774	$16,398	$6,180	$32,950	$40,042	$52,077	$19,774	$16,398	$1,694
$50,000 - $100,000	$40,421	$50,158	$83,299	$16,854	$11,095	$1,240	$40,421	$50,158	$90,518	$16,854	$11,095	$1,261
$100,000 - $250,000	$55,748	$62,176	$63,493	$9,873	$6,896	$4,971	$55,748	$62,176	$62,863	$9,873	$6,896	$4,887
$250,000 - $500,000	$101,899	$109,509	$112,544	$26,099	$21,174	$17,885	$101,899	$109,509	$114,741	$26,099	$21,174	$15,647
$500,000 - $1,000,000	$177,733	$189,126	$191,008	$32,662	$24,198	$18,987	$177,733	$189,126	$191,634	$32,662	$24,198	$19,862
>$1,000,000	$398,815	$404,855	$401,359	$69,911	$67,556	$68,732	$398,815	$404,855	$401,746	$69,911	$67,556	$68,223

Poultry	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Production Margin			Normal Deviation Below Average			Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$12,349	$15,602	$29,553	$8,401	$7,058	$68	$12,632	$15,886	$29,802	$8,459	$7,115	$68
$25,000 - $50,000	$51,894	$58,986	$66,675	$21,162	$17,633	$5,083	$55,643	$62,735	$74,770	$22,892	$19,250	$3,352
$50,000 - $100,000	$63,894	$73,631	$106,772	$23,421	$18,022	$1,691	$68,381	$78,119	$118,479	$27,027	$21,563	$1,676
$100,000 - $250,000	$85,748	$92,176	$93,492	$11,763	$8,748	$4,822	$89,485	$95,913	$96,600	$11,951	$8,900	$5,023
$250,000 - $500,000	$147,594	$155,204	$158,239	$23,449	$19,446	$14,303	$168,555	$176,165	$181,397	$25,224	$21,214	$15,217
$500,000 - $1,000,000	$259,954	$271,347	$273,228	$36,943	$29,646	$21,399	$290,643	$302,035	$304,543	$38,486	$30,909	$22,537
>$1,000,000	$566,992	$573,032	$569,536	$72,952	$70,817	$71,704	$645,816	$651,856	$648,747	$76,439	$74,212	$74,706

Table 12.15 Margin Variability With and Without Labour as Eligible Expense, Dairy Farms 1998-2001

Dairy	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$28,307	$30,532	$46,036	$13,862	$12,306	$2,341	$28,307	$30,532	$46,365	$13,862	$12,306	$2,272
$25,000 - $50,000	$32,581	$36,336	$44,621	$10,359	$9,258	$1,147	$32,581	$36,336	$44,634	$10,359	$9,258	$1,238
$50,000 - $100,000	$37,516	$40,743	$40,821	$6,102	$4,187	$2,874	$37,516	$40,743	$40,849	$6,102	$4,187	$2,742
$100,000 - $250,000	$66,127	$72,085	$72,254	$10,207	$6,936	$5,866	$66,127	$72,085	$72,342	$10,207	$6,936	$5,928
$250,000 - $500,000	$126,289	$134,216	$130,806	$16,700	$12,136	$12,938	$126,289	$134,216	$130,369	$16,700	$12,136	$13,390
$500,000 - $1,000,000	$221,070	$232,622	$226,125	$26,029	$19,765	$21,955	$221,070	$232,622	$225,765	$26,029	$19,765	$22,320
>$1,000,000	$453,408	$465,076	$464,246	$67,446	$59,513	$51,403	$453,408	$465,076	$459,508	$67,446	$59,513	$57,246

Dairy	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Production Margin			Normal Deviation Below Average			Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$42,495	$44,720	$60,224	$19,817	$18,574	$759	$44,102	$46,327	$62,159	$20,672	$19,426	$1,345
$25,000 - $50,000	$48,219	$51,973	$60,259	$15,923	$14,809	$1,365	$52,183	$55,938	$64,236	$16,871	$15,767	$1,353
$50,000 - $100,000	$53,503	$56,730	$56,809	$6,895	$5,271	$3,049	$54,316	$57,543	$57,650	$7,122	$5,451	$3,073
$100,000 - $250,000	$102,488	$108,446	$108,615	$10,495	$7,477	$5,431	$109,252	$115,210	$115,467	$10,677	$7,607	$5,612
$250,000 - $500,000	$196,716	$204,643	$201,233	$17,289	$13,356	$13,226	$216,746	$224,673	$220,827	$17,387	$13,149	$13,774
$500,000 - $1,000,000	$341,979	$353,531	$347,034	$27,531	$22,391	$23,255	$379,035	$390,586	$383,730	$27,326	$21,868	$23,752
>$1,000,000	$758,944	$770,612	$769,781	$79,563	$73,448	$61,124	$877,495	$889,163	$883,595	$76,460	$69,560	$65,088

Table 12.16 Margin Variability With and Without Labour as Eligible Expense, Hog Farms 1998-2001

	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
Hogs	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$9,402	$14,565	$24,232	$7,370	$5,014	$189	$9,402	$14,565	$24,421	$7,370	$5,014	$188
$25,000 - $50,000	$6,054	$11,458	$14,273	$6,032	$4,314	$1,447	$6,054	$11,458	$14,386	$6,032	$4,314	$1,430
$50,000 - $100,000	$14,844	$23,048	$23,515	$9,337	$5,552	$1,968	$14,844	$23,048	$23,497	$9,337	$5,552	$1,885
$100,000 - $250,000	$32,111	$46,420	$44,494	$12,740	$6,091	$2,929	$32,111	$46,420	$44,471	$12,740	$6,091	$2,994
$250,000 - $500,000	$66,399	$88,034	$82,895	$22,021	$11,865	$7,400	$66,399	$88,034	$82,888	$22,021	$11,865	$7,214
$500,000 - $1,000,000	$112,574	$144,023	$136,019	$44,692	$28,468	$20,155	$112,574	$144,023	$135,430	$44,692	$28,468	$20,263
>$1,000,000	$314,838	$359,052	$356,719	$143,412	$115,094	$87,351	$314,838	$359,052	$354,050	$143,412	$115,094	$91,668

	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
Hogs	Average Production Margin			Normal Deviation Below Average			Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$17,885	$23,049	$32,716	$9,226	$7,076	$135	$17,996	$23,159	$33,014	$9,269	$7,116	$137
$25,000 - $50,000	$16,636	$22,040	$24,855	$6,670	$4,793	$1,454	$17,373	$22,777	$25,705	$6,763	$5,099	$1,475
$50,000 - $100,000	$28,424	$36,628	$37,095	$9,040	$5,277	$1,415	$29,546	$37,750	$38,199	$9,362	$5,550	$1,397
$100,000 - $250,000	$53,391	$67,700	$65,774	$13,386	$6,698	$2,778	$56,121	$70,430	$68,482	$13,651	$7,007	$2,921
$250,000 - $500,000	$105,792	$127,426	$122,288	$24,511	$14,321	$8,684	$112,320	$133,954	$128,809	$25,057	$14,950	$9,068
$500,000 - $1,000,000	$188,093	$219,541	$211,538	$46,405	$30,332	$20,170	$210,112	$241,560	$232,968	$48,604	$32,667	$22,687
>$1,000,000	$532,062	$576,275	$573,942	$166,924	$134,809	$108,089	$644,852	$689,066	$684,064	$174,543	$143,024	$120,558

Table 12.17 Margin Variability With and Without Labour as Eligible Expense, Beef Cow-Calf Farms 1998-2001

	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
Cow Calf	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$2,566	$5,118	$7,999	$5,414	$4,316	$1,637	$2,566	$5,118	$8,191	$5,414	$4,316	$1,630
$25,000 - $50,000	$8,015	$11,034	$12,226	$5,470	$3,951	$2,270	$8,015	$11,034	$12,238	$5,470	$3,951	$2,274
$50,000 - $100,000	$15,149	$20,111	$20,841	$8,771	$6,270	$3,363	$15,149	$20,111	$20,919	$8,771	$6,270	$3,242
$100,000 - $250,000	$24,203	$33,519	$35,051	$14,252	$9,752	$4,353	$24,203	$33,519	$35,272	$14,252	$9,752	$4,364
$250,000 - $500,000	$38,100	$53,649	$55,340	$26,029	$17,980	$10,310	$38,100	$53,649	$55,254	$26,029	$17,980	$10,209
$500,000 - $1,000,000	$55,540	$73,768	$77,136	$29,416	$21,591	$8,988	$55,540	$73,768	$77,257	$29,416	$21,591	$8,756

	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
Cow Calf	Average Production Margin			Normal Deviation Below Average			Average Produiction Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$9,509	$12,061	$14,942	$5,307	$4,278	$1,131	$9,714	$12,267	$15,339	$5,336	$4,304	$1,116
$25,000 - $50,000	$17,846	$20,864	$22,056	$5,455	$4,026	$1,988	$18,240	$21,258	$22,462	$5,453	$4,021	$1,988
$50,000 - $100,000	$27,887	$32,849	$33,579	$8,718	$6,251	$2,883	$29,025	$33,987	$34,795	$8,866	$6,363	$2,944
$100,000 - $250,000	$41,243	$50,559	$52,090	$14,248	$9,867	$3,820	$43,331	$52,647	$54,399	$14,288	$9,877	$3,791
$250,000 - $500,000	$63,794	$79,343	$81,034	$26,149	$17,981	$8,475	$69,375	$84,924	$86,530	$26,708	$18,488	$8,766
$500,000 - $1,000,000	$85,953	$104,180	$107,548	$31,546	$23,533	$9,406	$92,322	$110,549	$114,039	$31,434	$23,358	$9,122

Table 12.18 Margin Variability With and Without Labour as Eligible Expense, Beef Feedlot Farms 1998-2001

Feedlot	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
>$1,000,000	$138,880	$175,950	$204,718	$113,717	$94,181	$42,716	$138,880	$175,950	$201,688	$113,717	$94,181	$43,656

	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
Feedlot	Average Production Margin			Normal Deviation Below Average			Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
>$1,000,000	$216,522	$175,950	$204,718	$111,861	$149,201	$95,523	$216,522	$175,950	$204,718	$111,861	$149,201	$95,523

Table 12.19 Margin Variability With and Without Labour as Eligible Expense, Tobacco Farms 1998-2001

