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**MANDATORY SUPPLY MANAGEMENT PROGRAMS
IN CANADA AND EUROPE**

by
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PREFACE

Harry M. Kaiser is an assistant professor in the Department of Agricultural Economics at Cornell University. The author acknowledges the useful comments and suggestions from Craig Alexander and Deborah Streeter for an earlier draft of this report.

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While all the references used in this report are listed in the Selected References section, this paper draws upon three studies in particular. The section dealing with the Canadian program is based principally on Jesse and Cropp (1986) and Fallert and Goodloe (1984). The section on the European Community's quota program draws primarily from the European Community Report (1984). The interested reader is referred to these three studies for more information on Canada and European quotas.

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Introduction

Interest in mandatory supply management or quota programs for milk has been developing in many regions of the U.S. over the last year or two. Producer cooperatives, other farm organizations, and policy makers are debating the advantages and disadvantages of such programs with respect to future dairy policy. The debate has been spurred by fears that the following trends will persist: burgeoning surpluses of dairy products relative to demand, the high costs of removing these products under the price support program, and declining producer prices. Some are also concerned that our experiments with "voluntary" forms of supply management like the recent whole herd buyout and milk diversion programs are merely a bandaid approach to the industry's problems.

While so far the U.S. has only talked about quotas for milk, several other countries have actually adopted them to deal with the problems caused by excess production. For example, Canada has had a national quota program for manufacturing milk and provincial quota programs for fluid milk since the late 1960's. More recently, the European Community (EC) adopted a community-wide mandatory supply management policy in March, 1984 primarily to control the tremendous cost of their dairy program. Some U.S. advocates of mandatory supply management point to other countries' quota systems as "success stories" that could be repeated here. However, the mechanics and implications of quota programs in other countries are not well understood by many individuals interested in the dairy industry.

The adoption of a national quota program for the U.S. dairy industry would be a significant departure from current dairy policy, which does not interfere with farm level decision making.¹ Because quota programs exist in several countries, their experiences can add a practical dimension to the discussion of the pros and cons of a national supply management program for the U.S. With that in mind, the purposes of this paper are twofold. The first is to provide the reader with a

¹As will become apparent in this paper, one of the most important distinctions between quota programs and current policy is that production decisions are restricted by the size of each producer's quotas. Production in excess of one's quota allotment is generally subject to a significant price penalty in order to discourage excess production. Therefore, the production control dimension of mandatory supply management programs are more restrictive from an individual farmer's perspective than current policy, which does not dictate how much one can produce.

basic understanding of the mechanics of the Canadian and EC programs. The second objective is to examine some of the advantages and disadvantages experienced by farmers, processors, consumers, and other groups under these programs. Understanding the components and implications of existing quota programs will put the reader in a better position to judge the relative merits of a mandatory supply management plan for the U.S. dairy industry.

The Canadian Quota Program

In Canada, milk utilized in manufacturing dairy products (industrial milk) is regulated by a national quota program and milk used in fluid products is subject to separate provincial quotas. Because industrial milk is sold nationally and internationally, it is regulated on a national basis. By contrast, fluid milk, by law, can only be marketed within each province and is consequently subject to provisions defined by provincial quota programs. Canada opted for the current national quota program in 1970 and some of the provincial fluid quota programs were instituted prior to 1970.

The National Quota Program for Industrial Milk

Three government agencies are directly involved in the administration of the national quota program. The Canadian Milk Supply Management Committee (CMSMC) is in charge of determining the level of national industrial milk production and allocation of this level to the individual provinces. The Canadian Dairy Commission (CDC) is principally responsible for setting prices and levies for "within-quota" and "over-quota" milk sales. Provincial marketing boards and departments of agriculture are responsible for administering the national program within their provinces. These provincial agencies perform the following functions: allocate the province's share of the national quota among individual dairy producers, act as the sole buyer of milk from farmers, allocate the quantities of milk to all processors, and establish rules for buying and selling quotas.

