

Farm Programs and Agricultural Support in Canada

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Table of Contents

1.	Introduction.....	1
2.	Agricultural Support in Canada: Background.....	3
3.	Canadian Agricultural Support Programs: History.....	8
4.	Canadian Agricultural Business Risk Management Programs	11
	4.1 Shift from Growing Forward (GF) to Growing Forward 2 (GF2).....	13
	4.2 From Growing Forward to the Canadian Agricultural Partnership (CAP).....	15
	4.3 Impact of BRM Programs and Changes to Programs on Farmers.....	18
	4.4 Program Funding and the Role of Provinces and Territories	18
	4.5 Private Market Agriculture Insurance Alternatives	23
5.	Supply Management	25
	5.1 Dairy Supply Management: Economic Framework	26
	5.2 Dairy Supply Management: Operation and Pitfalls	30
	5.3 Supply Management in Other Sectors	31
6.	Discussion and Recommendations	32
7.	References.....	35
	Appendix.....	38

1. INTRODUCTION

Canadian agricultural policy cannot be discussed without reference to the constitutional assignment of powers among the levels of government. Canada's Constitution requires that the federal government acts in conjunction with the provinces in planning agricultural policies and programs, with the eventual mix of policies and programs an outcome of bargaining between the provinces and the federal government. Included in this policy-setting framework is the issue of equalization payments, which amount to a transfer of monies from the 'have' provinces to the 'have-not' provinces so that 'fiscal capacity' is somewhat equal across provinces. While fiscal capacity refers to the ability of provinces to raise taxes, equalization payments are simply a mechanism to transfer wealth from one province to another. Agricultural payments are one means to make such transfers.

In Canada, provinces have power over certain areas of economic and social activity, with other powers the sole responsibility of the federal government and yet others shared between the provinces and the supra authority. Canada's provinces own their natural resources. Coal, oil and gas resources are mostly owned by provincial governments, with exceptions including federal lands, such as National Parks, private lands granted to the Canadian Pacific Railway in the late 1800s to incentivize construction of a trans-Canada railway (subsequently sold to private entities), and lands allocated to indigenous peoples. Agriculture falls under provincial jurisdiction, but with qualifications. The federal government exercises varying degrees of power in the resource sectors through its power over interprovincial and international trade, navigation and fisheries, and through other constitutional provisions – its spending and taxing powers, emergency power, and the declaratory power over works stated to be of general advantage to the nation (van Kooten and Scott 1995). How the federal government uses its powers determines the extent to which transaction costs are minimized, and the extent to which income is redistributed,

and at what cost.

Agriculture is a ‘shared jurisdiction’ where the federal government’s power originates with its constitutional responsibility over trade and through its spending power (viz., equalization payments). As a result, Canada’s agricultural policies differ greatly from those in the United States; nor does Canada have the fiscal and political wherewithal to keep pace with farm support levels in the United States and the European Union, despite attempts to the contrary during the 1980s and early 1990s (as shown in the next section). Further, because provinces are also responsible for agriculture, with the rural constituency carrying significant clout in provincial legislatures, agricultural policies differ among provinces – a farmer in one province might receive more support than a similarly situated farmer in another province. This occurs because agricultural programs are shared as follows:

1. The provincial and federal governments plus producers (referred to as ‘tripartite programs’), with costs usually but not always shared equally;
2. The provincial and federal governments (generally but not always shared equally);
3. More rarely between one level of government and producers; and
4. One level of government only (e.g., the federal government solely funded the now defunct feed freight assistance program, discussed below, while provinces have funded their own livestock programs).

That is, provinces can create their own support programs, and they individually bargain with the federal government in an effort to have more funds allocated their way, always keeping in mind the context of equalization.¹ In Canada, therefore, provinces and the federal government have to cooperate on agriculture. Of course, the provinces look to the feds for money to pay for

¹ The size and makeup of an agricultural sector varies greatly across provinces. For example, the grain producing provinces of Alberta, Saskatchewan and Manitoba face similar risks, so all three provinces will bargain for similar programs, and such programs generally include British Columbia’s small grain growing region in the northeast; these programs are not usually extended to grain farmers elsewhere in Canada. Nonetheless, a rich province such as Alberta may choose to support premium subsidies at a higher level.

agricultural programs, while they are reluctant to relinquish too much of their own power over agriculture.

2. AGRICULTURAL SUPPORT IN CANADA: BACKGROUND

To provide some indication of the degree to which Canada supports its agricultural sector, we first compare support for agriculture across sectors and countries using the OECD's producer support estimate (PSE) (Greenville 2017), and Anderson et al. (2013 and Anderson and Nelgen's (2013) Nominal Rate of Assistance (NRA). The PSE measures "policy transfers to agricultural producers, measured at the farm gate" and is "expressed as a share of gross farm receipts" (Organisation for Economic Co-operation and Development [OECD] 2018). The NRA is the percentage by which the domestic producer price is above (or below if negative) the border price of a similar product, net of transportation costs and trade margins – it is an estimate of direct government policy intervention.

As indicated in Figure 1, Canada's recent (2016) rate of assistance to agricultural producers (policy transfers as a share of gross farm receipts) is much lower than the OECD average (10.7% versus 18.9%). The rate of assistance has fallen with some hiccups from approximately 40% in the late 1980s to the present; it has fallen faster than that of the European Union and is now comparable to the rate provided by the United States, as seen in Figure 2.

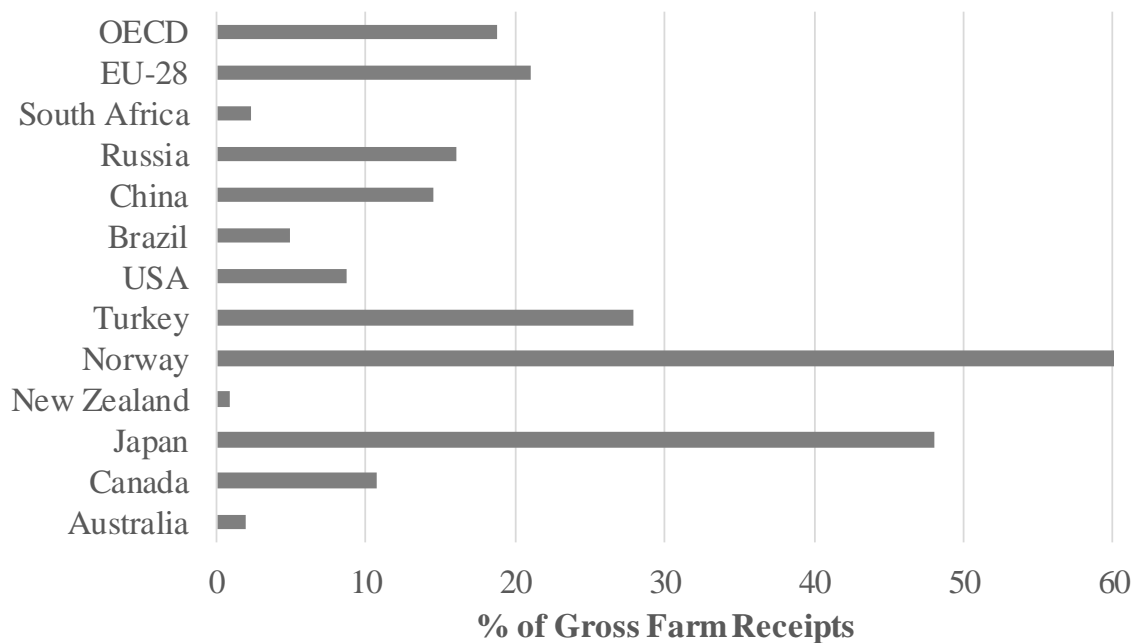


Figure 1: Rates of Assistance to Agriculture based on Producer Support Estimates, Selected Countries/Regions, 2016 (Source: OECD 2018)