Tobacco	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Gross Margin			Normal Deviation Below Average			Average Gross Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$30,710	$35,732	$54,133	$21,865	$20,270	$2,164	$30,710	$35,732	$66,763	$21,865	$20,270	$1,291
$25,000 - $50,000	$39,582	$46,930	$56,465	$20,012	$17,720	$3,564	$39,582	$46,930	$63,096	$20,012	$17,720	$3,126
$50,000 - $100,000	$54,382	$65,849	$71,281	$23,839	$18,685	$4,252	$54,382	$65,849	$77,233	$23,839	$18,685	$3,359
$100,000 - $250,000	$74,722	$91,143	$93,797	$32,241	$23,696	$10,517	$74,722	$91,143	$96,841	$32,241	$23,696	$10,334
$250,000 - $500,000	$119,307	$141,470	$140,036	$44,478	$29,984	$19,729	$119,307	$141,470	$141,594	$44,478	$29,984	$20,709
$500,000 - $1,000,000	$236,962	$267,513	$267,634	$68,233	$46,593	$35,701	$236,962	$267,513	$267,235	$68,233	$46,593	$36,867
>$1,000,000	$504,925	$569,019	$582,884	$181,208	$136,582	$103,008	$504,925	$569,019	$565,052	$181,208	$136,582	$132,863

Tobacco	Hired Arms Length Labour as an Eligible Expense						Hired Arms Length Labour as an In-Eligible Expense					
	Average Production Margin			Normal Deviation Below Average			Average Production Margin			Normal Deviation Below Average		
Sales Range	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM	No Pgm	Current Pgm - Adj OFIDP	BRM
$0 - $25,000	$46,941	$51,962	$70,363	$25,821	$24,361	$3,003	$60,234	$65,256	$96,286	$32,884	$31,517	$2,614
$25,000 - $50,000	$57,195	$64,543	$74,078	$21,553	$19,366	$4,022	$73,483	$80,831	$96,997	$27,619	$25,486	$4,930
$50,000 - $100,000	$74,190	$85,658	$91,089	$25,560	$20,445	$5,148	$101,639	$113,107	$124,491	$31,681	$26,701	$5,248
$100,000 - $250,000	$108,016	$124,437	$127,091	$31,510	$23,324	$8,761	$159,424	$175,845	$181,543	$35,478	$26,898	$10,349
$250,000 - $500,000	$180,498	$202,661	$201,227	$42,176	$28,530	$15,761	$264,742	$286,905	$287,029	$47,884	$33,140	$20,115
$500,000 - $1,000,000	$363,322	$393,872	$393,993	$63,734	$43,377	$28,101	$525,829	$556,379	$556,101	$74,801	$53,450	$37,286
>$1,000,000	$707,794	$771,888	$785,753	$130,018	$91,870	$49,736	$1,075,234	$1,139,328	$1,135,361	$166,946	$130,877	$105,216

12.2 Combining the Stabilization Layers under the Proposed Program

An alternative variant on the proposed program is that the two stabilization layers be combined into a single layer, with the average of the funding shares in the two stabilization layers under the current design used in the single combined layer. In other words, in place of a layer that covers the first 15% of margin loss in a 50:50 producer:government funding ratio, and a layer that covers the second 15% of margin loss in a 30:70 producer:government funding ratio, there would be a single layer that covers the first 30% of margin losses in a 40:60 producer:government funding ratio. Thus, under this alternative, there would be only two layers of support - one stabilization layer and one disaster layer.

The essential difference between the current design and this alternative (in terms of average payments) is the following. Farmers that tend to trigger in the first 15% of margin loss will receive more under the alternative, because the government share of support is higher (60% vs. 50% under the proposed design). For payments triggered in the second 15% of margin losses, the government portion is lower under this alternative (60% vs 70%). Thus, for losses in the first 15% of reference production margin, the alternative should give a higher government payment relative to the proposed design; in the second 15%, it should give a lower payment than the proposed design. However, since a farmer must lose the first 15% before reaching the second 15%, the net effect is likely to be an increase in payments under the alternative design.

To determine the implication of this design alternative, the scenario was simulated using the NISA database above. The total payments according to industry segment are presented in Table 12.20. Relative to the design proposed, total payments are somewhat higher under this alternative. The table shows that total payments increase by almost $7 million. All farm types received more support under the alternative than under the proposed design. Tables 12.21 to 12.29 present the results for each farm type according to sales category. The tables show the finding that combining the stabilization layers increases program payments is robust across farm sizes.

The implication on variability in margins from combining the stabilization layers into a single stabilization layer are presented in Tables 12.30 to 12.38. The tables show that, in comparing the alternative design (labelled as “2 Tiered BRM” in the tables) with the proposed design (labelled as “3 Tiered BRM” in the tables), no unambiguous statement can be made with regard to margin stability. In many cases, it appears that the alternative design provides better stability at lower sales levels than the proposed design, and that the alternative stabilized gross margin better than production margin. However, these observations were inconsistent. What is more consistent is the finding that the proposed program with the stabilization layers combined provided better stability in either gross margin or production margin relative to current programs.

Table 12.20 Total Program Payments Under Current Programs, Proposed Program, and Proposed Program With Stabilization Layers Combined, 1998-2001

	Total Current Program Payments	Total BRM Payments	Total BRM with Combined Stabilization Layers
Field Crops	$322,605,036	$342,973,066	$346,080,947
Vegetables and Fruit	$91,510,268	$83,854,979	$84,873,548
Green House (F&V)	$11,647,273	$10,668,740	$10,815,367
Poultry	$3,224,488	$5,151,661	$5,190,622
Dairy	$13,227,791	$9,632,345	$9,802,013
Swine	$82,500,427	$68,820,261	$69,626,350
Beef Cow-calf	$46,476,698	$54,342,383	$54,716,850
Beef Feedlot	$21,485,520	$35,815,718	$35,966,982
Tobacco	$49,920,335	$58,832,107	$59,664,624
Total All Sectors	**642,597,835**	**670,091,261**	**676,737,303**

Table 12.21 Support Under Current and Proposed Programs with Stabilization Layers Combined, Field Crop Farms

		Total Payment Under Current Programs	Total Payment Under Proposed Program	Total Payment Under Proposed Program with Combined Stabilization Layers
Income Range	Number	Total	Total	Total
$0 - $25,000	1,761	$26,274,107	$35,054,461	$35,238,065
$25,000 - $50,000	1,358	$39,876,220	$46,432,028	$46,738,669
$50,000 - $100,000	1,334	$65,959,638	$64,028,112	$64,614,591
$100,000 - $250,000	1,186	$101,013,026	$102,209,675	$102,206,869
$250,000 - $500,000	348	$48,914,442	$50,569,824	$53,610,195
$500,000 - $1,000,000	128	$31,334,633	$30,397,563	$29,218,976
>$1,000,000	43	$9,232,970	$14,281,404	$14,453,582

Table 12.22 Support Under Current and Proposed Programs with Stabilization Layers Combined, Fruit and Vegetable Farms

Income Range	Number	Total Payment Under Current Programs Total	Total Payment Under Proposed Program Total	Total Payment Under Proposed Program with Combined Stabilization Layers Total
$0 - $25,000	138	$1,900,083	$5,053,589	$5,063,570
$25,000 - $50,000	101	$2,092,541	$3,699,490	$3,719,725
$50,000 - $100,000	137	$5,658,216	$5,317,882	$5,362,078
$100,000 - $250,000	232	$16,922,905	$14,502,768	$14,647,231
$250,000 - $500,000	146	$17,702,525	$11,967,485	$12,117,487
$500,000 - $1,000,000	130	$23,171,416	$15,358,507	$15,669,974
>$1,000,000	109	$24,062,582	$27,955,258	$28,293,483

Table 12.23 Support Under Current and Proposed Programs with Stabilization Layers Combined, Greenhouse Farms

Income Range	Number	Total Payment Under Current Programs Total	Total Payment Under Proposed Program Total	Total Payment Under Proposed Program with Combined Stabilization Layers Total
$0 - $25,000	16	$184,254	$709,524	$712,676
$25,000 - $50,000	10	$328,041	$497,899	$501,843
$50,000 - $100,000	23	$784,326	$795,411	$804,852
$100,000 - $250,000	19	$1,238,291	$1,212,015	$1,226,042
$250,000 - $500,000	21	$3,137,536	$2,975,977	$3,015,530
$500,000 - $1,000,000	17	$2,693,356	$2,137,898	$2,162,800
>$1,000,000	17	$3,281,468	$2,340,015	$2,391,626

Table 12.24 Support Under Current and Proposed Programs with Stabilization Layers Combined, Poultry Farms

Income Range	Number	Total Payment Under Current Programs Total	Total Payment Under Proposed Program Total	Total Payment Under Proposed Program with Combined Stabilization Layers Total
$0 - $25,000	9	$117,135	$619,375	$620,541
$25,000 - $50,000	5	$141,838	$295,630	$297,240
$50,000 - $100,000	5	$194,747	$857,557	$859,757
$100,000 - $250,000	23	$591,415	$712,515	$718,256
$250,000 - $500,000	28	$852,346	$1,192,281	$1,205,911
$500,000 - $1,000,000	27	$1,230,374	$1,433,610	$1,443,656
>$1,000,000	4	$96,634	$40,693	$45,260

Table 12.25 Support Under Current and Proposed Programs with Stabilization Layers Combined, Dairy Farms

Income Range	Number	Total Payment Under Current Programs Total	Total Payment Under Proposed Program Total	Total Payment Under Proposed Program with Combined Stabilization Layers Total
$0 - $25,000	4	$35,607	$283,673	$284,559
$25,000 - $50,000	6	$90,114	$288,970	$289,659
$50,000 - $100,000	25	$322,716	$330,578	$335,870
$100,000 - $250,000	147	$3,503,126	$3,602,833	$3,644,904
$250,000 - $500,000	167	$5,295,051	$3,017,429	$3,081,143
$500,000 - $1,000,000	70	$3,234,436	$1,415,252	$1,462,200
>$1,000,000	16	$746,740	$693,609	$703,678

Table 12.26 Support Under Current and Proposed Programs with Stabilization Layers Combined, Hog Farms

Income Range	Number	Total Payment Under Current Programs Total	Total Payment Under Proposed Program Total	Total Payment Under Proposed Program with Combined Stabilization Layers Total
$0 - $25,000	20	$413,068	$1,186,411	$1,191,489
$25,000 - $50,000	33	$713,325	$1,084,916	$1,092,253
$50,000 - $100,000	71	$2,330,076	$2,462,687	$2,483,288
$100,000 - $250,000	243	$14,608,138	$12,036,427	$12,173,117
$250,000 - $500,000	252	$21,807,649	$16,627,907	$16,848,664
$500,000 - $1,000,000	158	$19,875,239	$14,816,888	$15,012,918
>$1,000,000	123	$22,752,933	$20,605,026	$20,824,621

Table 12.27 Support Under Current and Proposed Programs with Stabilization Layers Combined, Beef Cow-calf Farms