Approximately two-thirds of all milk produced in Canada is regulated by the national quota program for industrial milk. The CMSMC determines the national quota annually by estimating the supply of milk necessary to satisfy domestic consumption and exports plus a small reserve to balance the usual shortages and surpluses in production that occur among provinces. After setting the total quota, which has remained relatively constant since 1980, the CMSMC allocates portions of it (called Market Share Quotas or MSQ's) to each province. When the program was instituted in 1970, each province's share was based on its historical percentage of national milk production. Because

MSQ's cannot be exchanged between provinces, large milk producing regions like Ontario and Quebec were guaranteed larger shares of the manufacturing milk market than provinces with historically smaller shares of national production. Determining each region's quota allocation has perhaps been the most politically sensitive task faced by the CMSMC and it remains a source of inter-regional tension among provinces.²

Once the national quota is in place, marketing boards or departments of agriculture base each farmer's quota on the individual's historical share of the province's milk production. The quota entitles the farmer to receive the within-quota price for all milk sold up to the level of the quota. This level is set by the marketing board or department of agriculture on an annual basis.

Canada uses a two-tiered pricing system for industrial milk--one price for milk sold within the quota and another price for milk sold over the quota. To illustrate, consider the following price calculations, which are actual figures for the farm price of industrial milk in the 1985-86 marketing year (see Table 1).³ First, a base price called the "guaranteed market price" is calculated. This price is calculated by a formula that weights the cost of milk production by 45 percent, the Consumer Price Index by 35 percent, and a "judgmental factor" (currently fixed at \$5.00 per hundredweight) by 20 percent relative to how general conditions have changed since 1975. Next, a processor margin is deducted to allow for the fact that the market guarantee price is for butter and nonfat dry milk rather than raw milk.⁴ Similar to the price support

²For example, in 1982 British Columbia withdrew from the national program because their request for additional quota was not granted by the CMSMC. British Columbia reentered the program in 1984 when the CMSMC finally agreed to increase their MSQ. Such inter-regional tensions are difficult to avoid under a system like this because expanding one region's quota necessarily means decreasing another region's share of total production.

³All prices used in this paper are expressed in Canadian dollars unless otherwise noted.

⁴This is virtually identical to the "make allowance" used in determining product prices paid by the Commodity Credit Corporation for butter, cheese, and nonfat dry milk under the U.S. price support program. The make allowance or processor margin, in theory, represents the cost of manufacturing cheese, butter, or nonfat dry milk excluding raw milk. Therefore, the

(Footnote Continued)

Table 1. Formula Used by the Canadian Dairy Commission in Establishing Within-Quota and Over-Quota Industrial Milk Prices.*

<u>Factor</u>		<u>Canadian \$/Hundredweight</u>	
		<u>Within Quota</u>	<u>Over-Quota</u>
	Guaranteed Market Price	20.00	20.00
minus	Processor Margin	<u>2.52</u>	<u>2.52</u>
equals	Producer's Market Return	17.48	17.48
plus	Direct Income Payment	<u>2.66</u>	<u>2.66</u>
equals	Gross Target Price	20.14	20.14
less	Marketing Costs	<u>1.21</u>	<u>1.21</u>
equals	Net Target Price Before Quota Levy	18.93	18.93
less	Quota Levy	<u>2.27</u>	<u>16.76</u>
equals	Net Farm Price	16.66	2.17
	Approximate U.S. Equivalent	12.30	1.60

* These numbers are taken from Jesse and Cropp (1986), who used Dairy Facts and Figures at a Glance, Dairy Farmers of Canada, Ontario, November 1985, as their source.

for milk used in the U.S., the producer's market return is a target price to be paid by processors for raw milk used in manufacturing butter and nonfat dry milk. Third, a direct income subsidy, not reflected in the prices paid by processors, is paid to farmers.⁵ The resulting price is the gross target price for industrial milk. The net target price is equal to the gross target price minus hauling, promotion, and administrative marketing costs. Up to this point, there is no difference between the within-quota and over-quota price for industrial milk. The net farm price for industrial milk sold up to the quota is equal to the net target price (18.93) minus the within-quota levy (\$2.27). The net farm price for industrial milk sold above the quota is equal to the net target price (\$18.93) minus the over-quota levy (\$16.76). Compared to the manufacturing milk price in the U.S. (the Minnesota-Wisconsin price) for 1985, the Canadian price for within-quota milk (\$16.66 CAN, or \$12.30 U.S.) was about \$1.00 per hundredweight higher and the price for over-quota milk (\$2.17 CAN, \$1.60 U.S.) was about \$9.70 per hundredweight lower.

The dramatic differences in net farm prices shown in Table 1 illustrate that the over-quota levy is the principal mechanism for discouraging production of industrial milk in excess of the total quota. Since 1980, the over-quota levy has increased 109%, from about \$8.00 to \$16.76 per hundredweight. This increase was implemented in reaction to excess production experienced by Canada during the 1980's. Thus, contrary to what some claim, quota programs are not always effective in eliminating surpluses of dairy products.