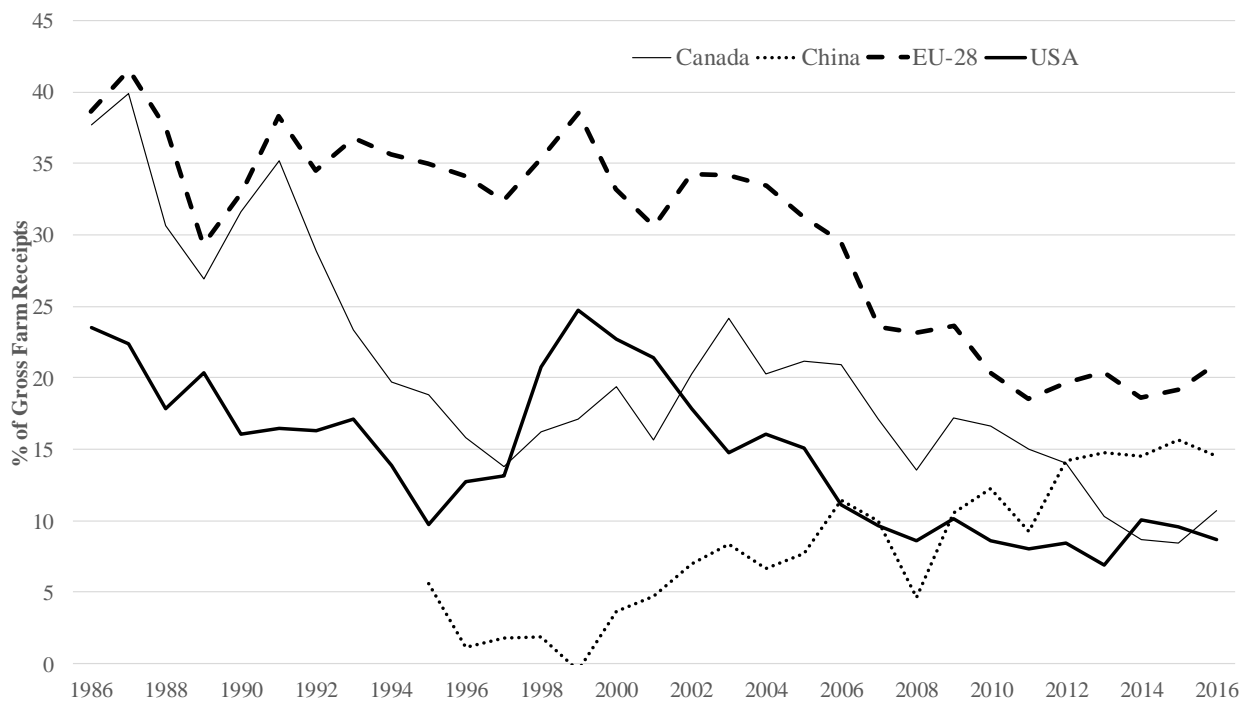


Figure 2: Rates of Assistance to Agriculture based on Producer Support Estimates, Canada, China, EU-28 and United States, 1986-2016 (Source: OECD 2018)

Canada's NRA has tracked higher than that of the United States and comparable countries in the last few years because of the role of the supply-managed sectors, especially dairy. Supply management began in Canada with passage of the Farm Products Agency Act in 1972, with effective quota regimes established in 1974 (see van Kooten 2019; van Kooten et al. 2019). As indicated in Figure 3, nominal rates of assistance since the early 1970s have ranged from near zero to more than 80% for eggs, and zero to 50% for poultry (notice the scale on the vertical axis). However, after implementation of supply management in dairy, NRAs increased from about 35% to as much as 480%, averaging nearly 200% thereafter. Meanwhile, NRAs and PSEs in the grains and livestock sectors are currently well below 5% (except poultry as it is a supply managed commodity) and maize (which is a minor crop subsidized to stimulate ethanol production but does not ripen in the grain belt).

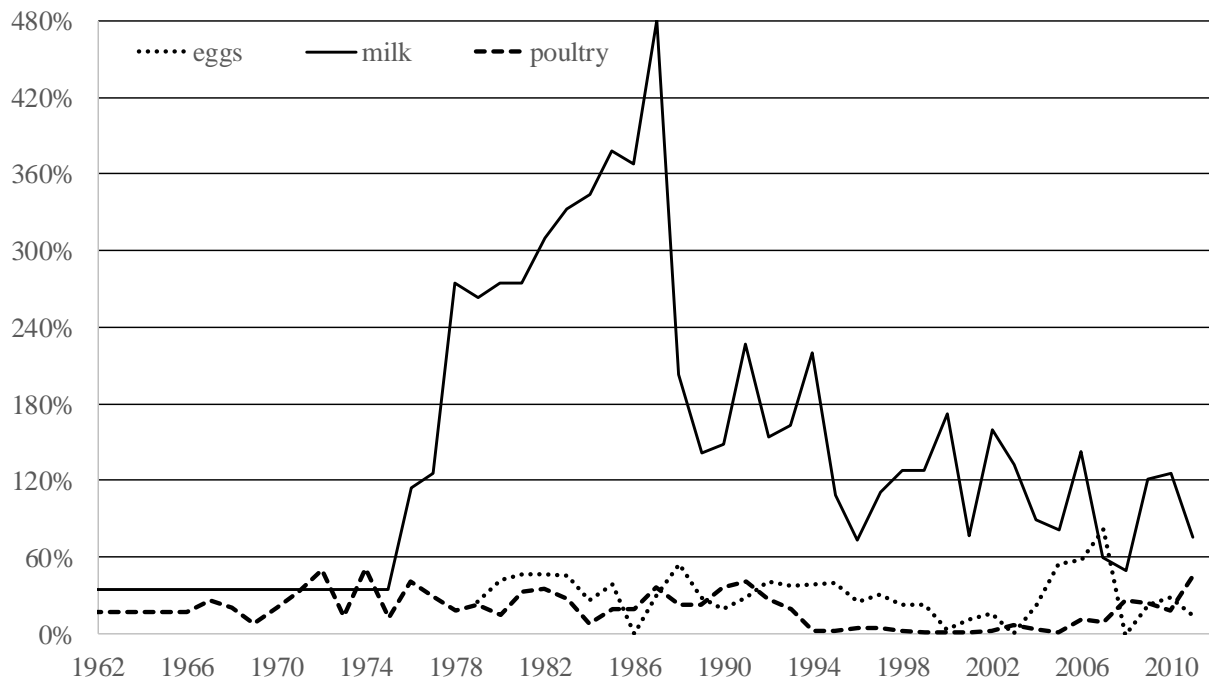


Figure 3: Nominal Rates of Assistance to Agriculture, Canada's Supply Managed Sectors plus Sugar, 1962-2011 (Source: Anderson and Nelgen 2013)

In Figure 4, we examine annual direct agricultural program payments as a proportion of

annual total farm cash receipts and of net farm income for the period 1980 to 2017. Except for 2004, real program payments exceeded net farm income between 2001 and 2007. When prices rebounded after 2007, the share of direct program payments declined dramatically, while net farm income grew. However, the ratio of direct payments to net farm income averaged 0.17 over the past five years (2013-2017), while averaging some 0.75 for the first 17 years of the new millennium. Meanwhile, the ratio of direct payments to real total cash receipts remained relatively more constant over the entire period 1980-2017.

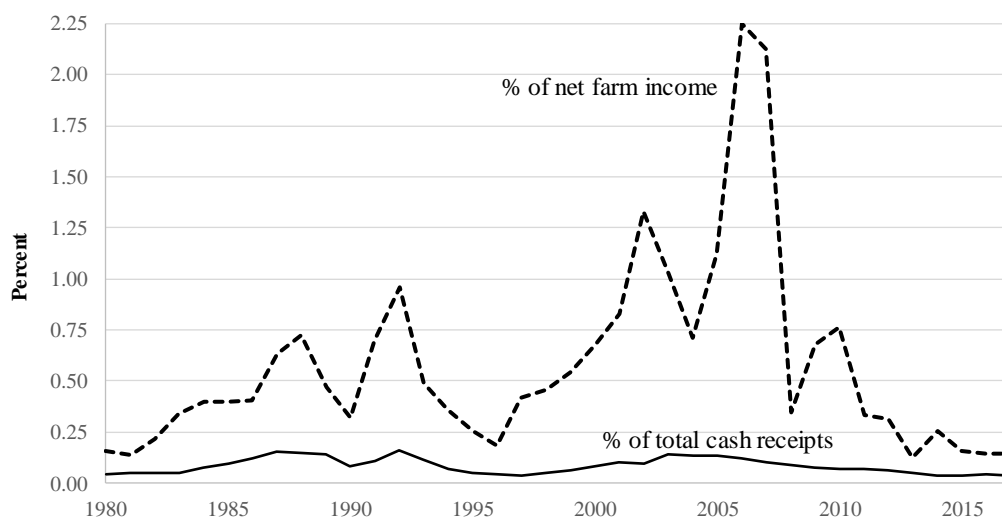


Figure 4: Ratio of Government Direct Agricultural Program Payments to Net Farm Income and to Total Cash Receipts, Canada, 1980-2017

As a last summary measure, direct payments are allocated by type of program in Figure 5. Crop insurance benefits and those provided by hail insurance are considered separately, as are payments provided by various provincial government programs. Payments related to AgriInvest are combined with those of a predecessor program, the Net Income Stabilization Account (NISA); similarly, AgriStability payments are combined with those of its Gross Revenue Insurance Program (GRIP) predecessor. (AgriInvest and AgriStability are discussed in section 4 on business risk management.) Finally, Western Grain Stabilization payments, pre-supply

management dairy payments, and a plethora of other government transfer payments are summed together under ‘Other.’ Notice that annual total program payments rose during much of the 1980s and flattened out during the 1990s, when payments averaged C\$3.0 billion (\$2017); however, payments averaged C\$4.1 billion during the period 2000-2017.²