Income Range	Number	Total Payment Under Current Programs Total	Total Payment Under Proposed Program Total	Total Payment Under Proposed Program with Combined Stabilization Layers Total
$0 - $25,000	206	$2,102,966	$4,477,059	$4,490,154
$25,000 - $50,000	256	$3,090,736	$4,311,433	$4,337,255
$50,000 - $100,000	308	$6,113,537	$7,012,052	$7,064,619
$100,000 - $250,000	394	$14,682,093	$17,095,849	$17,229,734
$250,000 - $500,000	197	$12,852,561	$13,585,142	$13,670,085
$500,000 - $1,000,000	91	$7,634,806	$7,860,848	$7,925,004

Table 12.28 Support Under Current and Proposed Programs with Stabilization Layers Combined, Beef Feedlot Farms

Income Range	Number	Total Payment Under Current Programs	Total Payment Under Proposed Program	Total Payment Under Proposed Program with Combined Stabilization Layers
		Total	Total	Total
>$1,000,000	163	$21,485,520	$35,815,718	$35,966,982

Table 12.29 Support Under Current and Proposed Programs with Stabilization Layers Combined, Tobacco Farms

Income Range	Number	Total Payment Under Current Programs	Total Payment Under Proposed Program	Total Payment Under Proposed Program with Combined Stabilization Layers
		Total	Total	Total
$0 - $25,000	47	$944,094	$4,403,463	$4,417,172
$25,000 - $50,000	33	$969,933	$2,228,503	$2,239,348
$50,000 - $100,000	83	$3,807,181	$5,610,354	$5,655,885
$100,000 - $250,000	297	$19,507,930	$22,660,842	$22,905,459
$250,000 - $500,000	195	$17,287,293	$16,169,076	$16,460,134
$500,000 - $1,000,000	48	$5,865,643	$5,888,853	$6,052,104
>$1,000,000	6	$1,538,261	$1,871,016	$1,934,523

Table 12.30 Margin Variability With Combined Stabilization Layers, Cash Crop Farms 1998-2001

Cash Crops	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$4,181	$7,532	$10,569	$10,906	$4,824	$3,165	$844	$798
$25,000 - $50,000	$9,967	$17,139	$18,530	$18,911	$7,126	$3,627	$1,284	$1,206
$50,000 - $100,000	$22,360	$34,478	$34,360	$34,799	$10,542	$4,520	$1,963	$1,852
$100,000 - $250,000	$50,771	$72,064	$71,262	$71,842	$19,595	$8,820	$3,702	$3,437
$250,000 - $500,000	$110,913	$146,053	$145,446	$146,621	$37,622	$19,845	$9,405	$8,648
$500,000 - $1,000,000	$197,773	$258,974	$252,261	$251,436	$64,154	$30,989	$14,283	$14,035
>$1,000,000	$405,806	$459,486	$488,837	$490,550	$132,939	$100,466	$49,441	$47,093

Cash Crops	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$10,553	$13,912	$16,949	$17,721	$4,692	$3,100	$411	$392
$25,000 - $50,000	$20,736	$27,893	$29,284	$30,561	$6,973	$3,580	$782	$722
$50,000 - $100,000	$37,532	$49,650	$49,532	$51,418	$10,363	$4,585	$1,274	$1,261
$100,000 - $250,000	$73,211	$94,503	$93,702	$98,864	$18,640	$8,296	$2,332	$2,450
$250,000 - $500,000	$149,238	$184,378	$183,771	$198,903	$34,620	$17,480	$5,978	$6,415
$500,000 - $1,000,000	$248,236	$309,437	$302,724	$345,963	$62,865	$30,794	$9,812	$11,925
>$1,000,000	$474,829	$528,509	$557,861	$678,732	$121,689	$90,094	$25,590	$31,271

Table 12.31 Margin Variability With Combined Stabilization Layers , Fruit and Vegetable Farms 1998-2001

Fruit & Veg	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$6,329	$9,771	$15,484	$16,542	$7,946	$6,562	$1,694	$1,455
$25,000 - $50,000	$8,564	$13,743	$17,721	$19,357	$8,153	$4,984	$2,494	$2,457
$50,000 - $100,000	$21,222	$31,547	$30,926	$32,248	$11,695	$6,838	$5,107	$4,821
$100,000 - $250,000	$44,681	$62,917	$60,309	$61,283	$22,704	$13,366	$9,617	$9,741
$250,000 - $500,000	$89,088	$119,401	$109,580	$109,649	$36,378	$20,346	$18,456	$18,530
$500,000 - $1,000,000	$189,532	$234,093	$219,068	$220,149	$69,829	$42,360	$39,214	$39,675
>$1,000,000	$518,523	$573,713	$582,641	$557,200	$207,097	$166,540	$142,448	$167,191

Fruit & Veg	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$15,168	$18,610	$24,323	$29,322	$8,387	$7,027	$1,272	$1,383
$25,000 - $50,000	$25,565	$30,744	$34,722	$42,389	$8,157	$5,455	$2,024	$2,021
$50,000 - $100,000	$41,679	$52,004	$51,383	$65,534	$11,156	$6,601	$3,827	$4,172
$100,000 - $250,000	$88,632	$106,868	$104,260	$140,997	$24,274	$14,794	$9,161	$10,243
$250,000 - $500,000	$162,586	$192,899	$183,079	$254,503	$35,531	$19,639	$16,086	$19,260
$500,000 - $1,000,000	$338,490	$383,050	$368,025	$502,351	$65,693	$39,952	$32,634	$38,155
>$1,000,000	$912,283	$967,472	$976,400	$1,611,874	$205,923	$169,601	$130,933	$162,580

Table 12.32 Margin Variability With Combined Stabilization Layers , Greenhouse Farms 1998-2001

Greenhouse	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$8,557	$11,436	$19,643	$21,384	$6,497	$5,133	$1,367	$1,199
$25,000 - $50,000	$21,142	$29,343	$33,590	$35,671	$11,445	$9,081	$1,587	$2,114
$50,000 - $100,000	$17,784	$26,309	$26,430	$28,782	$8,240	$4,241	$2,767	$2,551
$100,000 - $250,000	$60,515	$76,808	$76,463	$79,457	$28,483	$19,215	$14,312	$12,932
$250,000 - $500,000	$86,644	$123,996	$122,073	$124,675	$36,923	$15,353	$10,652	$9,882
$500,000 - $1,000,000	$177,964	$217,572	$209,403	$203,256	$63,743	$38,577	$32,238	$38,695
>$1,000,000	$587,646	$635,903	$622,058	$607,127	$161,666	$126,848	$125,864	$140,380

	Hired Arms Length Labour as an Eligible Expense							
Greenhouse	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$18,596	$11,436	$19,643	$21,384	$8,598	$12,725	$6,620	$8,437
$25,000 - $50,000	$33,722	$29,343	$33,590	$35,671	$11,841	$17,804	$9,077	$11,170
$50,000 - $100,000	$38,396	$26,309	$26,430	$28,782	$8,660	$18,245	$16,728	$26,111
$100,000 - $250,000	$104,376	$76,808	$76,463	$79,457	$32,177	$51,459	$47,270	$70,923
$250,000 - $500,000	$160,036	$123,996	$122,073	$124,675	$39,895	$65,718	$59,790	$120,505
$500,000 - $1,000,000	$305,314	$217,572	$209,403	$203,256	$64,626	$128,258	$126,278	$237,494
>$1,000,000	$971,408	$635,903	$622,058	$607,127	$188,898	$433,321	$437,092	$860,365

Table 12.33 Margin Variability With Combined Stabilization Layers, Poultry Farms 1998-2001

Poultry	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$1,395	$4,649	$18,600	$18,600	$8,123	$6,572	$517	$462
$25,000 - $50,000	$32,950	$40,042	$47,731	$52,115	$19,774	$16,398	$6,180	$1,686
$50,000 - $100,000	$40,421	$50,158	$83,299	$90,577	$16,854	$11,095	$1,240	$1,240
$100,000 - $250,000	$55,748	$62,176	$63,493	$62,926	$9,873	$6,896	$4,971	$4,839
$250,000 - $500,000	$101,899	$109,509	$112,544	$114,854	$26,099	$21,174	$17,885	$15,524
$500,000 - $1,000,000	$177,733	$189,126	$191,008	$191,718	$32,662	$24,198	$18,987	$19,775
>$1,000,000	$398,815	$404,855	$401,359	$402,076	$69,911	$67,556	$68,732	$67,978

Poultry	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$12,349	$15,602	$29,553	$29,837	$8,401	$7,058	$68	$68
$25,000 - $50,000	$51,894	$58,986	$66,675	$74,808	$21,162	$17,633	$5,083	$3,345
$50,000 - $100,000	$63,894	$73,631	$106,772	$118,537	$23,421	$18,022	$1,691	$1,650
$100,000 - $250,000	$85,748	$92,176	$93,492	$96,663	$11,763	$8,748	$4,822	$4,975
$250,000 - $500,000	$147,594	$155,204	$158,239	$181,510	$23,449	$19,446	$14,303	$15,068
$500,000 - $1,000,000	$259,954	$271,347	$273,228	$304,627	$36,943	$29,646	$21,399	$22,433
>$1,000,000	$566,992	$573,032	$569,536	$649,076	$72,952	$70,817	$71,704	$74,457

Table 12.34 Margin Variability With Combined Stabilization Layers , Dairy Farms 1998-2001

Dairy	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$28,307	$30,532	$46,036	$46,428	$13,862	$12,306	$2,341	$2,241
$25,000 - $50,000	$32,581	$36,336	$44,621	$44,662	$10,359	$9,258	$1,147	$1,217
$50,000 - $100,000	$37,516	$40,743	$40,821	$40,900	$6,102	$4,187	$2,874	$2,700
$100,000 - $250,000	$66,127	$72,085	$72,254	$72,410	$10,207	$6,936	$5,866	$5,879
$250,000 - $500,000	$126,289	$134,216	$130,806	$130,465	$16,700	$12,136	$12,938	$13,267
$500,000 - $1,000,000	$221,070	$232,622	$226,125	$225,886	$26,029	$19,765	$21,955	$22,185
>$1,000,000	$453,408	$465,076	$464,246	$459,793	$67,446	$59,513	$51,403	$56,893

	Hired Arms Length Labour as an Eligible Expense							
Dairy	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$42,495	$44,720	$60,224	$62,223	$19,817	$18,574	$759	$1,345
$25,000 - $50,000	$48,219	$51,973	$60,259	$64,264	$15,923	$14,809	$1,365	$1,326
$50,000 - $100,000	$53,503	$56,730	$56,809	$57,700	$6,895	$5,271	$3,049	$3,027
$100,000 - $250,000	$102,488	$108,446	$108,615	$115,535	$10,495	$7,477	$5,431	$5,549
$250,000 - $500,000	$196,716	$204,643	$201,233	$220,922	$17,289	$13,356	$13,226	$13,637
$500,000 - $1,000,000	$341,979	$353,531	$347,034	$383,851	$27,531	$22,391	$23,255	$23,580
>$1,000,000	$758,944	$770,612	$769,781	$883,879	$79,563	$73,448	$61,124	$64,676