The Provincial Quota Programs for Fluid Milk

Milk used in fluid products, which represents about one-third of Canadian production, is regulated via individual

(Footnote Continued)

price support for milk is really a target price that the government uses to indirectly support raw milk prices by buying these products from manufacturers at prices equal to the price support plus the make allowance.

⁵The subsidy is added onto the price here in order to illustrate the true price received by dairy farmers for within-quota industrial milk. The reason the CDC tries to keep the price of industrial milk relatively low is because the demand for manufacturing products is more price responsive than the demand for fluid milk. That is, an increase in the price of cheese, for example, will cause a larger decrease in the quantity demanded than an equivalent increase in the price of fluid milk.

provincial quotas. The milk marketing board (or department of agriculture) sets sanitary requirements, quality standards, and prices for fluid milk. All provinces are self-sufficient in supplying their markets with fluid milk. The discussion that follows uses the Ontario program as an illustration of the mechanics of a provincial plan.

The Ontario Milk Marketing Board (OMMB) was established under the Canadian Milk Act of 1965. The OMMB is made up of dairy farmers in Ontario and is completely financed by all producers. Policy decisions are made by a Board of Directors, composed of thirteen elected dairy farmers, who serve four-year terms.

Unlike industrial milk quotas, the OMMB allocates fluid quotas to farmers on a daily basis to assure an adequate daily supply of fresh fluid milk. Fluid quota holders are required to supply at least 80 percent of their quota on a monthly basis. If they fail to do this, producers forfeit some of their quota to the OMMB. The total amount of the fluid quota and the allocation of shares to producers is determined by the OMMB. In order to hold a fluid quota, a farmer must produce fluid grade milk and must hold MSQ so that milk sold in excess of the fluid quota is manufactured into dairy products. In 1985, 96 percent of milk produced in Ontario was under fluid quota.

The OMMB sets the fluid milk price using a special formula that takes into account changes (from a 1970-1972 base period) in the costs of production and general economic conditions. The cost of production indices used in adjusting fluid prices are the farm input price index, which is weighted by 20 percent, and the feed price index, which is weighted by 10 percent. Changes in general economic conditions are measured in the fluid price formula by the wholesale price index (30 percent), average weekly earnings of industrial workers in Ontario (15 percent), and fluid sales as a percentage of all milk sales (25 percent).

The price milk handlers must pay for milk used in fluid products is typically about \$4 to \$5 per hundredweight higher than industrial milk. However, since the OMMB allocates more fluid quota than is necessary to supply the market, a classified price system is used for determining producer prices. While fluid milk handlers pay the higher fluid class prices for the raw milk they purchase, dairy farmers receive a blend or uniform price, which is a weighted average of the fluid and the industrial milk prices (the weights on each price are the utilization percentage for fluid and industrial milk products). For example, suppose that the fluid price is \$19, the industrial price is \$15, and 65 percent of the total fluid quota milk is processed into fluid milk products. In this case, the farmer's blend price for his fluid quota is \$17.60 [(\$19 x .65)

+ (\$15 x .35)]. The blend price for fluid milk is typically just under \$2 per hundredweight higher than the industrial milk price.

Table 2 presents a simple example of the impact of this program on farm revenue for two different production scenarios. Consider a dairy producer with the following quota allocation, prices, and production costs:

Fluid Quota = 1,000 cwt.;
Blend Price = \$18.00/cwt.

MSQ = 1,000 cwt.;
Within-Quota Price = \$16.66/cwt.

Over-Quota Price = \$2.17/cwt.
Cost of Milk Production = \$12/cwt.

Case I - the farmer produces 1,000 cwt. more than his fluid and industrial quotas. In this case, net revenue from fluid sales is \$6,000 (\$18,000-\$12,000), net revenue from within-industrial-quota sales is \$4,660 (\$16,660-\$12,000), and net revenue from over-industrial-quota sales is -\$9,830 (\$2,170-\$12,000). Because the over-quota price is so much lower than the quota prices, the total net revenue in this case is only \$830.

Case II - the farmer produces exactly his total quota allocation. In this case, net revenue from fluid and within-industrial-quota sales is the same as Case I. However, because the farmer is staying within his quota on all milk sales, his net revenue in this case is \$0 instead of -\$9,830. His total net revenue, therefore, is \$10,660.