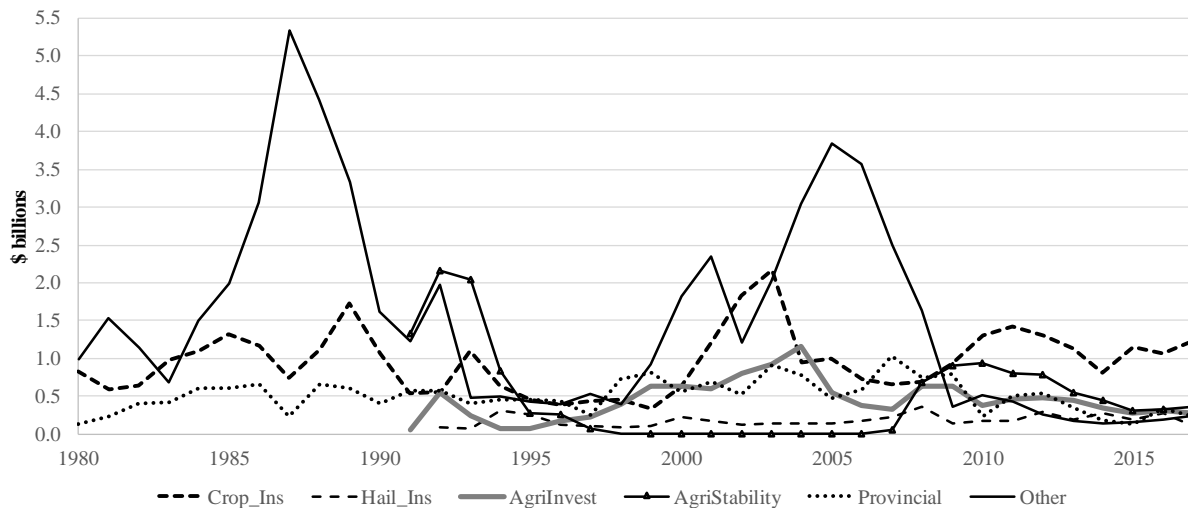


Figure 5: Government Direct Program Payments by Type of Program, Canada, 1980-2017 (\$2017 billion)

Direct payments from a variety of provincial and ‘other’ programs have historically been an important source of revenue for farmers. For example, in the mid-1980s, major funding for grain farmers came via the Western Grain Stabilization Act and the Special Canadian Grains program, while in 2007 provincial programs provided farmers with nearly \$1 billion (\$2017) with ‘other’ federal government programs providing more than \$3.5 billion. Vercammen (2013) compiled a list of 204 direct-payment programs in Canada for the period 1981-2010 (Figure 6).³ Canadian programs had an average weighted lifetime of 8.7 years and provided an annual

² Unless otherwise indicated, currency values are in Canadian dollars in the remainder of the chapter.

³ The author thanks Dr. James Vercammen for sharing his data. Figure 6 is a slightly modified version of Figure 1 in Vercammen (2013), while numbers in the text are based on the same dataset.

average payment of \$48.7 million (\$2002), with 27 programs providing an average of some \$282 million (\$2002) per year (see Appendix Table A1). Approximately 60% of all payments to agricultural producers over the period 1981-2010 came through some type of business risk management program; remaining transfers were pure income support and included the Special Canadian Grains Program, feed freight assistance, input rebates, direct payments from provincial programs, and so on.

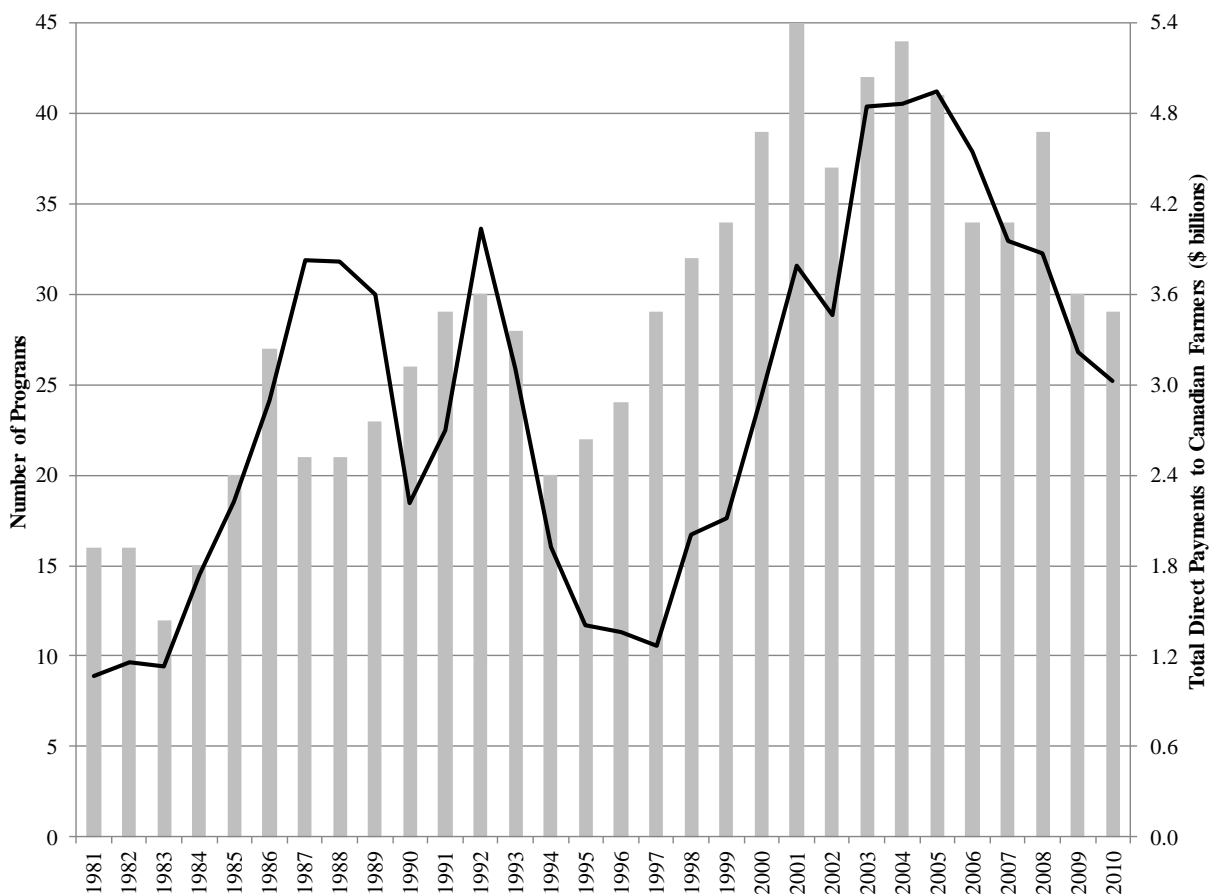


Figure 6: Number of Programs and Total Direct Payments to Canadian Farmers, 1981-2010 (Source: Vercaemmen 2013)

3. CANADIAN AGRICULTURAL SUPPORT PROGRAMS: HISTORY

The first agricultural price stabilization legislation in Canada was the 1958 *Agricultural Stabilization Act* (ASA). It was fully funded by the federal government, guaranteed farmers 90%

of a three-year moving average price for all commodities (later changed to a five-year moving average), and covered grain and livestock commodities in all provinces. Payouts under this legislation remained low until 1975 when they rose rapidly; the largest payout of \$450 million occurred in 1988, but this amount could have been much greater except that the *Western Grain Stabilization Act* (WGSA) of 1976 had removed grains produced on the prairies (northern Great Plains) from the ASA, while dairy, eggs and poultry had been removed in the early 1970s due to the establishment of supply management in these sectors. To counter low world prices resulting from EU and U.S. agricultural subsidy programs, Tripartite Payments, Special Canadian Grain payments and various provincial subsidies were employed on an ad hoc basis to support farmers' incomes. These were abandoned when an Agreement on Agriculture was struck in 1989 at the conclusion of the Uruguay Round of GATT negotiations.

State trading in the form of the Canadian Wheat Board (CWB) also played a role in Canada's approach to agricultural stabilization, as did subsidized transportation programs and crop insurance. The CWB was created in July 1935 by an Act of Parliament to be a single-desk seller of Western Canadian grains. Although farmers benefited for more than 75 years from the pooling of grain proceeds under the CWB, many farmers in the early 2000s felt there were benefits to be had from ending the CWB monopsony over their output (see Schmitz and Furtan 2000). Thus, the federal government ended the CWB system with the *Marketing Freedom for Grain Farmers Act* (2011), and the Wheat Board ceased to be the sole marketer of western wheat and barley in 2012. It was subsequently privatized in April, 2015, when a joint venture between a Bermuda company headquartered in the United States and a Saudi agricultural firm, known as the Global Grain Group, purchased a 50.1% stake and changed the name of the CWB to G3 Canada Limited.

Two transportation programs increased farm gate prices of grains and incentivized location of processing facilities, especially of livestock, near the largest urban centers (Toronto, Montreal and Vancouver): Feed Freight Assistance and the Crow's Nest Pass Freight Rate or 'Crow Rate'. The Feed Freight Assistance program began in 1941 and was terminated in 1995. It was fully funded by the federal government and provided a subsidy for feed grains shipped from the prairies to livestock producers in British Columbia and Central and Eastern Canada. It distorted the location of livestock producing and processing sectors by increasing the price of feed grains at the farm gate while reducing them near the population centers.