Table 12.35 Margin Variability With Combined Stabilization Layers, Hog Farms 1998-2001

Hogs	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$9,402	$14,565	$24,232	$24,482	$7,370	$5,014	$189	$188
$25,000 - $50,000	$6,054	$11,458	$14,273	$14,441	$6,032	$4,314	$1,447	$1,426
$50,000 - $100,000	$14,844	$23,048	$23,515	$23,571	$9,337	$5,552	$1,968	$1,860
$100,000 - $250,000	$32,111	$46,420	$44,494	$44,626	$12,740	$6,091	$2,929	$2,941
$250,000 - $500,000	$66,399	$88,034	$82,895	$83,130	$22,021	$11,865	$7,400	$7,075
$500,000 - $1,000,000	$112,574	$144,023	$136,019	$135,794	$44,692	$28,468	$20,155	$19,976
>$1,000,000	$314,838	$359,052	$356,719	$354,554	$143,412	$115,094	$87,351	$91,057

Hogs	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$17,885	$23,049	$32,716	$33,075	$9,226	$7,076	$135	$137
$25,000 - $50,000	$16,636	$22,040	$24,855	$25,760	$6,670	$4,793	$1,454	$1,466
$50,000 - $100,000	$28,424	$36,628	$37,095	$38,273	$9,040	$5,277	$1,415	$1,378
$100,000 - $250,000	$53,391	$67,700	$65,774	$68,636	$13,386	$6,698	$2,778	$2,867
$250,000 - $500,000	$105,792	$127,426	$122,288	$129,050	$24,511	$14,321	$8,684	$8,904
$500,000 - $1,000,000	$188,093	$219,541	$211,538	$233,332	$46,405	$30,332	$20,170	$22,380
>$1,000,000	$532,062	$576,275	$573,942	$684,568	$166,924	$134,809	$108,089	$120,014

Table 12.36 Margin Variability With Combined Stabilization Layers, Beef Cow-calf Farms 1998-2001

Cow Calf	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$2,566	$5,118	$7,999	$8,207	$5,414	$4,316	$1,637	$1,622
$25,000 - $50,000	$8,015	$11,034	$12,226	$12,265	$5,470	$3,951	$2,270	$2,254
$50,000 - $100,000	$15,149	$20,111	$20,841	$20,965	$8,771	$6,270	$3,363	$3,211
$100,000 - $250,000	$24,203	$33,519	$35,051	$35,361	$14,252	$9,752	$4,353	$4,324
$250,000 - $500,000	$38,100	$53,649	$55,340	$55,373	$26,029	$17,980	$10,310	$10,130
$500,000 - $1,000,000	$55,540	$73,768	$77,136	$77,453	$29,416	$21,591	$8,988	$8,620

	Hired Arms Length Labour as an Eligible Expense							
Cow Calf	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$9,509	$12,061	$14,942	$15,355	$5,307	$4,278	$1,131	$1,110
$25,000 - $50,000	$17,846	$20,864	$22,056	$22,489	$5,455	$4,026	$1,988	$1,968
$50,000 - $100,000	$27,887	$32,849	$33,579	$34,841	$8,718	$6,251	$2,883	$2,910
$100,000 - $250,000	$41,243	$50,559	$52,090	$54,488	$14,248	$9,867	$3,820	$3,749
$250,000 - $500,000	$63,794	$79,343	$81,034	$86,649	$26,149	$17,981	$8,475	$8,698
$500,000 - $1,000,000	$85,953	$104,180	$107,548	$114,235	$31,546	$23,533	$9,406	$8,994

Table 12.37 Margin Variability With Combined Stabilization Layers, Beef Feedlot Farms 1998-2001

Feedlot	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
>$1,000,000	$138,880	$175,950	$204,718	$201,941	$113,717	$94,181	$42,716	$43,544

Feedlot	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
>$1,000,000	$216,522	$175,950	$204,718	$201,941	$111,861	$149,201	$95,523	$123,934

Table 12.38 Margin Variability With Combined Stabilization Layers, Tobacco Farms 1998-2001

Tobacco	Average Gross Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$30,710	$35,732	$54,133	$66,881	$21,865	$20,270	$2,164	$1,221
$25,000 - $50,000	$39,582	$46,930	$56,465	$63,257	$20,012	$17,720	$3,564	$3,079
$50,000 - $100,000	$54,382	$65,849	$71,281	$77,456	$23,839	$18,685	$4,252	$3,285
$100,000 - $250,000	$74,722	$91,143	$93,797	$97,208	$32,241	$23,696	$10,517	$10,107
$250,000 - $500,000	$119,307	$141,470	$140,036	$142,328	$44,478	$29,984	$19,729	$20,081
$500,000 - $1,000,000	$236,962	$267,513	$267,634	$268,793	$68,233	$46,593	$35,701	$35,509
>$1,000,000	$504,925	$569,019	$582,884	$567,898	$181,208	$136,582	$103,008	$129,606

Tobacco	Average Production Margin				Normal Deviation Below Average			
Sales Range	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM	No Pgm	Current Pgm - Adj OFIDP	3 Tiered BRM	2 Tiered BRM
$0 - $25,000	$46,941	$51,962	$70,363	$96,405	$25,821	$24,361	$3,003	$2,606
$25,000 - $50,000	$57,195	$64,543	$74,078	$97,158	$21,553	$19,366	$4,022	$4,894
$50,000 - $100,000	$74,190	$85,658	$91,089	$124,714	$25,560	$20,445	$5,148	$5,210
$100,000 - $250,000	$108,016	$124,437	$127,091	$181,910	$31,510	$23,324	$8,761	$10,141
$250,000 - $500,000	$180,498	$202,661	$201,227	$287,763	$42,176	$28,530	$15,761	$19,449
$500,000 - $1,000,000	$363,322	$393,872	$393,993	$557,660	$63,734	$43,377	$28,101	$35,715
>$1,000,000	$707,794	$771,888	$785,753	$1,138,207	$130,018	$91,870	$49,736	$102,482

12.3 NISA 1-2-3

An area of curiosity is the "value of the asset" under the proposed program compared to the current programs. In particular, the issue is entitlement. Under NISA, farmers were credited for government matching funds when they made their contributions. Therefore, the program makes government money an entitlement. Farmers couldn't realize the payment unless they took a loss, but this was triggered by a cash accounting measure or a minimum income trigger.

Under the proposed program, there is no entitlement, and payments only occur when there is need. Not surprisingly, some farmers are concerned that the proposed program may not provide the same level of income supplement.

The only way to test this is to compare the eligible NISA matching funds during a period of time to what would be paid out in the top two tiers of the BRM program. This was done using the sample of NISA accounts for the period 1998 – 2001 (Table 12.39). The results show the amount of matching funds that were actually available to the accounts under NISA, compared to what their claims would have been in the top two tiers of the BRM (on a cash basis). The results show that there would actually have been a higher overall payout of just over $50 million in the top two tiers of the proposed BRM than in NISA. All of the industries, except fruit and vegetables and greenhouses, would have received more payment.

Those two industries are affected for two reasons. One is SDRM, which provided a higher level of support to horticulture in place of effective crop insurance programs. The second is structural adjustment. There was a tremendous amount of planned growth in those two industries during the time period of the analysis. A number of farms in those two industries had their NISA entitlements increased substantially because they applied for structural adjustment. The proposed program will also allow for structural adjustment, but this analysis does not. In reality, the results quite substantially underestimate the likely effects of the proposed program on these two industries.

Table 12.39 NISA Matching Funds Relative to Triggered Stabilization Payments Under Proposed Program

	Number of Producers	**Matching NISA Contribution**		**BRM Payment in Top Two Tiers (gov't payment))**	
		Total $	Avg $/Farm	Total $	Avg $/Farm
Field Crops	6,158	$89,704,066	$14,567	$140,027,914	$22,739
Vegetables and Fruit	993	$65,517,663	$65,980	$39,926,187	$40,208
Green House (F&V)	123	$8,859,236	$72,026	$5,421,885	$44,080
Poultry	101	$928,525	$9,193	$2,404,558	$23,808
Dairy	435	$4,612,271	$10,603	$3,817,443	$8,776
Swine	900	$30,954,171	$34,394	$32,261,394	$35,846
Beef Cow-calf	1,452	$15,764,137	$10,857	$25,311,153	$17,432
Beef Feedlot	163	$7,598,712	$46,618	$18,073,147	$110,878
Tobacco	709	$27,903,888	$39,357	$36,279,009	$51,169
Total	**11,034**	**$251,842,670**	**$22,824**	**$303,522,690**	**$27,508**

12.4 Observations About Program Variants

It would appear that most of the individual segments of the industries are either better off or not affected by treating hired labour as an ineligible expense. Fruit and vegetable farms and greenhouses would have received less payout over all with labour as an ineligible expense, but in both cases the overall result is driven by the two highest gross sales categories. The small and medium farms in these industries would actually have received more in total payments. The actual number of farms that are worse off with hired labour as an ineligible expense is quite small.

Contrasting the tobacco industry results with the other horticulture operations gives a clue about treatment of this variable. The fact that the tobacco industry would have received more payments with labour as an eligible expense without exception across size groups is probably reflective of the rapid movement toward mechanical technology in this industry during the past decade. In earlier years, it would likely have been more labour intensive, and the results would have been different for the industry. Conversely, it is likely that large fruit and vegetable farms and green houses have a relatively high labour complement and that labour cost is negatively correlated with revenue – perhaps in part because more labour is hired to salvage poor crops. As technology changes, the results may change.

Therefore, it is not obvious how to treat labour. What is clear is that the majority of farms are either better off or only marginally affected if hired labour is not an eligible expense, and the worst affected are the largest operations in the green house and fruit and vegetable industries. Therefore, the largest number is made better off by not having labour as an eligible expense. Also, not including labour makes the program simpler and easier to administer.

We are inclined to suggest, in general, that hired labour not be an eligible expense as a general rule, but that farmers be given the opportunity to include it if they desire. If they do decide to include it as an expense, the decision should be made at the outset and should remain in force for a given period of time – i.e. three to five years. This will make program administration easier.

Combining the top two tiers of the program so that the cost share is 40:60 is appealing. It is simpler. It is more similar to the current NISA program. The analysis shows that it would have paid slightly more money during 1998 – 2001 and would have had few effects on the stabilizing characteristics of the program.

13.0 "Affordability" of Proposed Program

The design of the proposed BRM program is such that producers must submit a deposit to a fund in order to leverage receipts of government funds. The merits of this design feature of the proposed program and some alternatives to it are discussed elsewhere in this report. Given the need for farmers to forward deposits under the proposed program, a natural question to ask is, "do farmers have the cash necessary to make their required deposits". The purpose of this section is to answer this question. Let us be clear here. The issue of affordability is not one of the cost to participate. There is no cost beyond the interest cost of the money that is tied up in the deposit and a very modest administration fee of $50. The issue is one of cash flow, and the question is whether it makes sense to have a large amount of funds tied up in deposits for a government program, and whether there is a significant difference between the amount tied up under the proposed program and what is tied up now in NISA.

Under the proposed program, at the time of closure of NISA accounts, producers will have an option to roll Fund 1 balances into deposits for the BRM program. They will also clearly have the option of forwarding liquidated Fund 2 balances as deposits into the BRM program after paying the deferred tax liability. This is in addition to borrowings for the purpose of BRM deposits (discussed below) and any free cash that can be contributed. Thus, the level of current NISA balances relative to BRM deposit requirements will determine producers' needs for cash from other sources to participate in the proposed program.

To determine the extent to which NISA balances can fund deposits under the proposed program, NISA Fund 1 and Fund 2 balances were analyzed across farm types and sizes, and then compared with deposits required given reference production margins. Table 13.1 presents the aggregate and average per farm NISA balances across Ontario farm commodity segments (as defined by majority of farm sales) at the end of the last fiscal year. The table shows that aggregate Ontario NISA balances are almost $680 million. Well over half of the balances are held by field crop and fruit and vegetable farms. Greenhouse, swine, tobacco, and fruit and vegetable farms have lower Fund 2 balances than Fund 1 balances, indicating that withdrawals had been made; this is not evident from the other commodity sectors. Table 13.2 provides a breakdown by commodity segment and farm sales range. Across farm types, average NISA balances increase with farm size, but with the greatest proportion of NISA balances held by farms in the middle size range.

Table 13.3 presents the frequency with which NISA balances are sufficient to cover deposits to the proposed program. Proposed program balances are shown as the maximum 26% deposit, and the actual amount required for each farm's claims. The table shows that, with the exception of supply managed segments, there is a surprising level of uniformity in the capability of NISA balances to fund the producer's balance of the proposed program. Across most commodity segments, a sufficient Fund 1 balance exists to fund 60-70% of the maximum and 70-80% of the minimum BRM deposit required. Table 13.3 shows that if both Fund 1 and Fund 2 are used to finance deposits, the percentage of account holders with sufficient balance for full deposits under the proposed program increases further, although the values in the table for Fund 1 and Fund 2

overstate the case somewhat since tax liabilities on the Fund 2 balances are not accounted for. Supply managed segments have relatively smaller NISA balances, and as such cannot leverage them to fund the BRM deposit to the same extent. Table 13.4 fragments these results according to farm size.

Thus, between 63 and 68% of NISA participants can fund the BRM program from current NISA Fund 1 balances. Ignoring the tax liability on Fund 2 balances, the percentage of NISA participants who can fund BRM deposits from whole NISA balances increases to 68-72%.

Table 13.1 Current NISA Balances by Commodity Segment, $

	# of PIN	Total Fund 1	Total Fund 2	Total	Avg. Fund 1	Avg. Fund 2	Avg. Total
Cow-calf	1452	26,623,515	26,974,579	53,598,094	18,336	18,578	36,913
Feedlot	163	10,526,113	11,512,704	22,038,817	64,577	70,630	135,207
Dairy	435	8,052,279	9,445,803	17,498,082	18,511	21,714	40,225
Field Crops	6158	153,309,280	150,027,005	303,336,285	24,896	24,363	49,259
Greenhouse	123	12,992,026	8,797,761	21,789,787	105,626	71,527	177,153
Poultry	101	1,702,753	1,730,641	3,433,393	16,859	17,135	33,994
Swine	900	37,627,357	36,896,501	74,523,858	41,808	40,996	82,804
Tobacco	709	46,618,022	41,753,605	88,371,627	65,752	58,891	124,643
Fruit and Vegetable	993	95,601,032	75,299,150	170,900,182	96,275	75,830	172,105
Total	**11,034**	**355,902,749**	**323,950,466**	**679,853,215**	**32,255**	**29,359**	**61,614**

Table 13.2 Current NISA Balances by Commodity Segment, $

# of PIN	Sector	Income Range	Total Fund 1	Total Fund 2	Total Fund	Avg. Fund 1	Avg. Fund 2	Avg. Total Fund
206	Cow-Calf	$0 - $25,000	896,224	848,214	1,744,438	4,351	4,118	8,468
256	Cow-Calf	$25,000 - $50,000	2,145,419	2,117,091	4,262,511	8,381	8,270	16,650
308	Cow-Calf	$50,000 - $100,000	3,443,150	3,642,115	7,085,265	11,179	11,825	23,004
394	Cow-Calf	$100,000 - $250,000	9,315,946	9,112,328	18,428,274	23,645	23,128	46,772
197	Cow-Calf	$250,000 - $500,000	5,687,168	6,298,025	11,985,193	28,869	31,970	60,839
91	Cow-Calf	$500,000 - $1,000,000	5,135,608	4,956,806	10,092,414	56,435	54,470	110,906
1452	**Total**	**All Income Range**	**26,623,515**	**26,974,579**	**53,598,094**	**18,336**	**18,578**	**36,913**
4	Dairy	$0 - $25,000	14,846	15,319	30,164	3,711	3,830	7,541
6	Dairy	$25,000 - $50,000	15,712	28,239	43,951	2,619	4,707	7,325
25	Dairy	$50,000 - $100,000	163,410	184,764	348,174	6,536	7,391	13,927
147	Dairy	$100,000 - $250,000	1,787,643	1,855,559	3,643,202	12,161	12,623	24,784
167	Dairy	$250,000 - $500,000	3,105,218	3,724,825	6,830,043	18,594	22,304	40,898
70	Dairy	$500,000 - $1,000,000	2,213,716	2,670,193	4,883,909	31,625	38,146	69,770
16	Dairy	>$1,000,000	751,735	966,904	1,718,639	46,983	60,431	107,415
435	**Total**	**All Income Range**	**8,052,279**	**9,445,803**	**17,498,082**	**18,511**	**21,714**	**40,225**
163	Feedlot	>$1,000,000	10,526,113	11,512,704	22,038,817	64,577	70,630	135,207
1,761	Field Crops	$0 - $25,000	12,576,410	11,507,336	24,083,745	7,142	6,535	13,676
1,358	Field Crops	$25,000 - $50,000	19,395,054	18,319,350	37,714,403	14,282	13,490	27,772
1,334	Field Crops	$50,000 - $100,000	30,767,379	29,466,451	60,233,831	23,064	22,089	45,153
1,186	Field Crops	$100,000 - $250,000	47,596,934	47,246,262	94,843,196	40,132	39,837	79,969
348	Field Crops	$250,000 - $500,000	25,845,124	25,208,557	51,053,682	74,268	72,438	146,706
128	Field Crops	$500,000 - $1,000,000	12,675,813	13,420,922	26,096,735	99,030	104,851	203,881
43	Field Crops	>$1,000,000	4,452,566	4,858,127	9,310,693	103,548	112,980	216,528
6158	**Total**	**All Income Range**	**153,309,280**	**150,027,005**	**303,336,285**	**24,896**	**24,363**	**49,259**
16	GH (F&V)	$0 - $25,000	436,930	124,986	561,916	27,308	7,812	35,120
10	GH (F&V)	$25,000 - $50,000	298,275	124,371	422,646	29,827	12,437	42,265
23	GH (F&V)	$50,000 - $100,000	569,728	404,015	973,742	24,771	17,566	42,337
19	GH (F&V)	$100,000 - $250,000	1,935,633	1,636,842	3,572,475	101,875	86,150	188,025
21	GH (F&V)	$250,000 - $500,000	2,028,230	1,680,331	3,708,560	96,582	80,016	176,598
17	GH (F&V)	$500,000 - $1,000,000	3,615,639	2,563,579	6,179,218	212,685	150,799	363,483
17	GH (F&V)	>$1,000,000	4,107,593	2,263,637	6,371,229	241,623	133,155	374,778
123	**Total**	**All Income Range**	**12,992,026**	**8,797,761**	**21,789,787**	**105,626**	**71,527**	**177,153**
9	Poultry	$0 - $25,000	30,221	22,654	52,874	3,358	2,517	5,875
5	Poultry	$25,000 - $50,000	28,909	44,013	72,922	5,782	8,803	14,584
5	Poultry	$50,000 - $100,000	75,702	82,561	158,262	15,140	16,512	31,652

23	Poultry	$100,000 - $250,000	362,132	216,290	578,422	15,745	9,404	25,149
28	Poultry	$250,000 - $500,000	447,258	617,593	1,064,850	15,973	22,057	38,030
27	Poultry	$500,000 - $1,000,000	636,418	596,025	1,232,443	23,571	22,075	45,646
4	Poultry	>$1,000,000	122,114	151,506	273,619	30,528	37,876	68,405
101	**Total**	**All Income Range**	**1,702,753**	**1,730,641**	**3,433,393**	**16,859**	**17,135**	**33,994**
20	Swine	$0 - $25,000	169,664	61,844	231,508	8,483	3,092	11,575
33	Swine	$25,000 - $50,000	212,580	200,487	413,067	6,442	6,075	12,517
71	Swine	$50,000 - $100,000	832,538	835,451	1,667,989	11,726	11,767	23,493
243	Swine	$100,000 - $250,000	5,954,710	5,615,167	11,569,878	24,505	23,108	47,613
252	Swine	$250,000 - $500,000	11,043,294	10,594,047	21,637,341	43,823	42,040	85,862
158	Swine	$500,000 - $1,000,000	10,294,810	9,862,161	20,156,971	65,157	62,419	127,576
123	Swine	>$1,000,000	9,119,760	9,727,345	18,847,104	74,144	79,084	153,228
900	**Total**	**All Income Range**	**37,627,357**	**36,896,501**	**74,523,858**	**41,808**	**40,996**	**82,804**
47	Tobacco	$0 - $25,000	1,176,566	774,768	1,951,333	25,033	16,484	41,518
33	Tobacco	$25,000 - $50,000	1,688,641	1,210,634	2,899,275	51,171	36,686	87,857
83	Tobacco	$50,000 - $100,000	3,385,834	3,108,402	6,494,236	40,793	37,451	78,244
297	Tobacco	$100,000 - $250,000	18,081,807	15,639,467	33,721,274	60,882	52,658	113,540
195	Tobacco	$250,000 - $500,000	16,087,000	15,741,915	31,828,916	82,497	80,728	163,225
48	Tobacco	$500,000 - $1,000,000	5,024,511	4,657,676	9,682,187	104,677	97,035	201,712
6	Tobacco	>$1,000,000	1,173,663	620,743	1,794,407	195,611	103,457	299,068
709	**Total**	**All Income Range**	**46,618,022**	**41,753,605**	**88,371,627**	**65,752**	**58,891**	**124,643**
138	Veg. & Fruit	$0 - $25,000	1,275,823	936,418	2,212,242	9,245	6,786	16,031
101	Veg. & Fruit	$25,000 - $50,000	1,691,234	1,482,730	3,173,964	16,745	14,680	31,425
137	Veg. & Fruit	$50,000 - $100,000	3,874,146	3,103,047	6,977,193	28,278	22,650	50,928
232	Veg. & Fruit	$100,000 - $250,000	17,496,627	12,497,820	29,994,447	75,416	53,870	129,286
146	Veg. & Fruit	$250,000 - $500,000	18,599,868	14,427,764	33,027,632	127,396	98,820	226,217
130	Veg. & Fruit	$500,000 - $1,000,000	25,439,586	20,571,937	46,011,522	195,689	158,246	353,935
109	Veg. & Fruit	>$1,000,000	27,223,748	22,279,435	49,503,183	249,759	204,398	454,158
993	**Total**	**All Income Range**	**95,601,032**	**75,299,150**	**170,900,182**	**96,275**	**75,830**	**172,105**