To incentivize construction of a transcontinental railway to facilitate British Columbia joining Confederation, the *Crow's Nest Pass Agreement* of 1897 provided lower freight rates for grain in exchange for a \$3.4 million subsidy to the Canadian Pacific Railway for building a rail link from Lethbridge, Alberta to Nelson, British Columbia to prevent movement of minerals from southeastern British Columbia through the United States. The freight rate on grain sold through Lake Superior ports was also lowered by 20%. Then, the *Railway Act* (1925) made the freight rate statutory in perpetuity and extended the Crow Rate to the Canadian National Railway, with 1927 legislation extending the statutory rate to cover exports of grain and flour through Vancouver, Prince Rupert and Churchill, Manitoba. Over time, the statutory rate was extended to other commodities, including oilseeds, dehydrated alfalfa and pulses.

As the costs of transporting grain increased over time, the railways no longer invested in transportation infrastructure because returns from moving grain were too low. Despite stop-gap measures, such as purchases of new hopper cars by the federal government and farmer organizations, and annual subsidies from government, the statutory Crow Rate could not survive. The Crow subsidy was finally eliminated in 1995, with a one-time payment of \$1.6 billion to

compensate farmers for lost land values, and \$300 million to offset some adjustment costs, although some agricultural economists had argued that the payment should have been \$8.5 billion. In the end, the Crow Rate was the longest running agricultural subsidy program in the world.

Crop insurance was introduced in Canada via the *Crop Insurance Act* of 1959. It allowed provinces to establish provincial crop insurance schemes with financial support from the federal government. Because crop insurance only protected farmers against yield loss (targeting production risk), the 1958 ASA and 1976 WGSA had targeted price and income risk. As these were phased out during the 1990s and into the new millennium, the government experimented with a variety of programs, including the Net Income Stabilization Account (NISA), Gross Revenue Insurance Plan (GRIP), the Canadian Agricultural Income Stabilization (CAIS) program, and other programs designed to support and stabilize farm incomes (see Appendix Table A1). With the exception of supply management, which is discussed in section 5, these programs were essentially replaced by a suite of business risk management (BRM) programs.

4. CANADIAN AGRICULTURAL BUSINESS RISK MANAGEMENT PROGRAMS

Into the new millennium, Canada abandoned most of its support programs, including the CWB, and shifted almost exclusively to agricultural BRM programs as the primary mechanism for protecting farmers' incomes. To bring all of the business risk management programs together, a five-year federal/provincial/territorial agricultural agreement, known as Growing Forward (GF), came into effect in 2008. The agreement focused on the following areas: (1) competitiveness, (2) innovation, (3) environment, and (4) business risk management. Pre-existing agricultural BRM programs were overhauled and subsumed under Growing Forward, which provided agricultural risk protection for farmers through four programs (van Kooten 2017):

1. *AgriInvest* is a government-matched savings account that is intended to address ‘shallow’ reductions in net farm income – to help producers protect their margin from small declines. Each year, individual producers could deposit up to 1.5% of their Allowable Net Sales (ANS) into the AgriInvest account, and this was matched by a government contribution. ANS was limited to \$1.5 million annually, with the largest matching annual government contribution equal to \$22,500. Further, the account balance was limited to 25% of a producer’s average ANS.
2. *AgriStability* is a margin-based, whole-farm program that protects against larger income losses than under AgriInvest – that is, ‘deep’ protection. Indemnities under AgriStability are based on the difference between the realized gross margin in any year and a reference historical margin, with payments triggered when a producer’s realized gross margin falls 85% or more below the reference margin. The reference margin is determined as an Olympic average (lowest and highest margins removed) of realized gross margins over the last five years, where the gross margin equals revenue minus specified variable costs. Under GF, funds from AgriInvest are meant to cover the first 15% by which the realized margin falls below the reference margin. After that, the coinsurance (what the producer pays) is 30% when the realized margin is between 70% and 85% of the reference margin, but is only 20% when it is less than 70%. Producers pay no premiums and incur only transaction costs and an initiation fee to participate.
3. *AgriRecovery* provides relief in the case of disasters, permitting governments to fill risk gaps not covered by other government programs. This disaster-relief program is offered by the federal, provincial and territorial (FPT) governments to assist producers with extraordinary costs of recovering from natural disasters.

4. *AgriInsurance* provides protection to producers from production (i.e., yield) losses for specified perils, including economic losses arising from natural hazards, such as drought, flood, wind, frost, excessive rain or heat, snow, losses from uncontrollable disease, insect infestations and wildlife – it is production insurance. *AgriInsurance* is an extension of subsidized multi-peril crop insurance that has been available to Canadian farmers since 1959, although the range of products covered has increased over time. *AgriInsurance* does not cover livestock producers although they can insure their on-farm feed production.⁴

Although somewhat modified, this suite of business risk management programs remains in place and constitutes, along with supply management, the primary form of support for Canada's agricultural sector (see Appendix Table A2). GF was in effect during the period April 1, 2008 through March 31, 2013, after which it was replaced by Growing Forward 2 (GF2), which, in turn, ended March 31, 2018. The Growing Forward suite of programs was continued beginning April 1, 2018 under the rubric of the Canadian Agricultural Partnership (CAP).

4.1 Shift from Growing Forward (GF) to Growing Forward 2 (GF2)

The CAIS program was one of the programs replaced by GF, which, in turn, was designed to be more responsive, predictable and bankable. Yet, a survey conducted by the Canadian Federation of Independent Business between November 2009 and January 2010 found that 65% of respondents categorized the predictability of financial support under *AgriStability* to be poor, while 56% replied that the paperwork and required calculations were too complicated (Labbie 2010). The agricultural BRM programs were subsequently revised under Growing Forward 2 (GF2), which was in effect from April 1, 2013 through March 31, 2018 (see AAFC 2016, 2017).

⁴ *AgriStability* and *AgriInsurance* are both offered at the farm level; *AgriStability* is whole-farm and margin-based, whereas *AgriInsurance* is commodity-specific and yield-based.

In particular, GF2 made changes to two programs – AgriInvest and AgriStability – while leaving the other programs unchanged from GF.

In going from GF to GF2, the producer contribution limit under AgriInvest was increased from 1.5% of allowable net sales to 100% of ANS, but only 1% (down from 1.5%) was matched by the government, although a provincial government could act to increase the matching contribution. Further, the government’s annual matching contribution was now limited to \$15,000, down from a maximum of \$22,500 under GF. However, the balance limit that could be held in a farmer’s AgriInvest account was increased from 25% of historical average ANS to 400%.

The changes to AgriInvest were required partly because of the changes made to the AgriStability program. Compared to GF, GF2 simplified the AgriStability payment calculation by harmonizing multi-tier compensation rates that existed under GF to a single level (70%), but the level of program margin necessary to trigger a payout was reduced from 85% of the reference margin to 70%, with a 30% gap rather than 15% now to be covered by AgriInvest. Under GF2, the coinsurance component is 30% (payouts are based on 70% of the coverage of the eligible decline) regardless of the degree to which income falls (as was the case with GF). Again, producers can employ AgriInvest to cover losses. Finally, under GF2 a reference margin limit (RML) was imposed for calculating indemnities under AgriStability – the reference margin was set at the lesser of the historic average program margin (as previously determined) and the historical average of allowable expenses (determined for the same three years used to calculate the reference margin).

For livestock producers who grow feed grains and participate in crop insurance, there is a Western Livestock Price Insurance Program (WLPIP) that cattle and hog producers can use to

manage the risk of falling prices in Canada's four western provinces. WLPIP protects producers against an unexpected drop in cattle and hog prices over a period of time. In essence, it protects against market volatility by providing a floor for cattle and hog prices. Program premiums are determined much like option prices, with the premium depending on the strike price, current price, period and amount of coverage desired.⁵ It does not appear that a similar program exists outside the four western provinces.

4.2 From Growing Forward to the Canadian Agricultural Partnership (CAP)

According to Agriculture and Agri-Food Canada's (AAFC) website, "the *Canadian Agricultural Partnership* is a five-year, \$3 billion investment by federal, provincial and territorial governments to strengthen the agriculture and agri-food sector."⁶ The main changes from GF2 were meant to simplify and streamline BRM programs and make them easier to access. In particular, AgriStability employs the federal income tax system to determine eligibility and payments to producers.⁷ Unfortunately, reliance on tax forms and the tax system leads to a great deal of uncertainty for participating producers regarding indemnities and delays in receiving payments because the calendar (tax) year often differs from a producer's fiscal year (see Ference & Company Consulting, Ltd. 2016). Therefore, AgriStability was modified so that participants with non-calendar fiscal year ends can now apply for AgriStability when their fiscal year ends,

⁵ See <https://www.wlpip.ca/> [accessed September 12, 2018]. As an example, a producer in Red Deer, Alberta, could take out a 10-month insurance contract on 28 August 2018 to protect the future (June 2019) price from falling below \$136/100kg (\$172/100kg), paying a premium of \$4.38/100 kg (\$18.72/100kg). This is much like a futures contract, but with more options for length of contract and level of protection. Premiums change daily of course. Poultry producers are not covered because of supply management.