Table 13.3 Sufficiency of NISA Fund Balances Relative to BRM Funding Requirements

	# of Participant	Fund 1 enough to cover Max Deposit (% of farms)	Total Fund enough to cover Max Deposit (% of Farms)	Fund 1 enough to cover Min Deposit (% of Farms)	Total Fund enough to cover Min Deposit (% of Farms)
Cow-calf	1452	63.15%	72.38%	68.53%	75.34%
Feedlot	163	40.49%	51.53%	46.01%	53.99%
Dairy	435	4.14%	25.06%	11.49%	36.78%
Field Crops	6158	64.21%	73.90%	69.76%	77.41%
Greenhouse	123	60.98%	64.23%	64.23%	66.67%
Poultry	101	14.85%	23.76%	18.81%	32.67%
Swine	900	49.00%	65.89%	59.56%	70.89%
Tobacco	709	54.30%	63.61%	62.76%	68.97%
Fruit and Vegetable	993	66.36%	73.72%	72.61%	77.04%
Total	**11,034**	**59.18%**	**69.55%**	**65.40%**	**73.55%**

Table 13.4 Sufficiency of NISA Fund Balances Relative to BRM Funding Requirements by Farm Sales Category

No. of Participant	Sector	Income Range	Fund 1 enough to cover Max Deposit (Share of Farms)	Total Fund enough to cover Max Deposit (Share of Farms)	Fund 1 enough to cover Min Deposit (Share of Farms)	Total Fund enough to cover Min Deposit (Share of Farms)
206	Cow-Calf	$0 - $25,000	60.19%	67.96%	66.02%	71.84%
256	Cow-Calf	$25,000 - $50,000	66.02%	74.22%	68.75%	75.00%
308	Cow-Calf	$50,000 - $100,000	58.77%	66.88%	64.94%	70.78%
394	Cow-Calf	$100,000 - $250,000	65.48%	75.89%	70.05%	78.93%
197	Cow-Calf	$250,000 - $500,000	65.48%	75.13%	73.60%	78.17%
91	Cow-Calf	$500,000 - $1,000,000	61.54%	74.73%	68.13%	78.02%
1452	**Total**	**All Income Range**	**63.15%**	**72.38%**	**68.53%**	**75.34%**
4	Dairy	$0 - $25,000	0.00%	50.00%	0.00%	75.00%
6	Dairy	$25,000 - $50,000	16.67%	50.00%	16.67%	50.00%
25	Dairy	$50,000 - $100,000	12.00%	52.00%	20.00%	64.00%
147	Dairy	$100,000 - $250,000	6.12%	29.25%	17.69%	44.90%
167	Dairy	$250,000 - $500,000	1.20%	14.37%	5.39%	23.95%
70	Dairy	$500,000 - $1,000,000	4.29%	30.00%	11.43%	37.14%
16	Dairy	>$1,000,000	0.00%	18.75%	6.25%	37.50%
435	**Total**	**All Income Range**	**4.14%**	**25.06%**	**11.49%**	**36.78%**
163	Feedlot (Beef)	>$1,000,000	40.49%	51.53%	46.01%	53.99%
163	**Total**	**All Income Range**	**40.49%**	**51.53%**	**46.01%**	**53.99%**
1,761	Field Crops	$0 - $25,000	64.22%	71.49%	68.09%	74.39%
1,358	Field Crops	$25,000 - $50,000	68.63%	77.25%	72.97%	79.75%
1,334	Field Crops	$50,000 - $100,000	65.44%	76.09%	72.49%	80.13%
1,186	Field Crops	$100,000 - $250,000	62.14%	73.61%	68.97%	77.99%
348	Field Crops	$250,000 - $500,000	56.90%	71.26%	65.80%	75.57%
128	Field Crops	$500,000 - $1,000,000	51.56%	64.06%	57.03%	69.53%
43	Field Crops	>$1,000,000	39.53%	58.14%	44.19%	65.12%
6158	**Total**	**All Income Range**	**64.21%**	**73.90%**	**69.76%**	**77.41%**
16	GH (F&V)	$0 - $25,000	50.00%	50.00%	50.00%	56.25%
10	GH (F&V)	$25,000 - $50,000	70.00%	80.00%	80.00%	80.00%
23	GH (F&V)	$50,000 - $100,000	56.52%	65.22%	69.57%	73.91%
19	GH (F&V)	$100,000 - $250,000	63.16%	68.42%	63.16%	68.42%

21	GH (F&V)	$250,000 - $500,000	38.10%	38.10%	38.10%	38.10%
17	GH (F&V)	$500,000 - $1,000,000	82.35%	82.35%	82.35%	82.35%
17	GH (F&V)	>$1,000,000	76.47%	76.47%	76.47%	76.47%
123	**Total**	**All Income Range**	**60.98%**	**64.23%**	**64.23%**	**66.67%**
9	Poultry	$0 - $25,000	11.11%	22.22%	11.11%	22.22%
5	Poultry	$25,000 - $50,000	20.00%	20.00%	20.00%	20.00%
5	Poultry	$50,000 - $100,000	40.00%	60.00%	60.00%	60.00%
23	Poultry	$100,000 - $250,000	26.09%	34.78%	30.43%	43.48%
28	Poultry	$250,000 - $500,000	17.86%	21.43%	21.43%	35.71%
27	Poultry	$500,000 - $1,000,000	0.00%	11.11%	3.70%	22.22%
4	Poultry	>$1,000,000	0.00%	25.00%	0.00%	25.00%
101	**Total**	**All Income Range**	**14.85%**	**23.76%**	**18.81%**	**32.67%**
20	Swine	$0 - $25,000	45.00%	50.00%	50.00%	50.00%
33	Swine	$25,000 - $50,000	48.48%	60.61%	54.55%	66.67%
71	Swine	$50,000 - $100,000	54.93%	61.97%	59.15%	61.97%
243	Swine	$100,000 - $250,000	57.20%	67.49%	65.02%	71.19%
252	Swine	$250,000 - $500,000	51.19%	71.43%	64.68%	75.00%
158	Swine	$500,000 - $1,000,000	48.10%	68.35%	61.39%	74.05%
123	Swine	>$1,000,000	26.83%	54.47%	39.02%	67.48%
900	**Total**	**All Income Range**	**49.00%**	**65.89%**	**59.56%**	**70.89%**
47	Tobacco	$0 - $25,000	31.91%	40.43%	40.43%	46.81%
33	Tobacco	$25,000 - $50,000	60.61%	63.64%	63.64%	66.67%
83	Tobacco	$50,000 - $100,000	60.24%	69.88%	66.27%	73.49%
297	Tobacco	$100,000 - $250,000	56.90%	65.99%	65.99%	71.72%
195	Tobacco	$250,000 - $500,000	54.36%	65.13%	63.08%	70.77%
48	Tobacco	$500,000 - $1,000,000	45.83%	54.17%	56.25%	60.42%
6	Tobacco	>$1,000,000	50.00%	66.67%	66.67%	66.67%
709	**Total**	**All Income Range**	**54.30%**	**63.61%**	**62.76%**	**68.97%**
138	Veg. & Fruit	$0 - $25,000	61.59%	66.67%	65.94%	70.29%
101	Veg. & Fruit	$25,000 - $50,000	74.26%	78.22%	77.23%	80.20%
137	Veg. & Fruit	$50,000 - $100,000	59.85%	66.42%	64.96%	70.07%
232	Veg. & Fruit	$100,000 - $250,000	67.67%	74.57%	74.14%	78.45%
146	Veg. & Fruit	$250,000 - $500,000	69.86%	79.45%	77.40%	81.51%
130	Veg. & Fruit	$500,000 - $1,000,000	70.00%	76.92%	76.92%	80.00%
109	Veg. & Fruit	>$1,000,000	61.47%	74.31%	71.56%	78.90%
993	**Total**	**All Income Range**	**66.36%**	**73.72%**	**72.61%**	**77.04%**

What the foregoing indicates is that the BRM program, as proposed, will require more cash to be tied up in deposits than is currently in the NISA accounts. While the Fund 1 balances would cover about 2/3 of the requirement, this means that another third is required. What is the purpose of the cash deposit? Is it a good use of money?

In our discussions with government officials, two reasons have been provided for having the deposits, one of which is for having them be 100% of the producer's share. The first is that the program is about managing risk, and farmers should be consciously making decisions about it, not just collecting cheques. Requiring them to make a deposit means that they will be fully engaged. Moreover, since the program pays as much as 4:1 on the dollar, it is argued that it is not unreasonable to require that the producer's dollar is there. We agree with this concept, but don't understand why it would add to their engagement to require the full deposit to be there. Whether the deposit is $5000, or $26,000 doesn't likely change a farmer's inclination to pay attention. For most farmers, $5000 remains a not insignificant sum: one won't be five times more engaged if the deposit is five times as much.

In fact, the 1/3 initial deposit that has to be topped up by the end of the third year, or when there is a claim, is a bit silly. If a farmer has a 1/3 deposit in place, then has a bad year, the farmer will need to send the remainder of the deposit to the government, who then writes the farmer a cheque for both the farmer's and the government's share. In other words, the farmer needs to find cash when cash, almost by definition, is short so the farm can send the government a cheque, which the government will then send back to the farmer. This sounds like making work for the sake of making work.

The second reason given is that the program is designed to make the farmer whole (bring them back to the reference margin) by combining the government's and the farmer's shares. There is a concern that this principle will get lost if all of the deposit is not required. Therefore, government officials are concerned that not requiring the full deposit will put eventual pressure on for richer programs.