⁶ See <http://www.agr.gc.ca/eng/about-us/key-departmental-initiatives/canadian-agricultural-partnership/?id=1461767369849> [accessed August 21, 2018].

⁷ See <http://www.agr.gc.ca/eng/?id=1291990433266> [accessed August 20, 2018] for details. The important point is that the income tax system is required to determine the cost side of the gross margin (which equals farm revenue minus specified variable costs).

thereby providing earlier access to program benefits.

Two additional changes were made to the AgriStability program. First, the RML was modified to ensure that producers from all sectors would have improved access to support, regardless of their cost structure. The reference margin limit could not reduce the reference margin by more than 30%. Thus, if a farmer's historical average of allowable expenses fell below 70% of the reference margin, the RML would equal 70% of the reference margin rather than the lower value determined from the historical average expenses. Second, a late participation mechanism was introduced to ensure that all producers could access AgriStability support should a significant decrease in revenue threaten the viability of their farm. The late participation mechanism would be triggered at the provincial/territorial level in response to "significant events," with program benefits subsequently reduced by 20%.

In going from GF2 to CAP, the maximum Allowable Net Sales eligible under AgriInvest was reduced from \$1.5 million to \$1.0 million, while the annual matching contribution from government was lowered to \$10,000 from \$15,000. Producer contribution limit under AgriInvest was increased from 1.5% of allowable net sales to 100% of ANS, but only 1% (down from 1.5%) was matched by the government. Further, the government's annual matching contribution was now limited to \$10,000, down from \$15,000 under GF2.

In addition to the four main programs of Canada's BRM suite, there are an additional 12 programs that constitute the CAP: AgriRisk (3 separate initiatives), AgriScience (2 programs), AgriMarketing (2 programs), AgriAssurance (2 programs), AgriCompetitiveness, AgriDiversity and AgriInnovate.⁸ Except for farmers and farm co-operatives, for-profit organizations are only

⁸ See <http://www.agr.gc.ca/eng/programs-and-services/?id=1362151577626> [accessed August 21, 2018]. Notice that AgriRecovery is not listed as a CAP program, primarily because farmers cannot register to participate; it is typically administered at the provincial/territorial level, but with federal funding.

eligible to participate in three programs – one AgriScience program, one AgriMarketing initiative and AgriInnovate; the remaining programs are directed at academic and not-for-profit entities. If the above programs are included, there are now 41 different programs that are designed to provide aid to Canada’s agricultural sector.⁹ Some programs are designed to fund research into clean technologies, innovations throughout the food chain, marketing and product diversity, et cetera. Two new research initiatives under AgriRisk provide small grants (\$25,000/year for upwards of three years) to fund academic research addressing issues relevant to BRM in Canada’s agriculture sector, and much larger grants to facilitate development and adoption of private risk management tools that would then be paid for by the agricultural producers.

Fifty-three agricultural programs have been terminated, although 13 of these continue via some successor program.¹⁰ For example, the federal government has an Advance Payments Program (APP) that complements but is not a part of the suite of BRM programs described above. The APP helps crop, livestock and other agricultural producers with cash flow (including producers whose principal activity may not be farming), which provides flexibility for marketing of commodities (e.g., a farmer can decide to sell product based on market conditions and not just on a need for cash flow). The APP provides a loan to producers of up to \$400,000, of which \$100,000 is interest free, depending however on the size of their enterprise. Producers can take out the loan at any time but must repay it within 18 months (24 months for cattle and bison producers).

⁹ See same source as previous footnote.

¹⁰ See <http://www.agr.gc.ca/eng/programs-and-services/expired-programs-and-services/?id=1251744184867> [accessed August 28, 2018]. APP costs are thus not included in the GF2 funding envelope.

4.3 Impact of BRM Programs and Changes to Programs on Farmers

What has been the impact of the federal BRM suite of programs on farmers' incomes? Jeffrey et al. (2017) calculated the expected net present values (NPV) of a representative Alberta farm enterprise under no BRM programs, and then under GF and GF2. Without BRM, the net annual earnings were estimated to be \$71.97 per hectare (ha) (net farm worth equal to \$931,960/ha) with the coefficient of variation (CV) equal to 0.40. Under GF, expected annual earnings increased to \$110.07/ha (net worth of \$1,425,386/ha) with a CV of 0.27, falling to \$106.69/ha (\$1,381,693/ha) with slightly higher CV of 0.29 under GF2. Upon examining representative farms in six regions of Alberta and only the changes in AgriStability in going from GF to GF2, Liu et al. (2018a) found that gross margins fell between 0.6% and 1.1% depending on the region, thereby confirming the results of Jeffrey et al. (2017).

Liu et al. (2018b) examined the impact of introducing a reference margin limit in the AgriStability program. This had a negative effect, which was greater for farmers with the lowest costs, as expected. Further, the choice of late participation does offer farmers some flexibility in enrolment, but the researchers found that all farmers would be better off in terms of expected gross margins if they participate in AgriStability every year.

4.4 Program Funding and the Role of Provinces and Territories

When it comes to funding, the two levels of government (federal and provincial/territorial) budgeted \$2 billion (Canadian dollars) for the BRM component of GF2 (an increase of 50% from Growing Forward); since the agricultural BRM programs are cost-shared 60:40 with the provinces and territories, they contributed \$0.8 billion (AAFC 2017). In addition, under GF2 the federal government was the sole funder, to the tune of \$1 billion, of programs that aim to facilitate economic growth in the agricultural sector (AgriInnovation, AgriCompetiveness and

AgriMarketing). Overall, therefore, the federal government spent \$1.2 billion on BRM programs, plus another \$1 billion on marketing, competitiveness and innovation, over the five-year period ending March 31, 2018. As noted above, governments expect to spend \$3 billion on CAP (an increase of 50% from GF2) over the period April 1, 2018 to March 31, 2023, again split 60:40 between the two levels of government. Annual expenditures are thus expected to run at \$600 million, not including expenditures on non-CAP programs.

The amount paid by farmers is difficult to determine as it depends on uptake or enrolment in various BRM programs. To participate in AgriStability, farmers must pay \$4.50 annually for every \$1,000 of reference margin protected (where reference margin in this case is 70% of the contribution reference margin); in addition, there is an annual administrative fee of \$55.¹¹ The introduction of a fee might explain why the participation rate for AgriStability fell from 57% under GF to 42% under GF2 – producers did not pay a premium under GF. However, as noted above, Liu et al. (2018b) find that farmers who participate in AgriStability can expect to be better off.

In British Columbia, Alberta, Saskatchewan, Ontario, Quebec and Prince Edward Island, AgriStability is delivered by the respective provincial government, while the federal government delivers these programs elsewhere in Canada. AAFC provides seven examples to illustrate how AgriStability works in conjunction with AgriInvest and AgriInsurance to protect a farmer against price and yield risk. Examples consist of each of the two types of risk (production and price) for cattle producers, potato farmers and grain growers, and yield risk for an apple grower.¹² Only a

¹¹ Suppose the farmer's contribution reference margin to be covered is \$70,000. The fee would then be \$220.50 ($=\$4.50/\$1000 \times 0.7 \times \$70,000$), plus \$55. See <http://www.agr.gc.ca/eng/?id=1296675557986> [accessed August 20, 2018] for details.

¹² See <http://www.agr.gc.ca/eng/programs-and-services/agricultural-business-management/business-risk-management-programs/?id=1490812852619> [accessed August 10, 2018].

grain producer experiencing yield loss due to flooding receives a benefit from AgriInsurance. Of course, the indemnities are based on participation in all three programs and depend on the amount of funds the agricultural producers have in their AgriInvest accounts.

Production insurance (AgriInsurance) is a tripartite program because it is funded by both levels of government and the producers. The allocation of funding for premiums and administration is shown in Table 1. In addition, the federal government provides a reinsurance pool for provinces; a province can insure against an insurance claim that could bankrupt its crop insurance agency. Such a ‘too big’ crop insurance claim can be the result of an adverse weather event, for example, that affects a large proportion of the farmers in a province. The provincial crop insurance bodies are responsible for the design and administration of AgriInsurance, absorbing all underwriting gains and losses (which is why they often employ reinsurance).¹³

AgriRecovery is best considered to be complementary to AgriInsurance, since it protects producers against catastrophic losses due to massive floods, animal diseases, et cetera. Expenditures under AgriRecovery are paid by the federal government and farmers are not required to enrol (as noted earlier). Since most major commercial crops in Canada are currently insured against deep losses under AgriInsurance, AgriRecovery is called upon only in unusual circumstances of extremely deep losses. Meanwhile, the great majority of farmers are also covered for shallow losses via AgriInvest, whereby the federal government contributes 1% of whatever a farmer deposits into a saving account, up to a total annual subsidy of \$10,000.

¹³ See <http://www.agr.gc.ca/eng/?id=1284665357886> [accessed August 20, 2018] for details and links to provincial insurance programs. Note, however, that CAP relies on bilateral agreements between individual provinces and the federal government – there is no widespread, sweeping legislation covering all levels of government simultaneously.

Table 1: Tripartite Sharing of Responsibility under AgriInsurance

Level of Government	Premium ^a	Administration
Federal	36%	60%
Provincial/Territorial	24%	40%
Producer	40%	

^a There are some special program options that are cost-shared at different rates but the vast majority of premium costs are shared at this level.

Source: See, e.g., <https://www.afsc.ca/Default.aspx?cid=3698-3701-3852> [accessed August 21, 2018].

Under the CAP agreement, the provinces are responsible for administering AgriInsurance, AgriInvest and AgriRecovery. These BRM programs are delivered at the regional level through provincial crown corporations or directly by the province’s ministry of agriculture. A provincial crown corporation is a publicly-owned enterprise created by an Act of the legislature that shields it from government intervention; these corporations are supposed to operate at a profit, just as a private-sector company, unless otherwise directed by the legislature that created them. Agricultural risk management crown corporations operate in Alberta, Saskatchewan, Manitoba, Ontario, Quebec and Prince Edward Island (PEI), with remaining provinces vesting this function within their ministries of agriculture. In Saskatchewan, delivery occurs through the Saskatchewan Crop Insurance Corporation (SCIC) – a provincial crown corporation; in Manitoba, it is known as the Manitoba Agricultural Services Corporation (MASC); in Alberta, the Agriculture Financial Services Corporation (AFSC); in Ontario, AgriCorp; in Quebec, le Programme d’Assurance Stabilisation des Revenus Agricoles; and, in PEI, Agricultural Insurance Corporation.

Many provincial governments created crown corporations to operate agricultural financial services as a cost-cutting budgetary measure. A study by Ker et al. (2017) indicates that the crown corporations act too much like private insurance companies as opposed to public delivery agents. These authors argue that these crown corporations rely too much on private

reinsurance, while holding too many reserves. Alberta, Saskatchewan, Manitoba, Ontario and Prince Edward Island paid \$108 million in premiums to private reinsurance companies in 2014, while holding \$3.65 billion in reserve. Reserves as a percentage of liabilities averaged more than 23% in 2014 for the six provinces with crown corporations, from a high of 46% in Alberta to a low of 8% in Manitoba. Using Monte Carlo simulation, the authors estimated that it would take more than 8,000 years to deplete the reserves held by crown corporations in Alberta and Ontario (Ker et al. 2017). Given that the agricultural sector is small relative to the rest of the economy, there is no reason whatsoever for provinces to rely on private reinsurance, especially given that the federal government already provides a reinsurance program for pooling risks.

Not surprisingly, Ker et al. (2017) also argue that the public sector can provide crop insurance to farmers more efficiently than the private sector. Governments are risk averse, require lower rates of return, and can use various policy levers to incentivize farmers to engage in on-farm, risk-reducing activities. Indeed, public provision (AgriInsurance) can be made more effective by introducing coinsurance into the program, as is done in the AgriStability program. Finally, these authors reiterate complaints others have voiced about the AgriStability program. It leads to uncertainty regarding the indemnity a farmer might expect to be paid and to delays before payment is received, and is viewed as an obstacle to on-farm diversification. Therefore, AgriStability should be replaced by commodity-specific revenue insurance as revenue is much easier to measure and track than is gross margin. Calculation of gross margin requires knowledge of input use and costs, and these can only be determined from a farmer's tax receipts – the tax system is needed to resolve the payments a farmer would receive, which leads to delays and uncertainty.

4.5 Private Market Agriculture Insurance Alternatives

While governments promote a greater role for private sector involvement in the provision of BRM tools (see below), this is very difficult because, in Canada, the crown corporations have a monopoly, and they provide subsidized products. As a result of subsidies, therefore, any private sector offering cannot compete. However, research summarized by Smith (2017) indicates that there would be little uptake of private sector crop insurance in the absence of government subsidies because few farmers would be willing to pay the full premium of the insurance product plus administration and operations costs.¹⁴ This creates a situation where there really are no private sector tools that are commercially viable. One exception is hail insurance, which is currently the only payment listed in Statistics Canada farm accounts as a separate BRM payment to agricultural producers; here the private sector has succeeded because hail insurance does not suffer from moral hazard (producer decisions cannot influence outcomes) or adverse selection (premiums are unaffected by participation rates), and costs of providing this product are lower than with other forms of crop insurance.

Another possible success is a product called Global Agricultural Risk Solutions. Global Agriculture Risk Solutions (GARS) is a relatively new production cost insurance product offered to grain producers in Western Canada. It is delivered by the private sector and premiums are not subsidized. The product provides basic insurance coverage for three major input costs, including fertilizer, seed and chemicals, plus enhanced coverage for qualifying producers for a specific amount of revenue per acre.

GARS is a whole-farm revenue insurance product that provides coverage when net

¹⁴ Smith (2017, p.6) reports that farmers' willingness to pay for crop insurance was less than the actuarially sound premium plus a loading factor for administrative and operating costs of no more than 9%. This is well below the 20% to 25% that insurance companies often require to cover these costs.

production income is less than insured net crop production. It pays indemnities based on farm specific production income, and not an index. While GARS provides coverage for input costs, as well as for a specific amount of revenue per acre for qualifying producers, GARS has a number of unique features:

- Premiums are based on a producer's specific circumstances and financial records. Therefore, at least five years of accrual financial statements are needed, which farmers must provide. Producers using cash financials must convert to accruals.
- 'Enhanced' coverage levels of \$25, \$50, \$75, \$100 or \$125 per acre are available only to qualified producers based on an analysis of financial records. Consequently, insurance is only offered to a limited number of producers who are financially sound – adverse selection in reverse.
- GARS does not insure individual crops.
- Claim payments can be delayed, however, since 60% of the indemnity is paid after an interim harvest report from an accountant is provided. The remaining 40% of the indemnity is withheld until after May 1, the inventory cut-off date.
- GARS coverage levels are determined based on an average of the producer's production history. Therefore, farm performance (i.e., profitability) from previous years impacts the insurance coverage in the current year.

GARS is successful because it is able to select only the top agricultural producers and penalize them in subsequent periods if they 'shirk' – perform below expectation. Unfortunately, little is known about uptake of GARS, although, based on its staffing level, it is clear that the company serves a small clientele. Besides the fact that GARS only appeals to top producers, some crop producers might shy away from this product because participation requires farmers to make their financial transactions available to the insurer. It is unlikely that this product could operate in anything but a small niche market.

In addition to GARS, some private companies provide over-the-counter, index-based insurance products. Under the AgriRisk initiative, the Canadian government is looking to fund projects that will bring about new and innovative BRM products such as index-based insurance as it is considered a good alternative to crop insurance because individual loss characteristics of

the producer cannot influence the underlying index – adverse selection and moral hazard no longer apply. However, uptake of such products has not proven very good so far, partly because private insurance companies are unable to compete with highly-subsidized public corporations that protect farmers' incomes and subsidize high premiums. It is unlikely that index-based insurance will be attractive to farmers without some form of subsidy (Smith 2017).

In summary, the Canadian Agricultural Partnership (CAP) program does not deviate from the Growing Forward program in the sense of privatizing the current approach to BRM. The government provides money to producer groups and others to conduct research or provide seed money for creating new risk mitigation products (Stephen 2017). The government does encourage the creation of new BRM tools that might be provided by the private sector, but these are unlikely to be successful without some government support. If the government was not involved in crop insurance, either through the subsidisation or delivery of insurance, it is unlikely that crop yield or crop revenue insurance would be provided privately.¹⁵ Of course, the private sector is involved in reinsurance, management of farmers' AgriInvest accounts, provision of farm management services that help farmers reduce risk, et cetera. But any shift toward much greater private sector involvement in the foreseeable future is unlikely; beyond hail insurance, which has historically been privately provided, the private sector role will be limited.

5. SUPPLY MANAGEMENT

Perhaps the most pernicious feature of Canada's agricultural programs is supply management (SM). Supply management in Canada's dairy sector began with the establishment of the

¹⁵ It is important to distinguish between private provision and private delivery of insurance products. For example, the United States mandated private sector delivery in the 1980 U.S. Crop Insurance Act, but this required government subsidization of both premiums and administrative and operating costs without which farmers would not participate (Smith 2017).