The latter is a matter of communication. We agree with the farm community that it is unnecessary to require this much money to be tied up in deposits. It can be used elsewhere. That is why, in earlier sections of this report, we suggested that depositing a letter of credit or developing an option (i.e. a derivative) to cover the deposit would be preferable. Also, in section 10.0, we suggested that another way to accomplish the same end is to charge a fee to farmers based on their likely benefits from the program. As with an option premium, the fee can be calculated based on the risk associated with industries or farm sizes.

14.0 Transitional Programming: Alternatives and Analysis

The first three years under the proposed program will be a period of transition from current programs to the new program. NISA accounts will be closed beginning at the end of 2003, and the CFIP program (OFIDP in Ontario) will be discontinued at the end of 2003. It is being proposed that NISA balances be withdrawn over a five-year period, during which the proposed program will begin and farmers may be drawing on them.

In addition, there will be a transition period for companion programs. Thus, for the three years of transition from current to proposed programs, a transition away from companion programs to solely the proposed program will occur.

The funding constraints for the three year transition are the following:

- The so-called "wedge" funding, which amounts to $167 million
- Funding allocated for contributions to MRI of $95 million
- Any funds in the MRI pool that become surplus in the future

Thus, a total of approximately $262 million exists to fund the transition.

Against these funding constraints, Table 14.1 presents the recent patterns in government funding of companion programs. The government contributions in the table include both provincial and federal government contributions for companion programs. The table shows actual government cost associated with companion programs in the previous three years, along with the average annual payment for companion programs and the total payment over the last three years. The last column provides a sum over three years of the highest payments observed in the last three years.

The values in the table suggest that if the three years in the wedge period resemble the previous three years, the funding that has been allocated between the MRI funding and the wedge funding would be insufficient to cover the all the companion programs listed. This is particularly the case if each of the three years in the transition period had the highest payments seen in the last three years. Thus, choices must be made between historic levels of companion program funding and funding that can be allocated to companions during the transition funding.

Choices must also be made with regard to the design of companion programs during the transition period. In particular, because NISA is being closed at the end of 2003, it begs the question as to how SDRM and the NISA top-up programs will operate. Under the proposed program, no new contributions to NISA will be accepted, and producers will be required to withdraw 20% of their NISA Fund 2 balance by March 31st, 2004, with the remainder withdrawn over the next 5 years. Any NISA Fund 1 balance not used to fund a producer's BRM deposit would be withdrawn in an equal amounts to Fund 2. Thus, the companion funding in the transition period would not have a "fund" to go to as it has in under current programs.

As a means to redesign SDRM and NISA top-ups in the transition period, the following options are apparent:

- Issue payments directly to producers for SDRM and other top-up payments based on ENS, adjusted for the taxable liability
- Direct SDRM and top-up payments based on ENS into BRM deposits, with an adjustment for tax liability on the government portion
- Establish "new" Fund 1 and Fund 2 accounts in which to accumulate SDRM and top-up payments based on ENS, with withdrawal triggers linked to defined perils and/or negative margins.

Table 14.1 Government Contributions to Companion Programs, 2000-01 to 2002-03

	2000-01	2001-02	2002-03	Average/yr	3-year Total	3-year Maximum Total
NISA Top-ups	31,267,000	32,195,000	58,712,000	40,724,667	122,174,000	176,136,000
MRI	72,718,000	43,571,000	18,139,000	44,809,333	134,428,000	218,154,000
SDRM	4,138,000	9,776,000	10,550,000	8,154,667	24,464,000	31,650,000
Other	25,126,000	8,303,000	13,390,000	15,606,333	46,819,000	75,378,000
Total	133,249,000	93,845,000	100,791,000	109,295,000	327,885,000	399,747,000

The first design for SDRM and top-ups in the transition appears relatively straightforward. Rather than deposits being matched and directed to a fund, a cheque would be issued from government directly to the producer in the amount of X% of ENS to producers that had historically participated in SDRM and NISA. Unlike the operation of SDRM and top-ups under current programs, under this design no conscious effort would be required on behalf of the producer to obtain the entitlement. Under the current design, the producer must actually make a contribution in order to receive the entitlement. As a result of the removal of the requirement for a deposit on behalf of the producer, it presents the likely potential that total payments to SDRM and top-ups would increase.

Under the second design alternative, SDRM and top-up payments would be directed into BRM deposits to producers who had historically participated in SDRM and NISA. Rather than a cheque being written directly to the producer, funds would be deposited in the producer's BRM account. The tax liability owing to the payment could be either deducted at the time the payment is transferred as a deposit into the producer's BRM account, or at the time that a payment is triggered under the BRM program. Thus, the companion program money would be allocated to buttress the producer's BRM account.

Finally, given that NISA Fund 1 and Fund 2 are to be closed, a new Fund 1 and Fund 2 could be opened, with producer contributions going into Fund 1 and government matching funds going into Fund 2. Withdrawals could be triggered by hazards not well covered by crop insurance, or

negative margins. For example, if data can be readily observed to verify a spot loss, such as a frost on specialty crop, the producer would be eligible for a withdrawal; first from Fund 2 (with tax liability realized), then from Fund 1.

Among these three options, there are distinct advantages to the third. It has perhaps the most in common with program intentions associated with companion programs. First, in order to receive government entitlement, producers must set aside their own funds. The first two alternatives do not have this characteristic, and it is difficult to see how they could be made to. Second, SDRM in particular was conceived as filling a gap in crop insurance for producers of horticultural products. Under the conception of the triggers for SDRM and top-ups in the transition period, this intent is retained. Third, a trigger concept as a means to access funds is retained under the third alternative, while it is not under the first alternative. Under the second or third alternatives the funds are only accessible by the producer on a countercyclical basis; under the first alternative the entitlement can be realized at any time after it has been paid. The potential weakness of the third option is that it requires new accounts to set up because current Fund 1 and Fund 2 accounts are to be dissolved. This introduces a setup cost that would not be necessary if current Fund 1 and Fund 2 accounts could remain open and be used.

Appendix I

The Proposed Program: A Conceptual Model

There are three related conceptual components of the proposed BRM program:

- Payment calculation
- Reference margin calculation
- Deposit calculation

Of these three, the deposit calculation is among the most complex to treat in a generic way, but at the same time the least relevant to the overall operation of the proposed program. This is because the deposit remains the producer's money (it is simply cash flow out of one account into another), and the affordability of this deposit is not an important issue, for reasons discussed elsewhere. In fact, by ignoring the deposit and the return of deposits through program payments, the understanding of the proposed program becomes much clearer. Thus, it is ignored here.

The payment calculation is a function of the magnitude of the deposit, or the level of "coverage", that has been selected by the producer. As such, it is technical. Consider the representation of the payment function below:

Let: π_t = farm profit in the current year
p_t = output price in the current year
q_t = volume of output in the current year
$c(q_t)$ = eligible costs in the current year
FC = ineligible costs in the current year
RM_t = reference margin in the current year

Then the farmer attempts to maximize income (given the proposed program) according to:

$$\text{Max } \pi_t = p_t q_t - c(q_t) - FC + .8*\max\{.7[RM_t - p_t q_t - c(q_t), 0]\} + .7*\max\{\min\{.85[RM_t - p_t q_t - c(q_t)], .85RM_t - .7RM_t\}, 0\} + .5*\max\{\min\{[RM_t - p_t q_t - c(q_t)], RM_t - .85RM_t\}, 0\} \quad [1]$$

The first components of the expression above deal with farm sales and costs, the later sections express the potential for payments under the proposed program. The terms in the first set of brace brackets identify that the producer receives 80% of losses below 70% of the reference margin, or zero (whichever is greater). The second brace bracketed terms show that, in addition, the producer receives 70% of losses below 85% of reference margin less current year margin up to 15% of reference, or zero (whichever is greater). The final set of terms show that the producer receives 50% of the reference margin less current year margin, up to 15% of reference, or zero (whichever is greater).

The specific nature of an individual's payment function will depend on the deposit (coverage) that has been chosen. The above expression assumes a deposit equivalent to 100% "coverage"; for farmers with deposits at the 85% level, the final term would not apply. Payment for farmers with deposits at the 70% would be represented by eliminating the final two terms.

Implicit in the above expression is the calculation of the current year reference production margin, RM_t. It is given by the following:

$$RM_t = \frac{\sum_{t-1}^{t-5}[p_t q_t - c(q_t)] - \min_{t-1}^{t-5}\{p_t q_t - c(q_t)\} - \max_{t-1}^{t-5}\{p_t q_t - c(q_t)\}}{3} \qquad [2]$$

In the current year reference margin expression, the eligible revenue less eligible expenses (production margin) in each of the previous five years is summed, with the minimum production margin and maximum production margin over the previous five years subtracted. The remaining three years' data is divided by three to calculate the average that forms the reference margin.

From the perspective of farm management incentives, what is more interesting is the reference production margin in the next year resulting from claims in the current year; it is given by the following:

$$RM_{t+1} = \frac{\sum_{t-1}^{t-4}[p_t q_t - c(q_t)] + p_t q_t - c(q_t) - \min_{t}^{t-4}\{p_t q_t - c(q_t)\} - \max_{t}^{t-4}\{p_t q_t - c(q_t)\}}{3} \qquad [3]$$

The expression characterizing next year's reference production drops the oldest of the production margins in [2] and replaces it with the current year (year *t*) production margin; current year production margins are used in the minimum and maximum calculations to determine which years' production margins are omitted from the reference calculation.

Analysis of Payment and Reference Margin Calculations

The payment function presented above is static in nature; given results in the current year, it calculates the payment due to the producer. Decisions made in the current year can influence payments under the program, so expression [1] above is relevant in considering incentives under the proposed program. The decisions that influence the current year reference margin [2] have already been made by the time it comes into use as a reference. However, activities in the current year under [1] influence next year's reference margin defined by [3]; thus, [1] and [3] above are relevant in understanding incentives under the proposed program.

The payment function above shows that a payment can be triggered if the current year production margin falls below the reference production margin. Farmers may perceive an incentive to intentionally trigger a payment under the proposed program. The rationale for this is that they can access government payments and meet cash flow needs from their own deposit. In a sense, the proposed program allows the producer to experience a loss that is partially funded by government with no loss in cash flow, because of the cash flow on deposit that becomes accessible. The primary factor mitigating this incentive (besides detection and enforcement from program administrative staff) is that the reference margin in the next year adjusts in response to current year production margin. In other words, a farmer who intentionally triggered a payment under the program would see his or her reference production margin decrease in the future,

thereby decreasing future margin coverage. However, the implication of the intentionally triggered production margin loss depends on the extent to which the next year's production margin adjusts in response. The sensitivity of the subsequent year's reference margin to changes in the current year production margin can be determined by considering the effect of an incremental change in the current year's production (through a change in output or a change in price) on the reference margin.