Canadian Dairy Commission in 1966. This was followed in 1970 by a National Milk Marketing Plan to control supply, with Quebec and Ontario along with the federal government as the original participants. The enabling legislation for SM in agriculture was not passed until two years later when the *Farm Products Agency Act* (1972) became the enabling legislation; in addition to SM in dairy, it also led to the establishment of SM boards in eggs (1973), turkey (1974), chicken (1978), and chicken hatching eggs (1986) – the ‘feather industries’. Although SM remains the identifying characteristic of these sectors, the focus is usually on dairy because it receives the largest support of any agricultural commodity in Canada (see Figure 3 above). Dairy SM is a major impediment to Canada’s on-going trade negotiations, particularly the North American Free Trade Agreement (NAFTA) (see van Kooten 2019).

5.1 Dairy Supply Management: Economic Framework

The key to supply management is the use of import quotas and domestic production controls (see Vercammen and Schmitz 1992). Both of these policy instruments are modeled in Figure 7. Domestic demand is given by the curve D_0 and domestic supply is given by S . Under free trade, the domestic border price is P_b , domestic production is Q_1 , and domestic consumption is Q_2 . Imports total $Q_2 - Q_1$.

For the domestic producers to maximize profits, the production of quota is set where the marginal revenue curve MR equals the supply curve S, which results in domestic production Q_m – that is, supply management leads to the vertical supply curve S^R . Producers gain $(P_e P_{bea} - ehi)$, the relatively dark shaded rectangle area minus the black-shaded triangle. The quota value for any producer will be the discounted value of $(P_e - P_s)$ per unit of quota. The total approximate quota value for the industry will be the discounted value of $(P_e P_{sha})$.

In Figure 7, consumers lose $(P_e P_{bdb})$ importers gain $(a ECB)$. The availability of import quotas gives importers (many of whom are also domestic food retailers) incentives for rent-seeking behavior, because import quotas have a value equal to $[P_e P_{bdb} - (P_e P_{bea} + a ECB)]$. This area plus ehi represents the net cost of the supply management program. The smaller the deadweight loss, the greater is the efficiency with which income can be transferred from consumers to producers. Thus, the size of the income transfer can be large, while the deadweight loss triangle can be small. The burden of supply management thereby falls on consumers, with the poorest hurting the most.

That the burden falls on consumers is shown in Table 2 where prices for basic food commodities in various regions/cities in Canada are compared with those in nearby U.S. states or cities. While Canadian prices of basic foods that are not under supply management are comparable or even slightly lower than those in the United States, foods produced under supply management, including chicken, eggs, milk and butter, are substantially higher than the same product in the United States (see Cardwell et al. 2015, 2018; Doyon et al. 2018). The data in Table 2 also support the theoretical arguments of Figure 7.

Table 2: Cross-border Price Comparisons for Selected Products under Supply Management and Products not under Supply Management, Various Regions, 2018 (Canadian dollars)^a

Product	Units	Van-couver	State of Washing-ton	Win-nipeg	Grand Forks/ Fargo, ND	Southern Ontario	State of New York	Average premium /discount (%) ^d
Products under supply management (chicken, eggs and dairy products)								
Whole chicken	\$/kg	8.99	4.55	8.99	5.34	8.49	4.27	88
Chicken thigh	\$/kg	13.82	8.39	13.82	8.39	13.83	8.39	65
Grade A eggs ^b	\$/dozen			2.82	1.52	2.93	2.79	45
Grade AA eggs ^b	\$/dozen	2.84	1.26					125
Milk, generic ^c	\$/4 L	4.47	3.27	4.58	3.89	4.27	2.72	37
Milk, alternate ^c	\$/4 L	4.47	4.43	4.58	4.63	4.27	4.23	0
Milk, other ^c	\$/4 L	4.47	3.92	4.58	4.41	4.27	2.55	28
Ice cream	\$/L	2.98	2.69	2.98	2.72	2.98	1.94	25
Cheddar cheese	\$/kg	11.29	12.08	11.29	12.08	12.82	9.79	6
Process cheese	\$/450 g	3.67	4.48	3.67	4.48	3.67	2.42	5
Butter	\$/454 g	6.18	4.21	5.16	4.21	5.16	3.06	46
Products not under supply management								
Lean ground beef	\$/kg	9.92	10.37	9.92	10.37	9.92	10.37	-4
Pork chops	\$/kg	11.11	13.40	11.11	11.97	11.11	10.21	-5
Bacon	\$/kg	7.92	13.13	8.99	13.13	7.92	12.14	-35
Apples	\$/kg	4.02	3.44	4.02	4.24	3.29	2.81	10
Oranges	\$/kg	3.17	3.17	3.17	3.49	3.17	3.21	-3
Bananas	\$/kg	1.46	1.47	1.70	1.58	1.22	1.31	0
White bread	\$/kg	2.75	3.39	2.75	3.39	2.43	2.47	-13
All-purpose flour	\$/kg	2.35	1.99	2.35	1.99	2.15	1.87	17
Peanut butter	\$/kg	3.77	5.01	3.77	5.01	3.27	2.93	-13
Ketchup	\$/L	3.47	4.64	3.47	4.64	3.47	3.46	-17

^a Using an exchange rate of C\$ 1 = US\$ 0.77.

^b Grade refers to US grade

^c Generic and alternate refer to Walmart’s Great Value and alternate brands, while ‘other’ refers to milk from other stores

^d Extent to which Canadian prices exceed U.S. averaged over the local area differences.

Source: Adapted from Cardwell et al. (2018)

Van Kooten (2019) uses the theoretical model in Figure 7 to estimate the welfare areas in Canada’s dairy sector – the annual quota rent (dark shaded rectangle), the quasi-rent ($P_l P_b e v$) component of the quota rent, the deadweight loss triangle ($e h i$), and the net loss to dairy producers ($P_e P_b e a$) should supply management end. This information is provided in Table 3 for each of the years 2010 through 2016 (because the wedge between P_e and P_b differs across years). The value of quota depends on the rate used to discount the annual quota\monopoly rent. If there is a high risk that the dairy supply management system will be reformed (see below), the rate

used to discount future benefits from quota will be high. If it is assumed to be a moderate 20%, then the average total quota rent \$2,069.6 million will result in a quota value to Canadian dairy producers of \$10.35 billion; if the rate is 40%, the quota has a value of only \$5.17 billion.

Table 3: Annual Quota Rent, Quasi-rent Component, DWL Triangle, and Net Loss if supply Management Ended, Dairy Sector, Canada, Various Scenarios (2018 Canadian million dollars)

Year	Quota Rent	Quasi-rent	DWL Triangle	Net Potential Loss Should Quota Regime End
2010	2,422.0	373.5	18.7	354.8
2011	2,332.4	346.4	17.4	329.0
2012	2,587.3	398.0	19.7	378.3
2013	2,050.5	252.6	13.6	239.0
2014	2,051.8	254.0	13.6	240.3
2015	2,106.5	263.2	14.0	249.1
2016	936.5	60.0	3.7	56.3
Average	2,069.6	278.2	14.4	263.8

Source: Adapted from van Kooten (2019)

5.2 Dairy Supply Management: Operation and Pitfalls

The government supports the prices of butter fat and skim milk powder (SMP), buying and disposing of excess product at those prices. The dairy producer receives a blend of the two prices depending on the butter fat content of their milk. Demand for butter fat is robust and because quota are measured in terms of butter fat, Canada exports the excess non-fat component as SMP; such exports are currently limited under WTO rules and, unless Canada removes its support price for SMP, will be prohibited after 2020.

Imports of a new product, milk protein isolate (MPI), increased after the early 2000s, because they were classified in the Canadian tariff schedule as a ‘protein’ rather than as a dairy product, and thus outside the SM regime. While the Canada-EU and the renegotiated NAFTA (now USMCA [United States-Mexico-Canada Agreement]) trade deals have increased duty-free TRQs in dairy to 3.25% and 3.59% of the market, respectively, tariffs on MPI from Europe and the United States have been eliminated entirely. Since the MPI market is only a subset of the non-

fat market, Canada has some ability to maintain domestic price above world price (as tariffs of some 270% on the above-TRQ remain in place). However, given robust demand for butter fat, Canada must accept the world price for SMP or restrict production of butter-fat, even importing butter, to support the farm-gate price of milk.

Canadian dairy programs provided subsidies of over \$200 million annually over the period 1981-2002 (see Appendix to this chapter). Given the current situation, subsidies continue in the form of the Dairy Farm Investment Program and Dairy Processing Investment Fund; the former provides dairy producers with \$250,000 (one time over the period 2018-2023) to invest in their operation, while the latter provides dairy processing firms upwards of \$10 million (with an additional \$250,000 for consulting R&D and other services) to invest in technological processes. These seek to make dairy producers and especially processors more efficient, enabling processors to replace aging plants and compete in the MPI market, for example. Of course, dairy producers always have the option of participating in Canada's suite of BRM programs.

5.3 Supply Management in Other Sectors

The *Farm Products Agency Act* (1972) is also the enabling legislation for poultry and eggs. Under the Act, marketing plans may be developed and federal-provincial agreements may be set up to govern the creation and operation of national agencies. Output levels must be approved by the National Farm Products Council (NFPC) and are decided by agencies made up largely of provincial representatives. The NFPC reports to the Minister of Agriculture and Agri-Food Canada, but pricing jurisdiction for poultry and eggs remains at the provincial level.