The change in subsequent year reference margin [3] given by an incremental change in current year production is given by[15]:

$$\frac{\partial RM_{t+1}}{\partial q_t} = \frac{p_t - c'(q_t)}{3} - \begin{cases} \frac{p_t - c'(q_t)}{3} \text{ if } \min_t^{t-4}\{p_t q_t - c(q_t)\} = p_t q_t - c(q_t) \\ \frac{p_t - c'(q_t)}{3} \text{ if } \max_t^{t-4}\{p_t q_t - c(q_t)\} = p_t q_t - c(q_t) \\ 0 \text{ otherwise} \end{cases} \quad [4]$$

This shows that a one unit change in output in the current year changes the next year's reference by an amount proportional to one-third of the per-unit production margin, or by zero.

The change in subsequent year reference margin given by an incremental change in price in the current year is given by

$$\frac{\partial RM_{t+1}}{\partial p_t} = \frac{q_t}{3} - \begin{cases} \frac{q_t}{3} \text{ if } \min_t^{t-4}\{p_t q_t - c(q_t)\} = p_t q_t - c(q_t) \\ \frac{q_t}{3} \text{ if } \max_t^{t-4}\{p_t q_t - c(q_t)\} = p_t q_t - c(q_t) \\ 0 \text{ otherwise} \end{cases} \quad [5]$$

Thus, a one unit change in the price of the output changes the next year's reference production margin by an amount proportional to one-third of output.

In general, one would expect $q_t > p_t - c'(q_t)$, so the reference production margin next year is more sensitive to adjustments in price than output.

From the standpoint of moral hazard, the implication of the foregoing is the following:

- A producer who is intentionally trying to trigger a payment will attempt to do so in such a way that there is minimal reduction in the reference margin.
- The sensitivity of next year's reference margin to the current year reference margin is disjoint. For large production margin losses that are not registered as a 5-year minimum, the impact on the reference is one-third of the loss. However, if the loss is significant

[15] Because a maximum or minimum function if not differentiable, we must deal with the incremental change in a piecewise fashion

enough to be registered as a minimum, then there is no change. So the incentive is to make the current year's production margin loss sufficient to be registered as a 5 year minimum.

- As shown above, the reference margin will ultimately be more sensitive to price decreases than output decreases. So someone who is intentionally attempting to trigger a payment (and have a minimal impact on the reference margin) has every incentive to avoid good price risk management and use negative movements in price as means to register a 5-year minimum production margin.

Incentives Under Multiple Products

The approach applied above can also be used to determine whether there are incentives to engage in more risky enterprises. To understand whether the proposed program will give the incentive to move from less risky to more risky outputs, we expand the framework above to consider two farm outputs; one relatively risky, q^1, and another relatively low risk, q^2. Under this situation, the payment function becomes:

$$\pi_t = p^1_t q^1_t + p^2_t q^2_t - c(q^1_t) - c(q^2_t) - FC + .8*\max\{.7[RM_t - (p^1_t q^1_t + p^2_t q^2_t - c(q^1_t) - c(q^2_t)), 0]\}$$
$$+.7*\max\{\min\{.85[RM_t - (p^1_t q^1_t + p^2_t q^2_t - c(q^1_t) - c(q^2_t))], .85RM_t - .7RM_t\},0\}$$
$$+ .5* \max\{\min\{[RM_t - (p^1_t q^1_t + p^2_t q^2_t - c(q^1_t) - c(q^2_t))], RM_t - .85RM_t\},0\} \qquad [6]$$

Inspecting the payment function above reveals little about any incentive to produce the risky product or the less risky enterprise. If there is a loss in one product and not the other, the proposed program would issue a payment; if a loss were experienced in both products, a payment would be issued.

The limiting case occurs when losses in one product are accompanied by a gain in the other product. This would reduce the payment received under the proposed program, because it is whole-farm in nature. At the same time, the traditional rationale for diversification is precisely to offset losses in one enterprise from gains in another. Thus, the proposed program reduces the incentive for diversification on the grounds of risk spreading[16].

The reference production margin formula for the next year under two enterprises is given by:

$$RM_{+1} = \frac{\sum_{t-1}^{t-4}[p^1_t q^1_t + p^2_t q^2_t - c(q^1_t)\ c(q^2_t)] + p^1_t q^1_t + p^2_t q^2_t - c(q^1_t) - c(q^2_t) - \min^{t-4}_t\{p^1_t q^1_t + p^2_t q^2_t - c(q^1_t)\ c(q^2_t)\} - \max^{t-4}_t\{p^1_t q^1_t + p^2_t q^2_t - c(q^1_t)\ c(q^2_t)\}}{3}$$

[7]

The subsequent year reference production margin formula is essentially the same as that identified in [3] above, with the change to reflect the two enterprises.

[16] That does not imply that the proposed program is a disincentive to diversify; there are other reasons for diversification, such as synergy between enterprises, that this observation need not apply to.

To determine the impact of a change in the current year production margin from changes in output, we determine the impact of an incremental change in output in each product on next year's reference margin:

$$\frac{\partial RM_{t+1}}{\partial q_t^1} = \frac{p_t^1 - c'(q_t^1)}{3} - \begin{cases} \frac{p_t^1 - c'(q_t^1)}{3} \text{ if } \min_t^{t-4}\{p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2)\} = p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2) \\ \frac{p_t^1 - c'(q_t^1)}{3} \text{ if } \max_t^{t-4}\{p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2)\} = p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2) \\ 0 \text{ otherwise} \end{cases} \quad [8]$$

$$\frac{\partial RM_{t+1}}{\partial q_t^2} = \frac{p_t^2 - c'(q_t^2)}{3} - \begin{cases} \frac{p_t^2 - c'(q_t^2)}{3} \text{ if } \min_t^{t-4}\{p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2)\} = p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2) \\ \frac{p_t^2 - c'(q_t^2)}{3} \text{ if } \max_t^{t-4}\{p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2)\} = p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2) \\ 0 \text{ otherwise} \end{cases} \quad [9]$$

This result is analogous to [4] above. In this case, the enterprise with the greater per unit production margin will give the greater incremental change in the reference margin (i.e. give the greater probability of registering the current year as the minimum). The notion of a risky enterprise is such that it has a relatively high expected value (average) and relatively high variability in profit. One would expect that $E[p^1_t - c'(q^1_t)] > E[p^2_t - c'(q^2_t)]$. Thus, a desire to intentionally trigger claims without changing next year's reference margin would push farmers toward relatively risky enterprises.

The impact of a change in the current year production margin from changes in price is given by:

$$\frac{\partial RM_{t+1}}{\partial p_t^1} = \frac{q_t^1}{3} - \begin{cases} \frac{q_t^1}{3} \text{ if } \min_t^{t-4}\{p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2)\} = p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2) \\ \frac{q_t^1}{3} \text{ if } \max_t^{t-4}\{p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2)\} = p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2) \\ 0 \text{ otherwise} \end{cases} \quad [10]$$

$$\frac{\partial RM_{t+1}}{\partial p_t^2} = \frac{q_t^2}{3} - \begin{cases} \frac{q_t^2}{3} \text{ if } \min_t^{t-4}\{p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2)\} = p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2) \\ \frac{q_t^2}{3} \text{ if } \max_t^{t-4}\{p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2)\} = p_t^1 q_t^1 + p_t^2 q_t^2 - c(q_t^1)\ c(q_t^2) \\ 0 \text{ otherwise} \end{cases} \qquad [11]$$

The interpretation is similar to [5] above- the incremental change in reference margin due to a change in price is proportional to one-third of the output. If, for the riskier output, the percentage swing in price that is typically observed is greater than that for the less risky output, then the riskier output can more easily be used to trigger a payment without affecting the coverage under next year's reference margin. Thus, the effect of price change and the effect of output changes effectively say the same thing- that farmers attempting to intentionally trigger a payment without changing next year's reference margin are more likely to be able to do so through relatively risky enterprises.

Appendix II. Alberta Spring Price Endorsement and Revenue Insurance Coverage Compared to MRI

Alberta Agriculture Financial Services Corporation (AFSC) developed the Spring Price Endorsement (SPE) and Revenue Insurance Coverage (RIC) products to address losses in the value of crops within the growing season. Both SPE and RIC and endorsements under multiple-peril production insurance, with percentage loss coverage equal to that taken under production insurance. The program operates in the following way:

- In late January, the SPE benchmark price is set for the coming crop year (based on expectations of future market conditions). At the same time, the RIC price is set based on criteria including long-run average prices, loan rates under US farm programs, and production costs
- In late March, producers select coverage levels under crop insurance. The producer's coverage percentage under SPE/RIC is equal to the percentage coverage taken under crop insurance.
- In the fall, the producer's yield and the fall price are realized. The fall price is taken as the average of October daily futures price closes, adjusted using a fixed basis.
- SPE/RIC provides price coverage on the realized yield (not yield loss). SPE covers decreases in price between the January reference price and the fall price, if the decline in price is greater than 10%. The payout is capped at 50% of the January reference.
- RIC pays out 50% of the difference between the RIC reference and the fall price or the difference between the RIC reference and the January SPE reference price, whichever is smaller.
- A premium averaging about 7% of coverage is charged for SPE. No premium is charged for RIC; effectively it is co-insured.

An Example

Suppose that a given crop had a January SPE reference price of $3.00/bushel, an RIC reference of $2.80/bushel, and that a producer took 80% coverage with a reference yield of 150 bushels. Then, if the price in the fall fell to $2.50/bushel, and the yield was 120 bushels:

- SPE would cover 80% of the loss from $3.00 to $2.50 on 120 bushels, or ($3.00-$2.50)*.8*120 = $48/acre
- There would be no RIC payment, because the SPE reference price was higher than the RIC reference price
- Multiple peril crop insurance would pay out 80% of the yield loss between 150 and 120 bushels at the floating price
- Alternatively, if the RIC was higher than the SPE price, there would have been a payout of 50% of the difference between the RIC reference and the SPE January reference in addition to the above.
- If the fall price had been higher than the SPE January reference but lower than the RIC reference, a payment for 50% of the difference between the RIC reference and the fall price would have been made on the actual yield.

Comparison with Market Revenue Insurance in Ontario

SPE and RIC share a number of commonalities with MRI in Ontario. First, RIC uses a long run average price (in addition to US farm program parameters and production cost estimates) to establish its reference, as does MRI. Also, the payments under RIC are co-insured (rather than having an explicit premium) like MRI. In contrast to MRI, the SPE reference price changes each year in a way that is not predictable, and a non-refundable premium is charged for it. Also, there is no minimum price change in order for MRI to become effective.