The NFPC approves national production levels, but it must be satisfied that plant production is adequate to protect the interests of consumers as well as producers. Beyond monitoring and its supervisory role, the NFPC is charged with conducting the process under

which new plans may be established There is an important difference between dairy and poultry in terms of the governance structure, however. The poultry agency is governed by directors who are usually elected by producers in each member province. In contrast, the Canadian Dairy Commission is a federal crown corporation with members appointed by the AAFC federal minister. As such, the CDC members have no particular geographical constituency in the same sense as do the provincial directors of the poultry agencies.

What are the consequences of this structural difference? The federal agency approach underlying the poultry and egg systems, while more democratic in terms of producer input, is also more rigid and less capable of change, particularly when it comes to adjusting provincial production shares (Skogstad 1993). Moreover, the necessity for a federal-provincial agreement will lead some provinces to view poultry and dairy as instruments of regional economic development. If provinces sign on to the production plan, they will expect a piece of the action in return.

6. DISCUSSION AND RECOMMENDATIONS

Although American and European agricultural policies have had an impact on Canadian decision making, much as it has on decisions in other jurisdictions, Canadian agricultural programs have evolved quite differently. The main difference relates to the degree to which Canada supports its agricultural sector. With the exception of the supply-managed industries, Canadian farmers have been less successful rent seekers compared to their American and European counterparts; therefore, the agricultural sector has historically received far less subsidies than in the United States and European Union. However, the degree to which EU and U.S. farmers are subsidized has fallen dramatically over the decades following the Agreement on Agriculture that ended the Uruguay Round of GATT negotiations and initiated the World Trade Organization (WTO). This

is evident from Figures 2 and 3.

Canada has no intention to dismantle its supply managed dairy, eggs and poultry sectors, despite significant pressure to do so in bilateral trade negotiations (especially the NAFTA renegotiation [USMCA]). Nor will Canada make changes to its suite of agricultural business risk management programs in the foreseeable future. The government encourages greater participation by the private sector in BRM through the creation of new products or tools (e.g., weather-indexed insurance based on growing degree days or precipitation over a specified period), but private sector programs are simply unable to compete with government programs. Canada is also unlikely to switch from crop yield to crop revenue insurance, as was done in the United States.

When it comes to protecting agricultural producers from adverse circumstances beyond their control (mainly as a result of adverse weather, but also due to disease and pests), Canada distinguishes two levels of protection. Crop insurance is used to protect against ‘deep’ losses in income, while a variety of hedging mechanisms are used to protect farmers against ‘shallow’ losses. One can think of the former as protecting agricultural producers against the loss of variable costs that have been invested at the time of planting and throughout the growing season; these are costs related primarily to the buying and planting of seed, the purchase and application of fertilizers, herbicides and pesticides, and the costs of operating machinery. The second category of protection enables farmers to recover some of the capital and entrepreneurial costs associated with operating a farm enterprise – hedging of shallow losses.

Canada provides protection against *deep losses* through the AgriStability and AgriInsurance programs. AgriStability provides protection of farm-level gross margins (revenue minus certain allowable variable costs): If individual farmers’ gross margin falls by 30% or more

from the benchmark expected revenue, they receive an indemnity equal to 70% of any loss below 0.7 times the benchmark. For example, if the expected gross margin is \$1 million, a payment is triggered if realized income falls below \$700,000. Suppose that the realized income is \$600,000. Then, the payment would equal: $0.7 \times (\$700,000 - \$600,000) = \$70,000$, with the farmer having to cover the remaining \$30,000. However, the farmer would have paid \$3.15 per \$1,000 of reference margin protection and a \$55 fee to participate; this implies a cost to the farmer of \$3,205 ($= \$3.15/1000 \times \$1 \text{ million} + \55). If individual farmers also have a crop insurance policy under AgriInsurance, they might be eligible for additional payments depending on the level of coverage they had chosen. For crop insurance, the farmers would only have paid 40% of the actuarially sound premium and none of the administration and operating costs.

In addition to this, the Canadian government provides deep coverage through AgriRecovery. This program is paid for solely by the federal government, with farmers paying no premiums. AgriRecovery is simply a form of disaster protection – protection against major drought or flood, pest outbreaks (e.g., BSE in livestock), and other catastrophes.

Canada protects farmers against shallow losses through AgriInvest. The federal government allows farmers each year to invest 1.5% of their annual net sales into a tax-free savings account (no income tax is levied on interest), matching producer contributions up to 1% with a maximum annual subsidy of \$15,000. Further, producers are permitted to invest up to four times their annual net sales as a safety net to protect against shallow reductions in income (there are conditions under which funds can be withdrawn). This limits the government's exposure to risk.

Finally, the federal-provincial/territorial bilateral business risk management agreements are meant to protect agricultural producers outside of the supply management sectors against

price and yield risk. The costs of supply management are borne by consumers (with administrative costs borne by producers and government), while the costs of BRM programs are shared by government and producers. As to the remaining programs, these tend to be minor in terms of funding requirements and are focused on research and development. As a result, annual government expenditures on agriculture are limited to a much greater degree than elsewhere. Indeed, the PSE and NRA measures of support (see Figures 1, 2 and 3) exaggerate government outlays because consumer transfers in the supply managed sectors are included as a measure of support. Clearly, American and European taxpayers spend much more per capita on agricultural support programs than Canadian taxpayers.

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Appendix

Table A1: Top Agricultural Programs Providing Direct Payments to Canadian Farmers, Average Annual Payments (Pmt/Yr) over the Period 1981-2010

Program	Average Pmt/Yr ^a	Start Year	Finish Year	Duration (years)
Canadian Agricultural Income Stabilization (CAIS)	\$ 928,079	2004	2010	7
Crop Insurance	594,239	1981	2010	30
Agri-Stability	564,855	2007	2010	4
Special Canadian Grains	508,134	1987	1990	4
Farm Income Payment	482,759	2005	2006	2
Gross Revenue Insurance Plan (GRIP)	410,259	1991	2001	11
Provincial stabilization programs	382,884	1981	2010	30
AgriInvest	330,606	2008	2010	3
Net income stabilization account (NISA)	329,778	1991	2009	19
Transitional Industry Support Program (TISP)	271,095	2004	2006	3
Grains and Oilseeds Payment (GOPP)	251,665	2006	2008	3
Farm Support and Adjustment Measures II	248,823	1991	1993	3
Farm input rebates	237,837	1981	2010	30
Dairy subsidy	209,392	1981	2002	22
Special Drought Assistance	195,151	1989	1992	4
Western Grain Stabilization Act	190,303	1981	2001	21
2003 Transition Funding	178,004	2003	2005	3
Farm Income Assistance	172,687	1990	1992	3
CAIS Inventory Transition Initiative (CITI)	163,546	2006	2010	5
AgriRecovery	145,876	2008	2010	3
Beef Cattle and Sheep Support	141,611	1982	1982	1
Canadian Farm Income Program (CFIP)	120,589	2001	2005	5
Bovine Spongiform Encephalopathy Recovery	115,884	2003	2006	4
Agricultural Income Disaster Assistance (AIDA)	111,146	1999	2004	6
Tripartite payments	104,525	1986	1998	13
Freight Cost Pooling Assistance Program (FCPAP)	102,922	1997	1997	1
Canada-Saskatchewan Assistance Program (C-SAP II)	100,105	2001	2002	2

^a Payment per year in '000s of 2002 Canadian dollars.

Source: Vercammen (2013)

Table A2: Agricultural Programs Providing Direct Net Payments to Canadian Farmers, 2011-2017 and Average Annual Payments, Canadian million dollars

Program	2011	2012	2013	2014	2015	2016	2017	Average
Crop insurance	660.2	496.7	251.2	112.6	455.5	328.5	493.3	399.7
AgriInvest	424.9	452.3	418.6	321.0	268.9	297.3	281.4	352.0
AgriStability	740.8	726.1	517.4	432.9	295.7	311.0	356.5	482.9
AgriRecovery	292.9	49.7	0.6	1.3	4.1	2.7	9.0	51.5
Provincial stabilization programs	259.3	331.6	169.2	115.5	75.8	254.4	213.2	202.7
All other programs ^a	133.92	231.36	193.34	156.26	190.57	207.26	249.43	194.6
Total government funded programs	2,512.1	2,287.8	1,550.4	1,139.5	1,290.5	1,401.2	1,602.7	1,683.4

^a Includes Agri-Quebec (average C\$80 million), Self-Directed Risk Management program (C\$20 million), Crop Loss Compensation (C\$14 million), two programs focused on waterfowl and other wildlife damage to crops (C\$16 million), two livestock loss programs (C\$7 million), and the remainder on flood assistance (not included in AgriRecovery), remnants of discontinued programs (e.g., CAIS) and temporary (3 years or less) programs.

Source: Statistics

Canada Table: 32-10-0106-01 Direct Payments to Agricultural Producers (×1,000)

<https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210010601>