These two scenarios illustrate the significant economic incentive a farmer has to produce and market milk within his quota. In most instances, a farmer wishing to expand sales is better off buying additional quota rather than selling the extra production at the over-MSQ price. This decision depends upon the level of the over-quota penalty, the price of industrial and fluid milk, and the cost of production.

Quota Transfers

In Ontario and Quebec, quotas can be transferred to another party in three ways. Quotas can be transferred to immediate family members, sold as part of a whole farm sale, or bought and sold in the quota exchange. About 65 percent of all quota transfers in recent years have been within the family, 30 percent through the quota exchange, and 5 percent exchanged

Table 2. A Simple Example of Farm Level Revenue Under the Canadian Program.

Case I. Farmer produces over his total quota allocation, 3,000 hundredweight.

<u>Milk Sales</u>	<u>Gross Revenue</u>	<u>Total Costs</u>	<u>Net Revenue</u>
Fluid Sales	\$18,000	\$12,000	\$6,000
Within-MSQ	\$16,660	\$12,000	\$4,660
<u>Over-MSQ</u>	<u>\$2,170</u>	<u>\$12,000</u>	<u>-\$9,830</u>
Total	\$36,830	\$36,000	\$830

Case II. Farmer produces exactly at his total quota allocation, 2,000 hundredweight.

<u>Milk Sales</u>	<u>Gross Revenue</u>	<u>Total Costs</u>	<u>Net Revenue</u>
Fluid Sales	\$18,000	\$12,000	\$6,000
Within-MSQ	\$16,660	\$12,000	\$4,660
<u>Over-MSQ</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Total	\$34,660	\$24,000	\$10,660

with farm sales. If quotas are either bought and sold in the quota exchange or in a farm sale, then the government taxes 15 percent of the total quota. For example, in a nonfamily transfer of 100,000 pounds of quota, the government acquires 15,000 pounds. The resulting assessments are used to provide quotas for new entering farmers and/or to reallocate additional quota among existing farmers.

Quotas are valuable assets because of the substantial difference between the quota and over-quota prices. In a quota exchange, the price of quotas depends upon 1) the difference between the quota and over-quota price, 2) the supply of quotas, and 3) the demand for quotas. Obviously, quotas will be more valuable as the gap between the quota and over-quota prices widens. Farmers wishing to expand should be willing to pay up to the penalty rate less the marginal cost of additional production for extra quota. Also, since the government does not intervene to fix the price of quotas, the supply and demand of these certificates will affect the price of quotas. Like any commodity, lower supply and/or greater demand causes upward pressure on quota prices.

Table 3 shows the estimated values for fluid and industrial milk quotas in Ontario and Quebec for 1980 and 1983. It is clear from this table that quotas are valuable assets in these provinces. In Ontario, for example, the average price of a fluid quota in 1983 was over \$2,500 per cow, or worth \$82,000 for a 32-cow herd. Added to the industrial milk quota value of \$92,000 for a 32-cow herd, the average farm's total quota in 1983 represented an asset worth three and one-half times the value of cash receipts.

The European Community Quota Program

Prior to 1984, the EC was experiencing a costly milk surplus problem. Between 1975 and 1984, production of milk increased on average by 2.5 percent each year, while consumption remained relatively constant. By 1983, milk production was 20 percent higher than Community consumption plus exports. As a result, the EC adopted a temporary (5-year) quota plan in March, 1984 for the ten sovereign country members.

The program is based on a "guaranteed threshold" for milk supply and a "super-levy" applied to all milk sold above this threshold. The guaranteed threshold is an amount of milk required to satisfy EC consumption and exports. The super-levy is used to discourage the sale of milk in excess of this community-wide quota.

Table 3. Estimated Values of Quotas in Ontario and Quebec, 1980 and 1983.

Province (Year)	Average Herd Size		Value of Fluid Quota		Percent of Cash Receipts		Value of MSQ		Percent of Cash Receipts	
	Cows	Per Cow	Per Farm	Per Cow	Per Farm	Per Cow	Per Farm	Per Cow	Per Farm	
	Cows	Canadian \$	Canadian \$	Percent	Canadian \$	Percent	Canadian \$	Percent	Canadian \$	Percent
Ontario										
1980	31.7	1,179	37,371	94.8	1,074	34,047	86.4			
1983	32.4	2,540	82,298	165.2	2,852	92,416	185.4			
Quebec										
1980	33.6	1,525	51,248	140.2	842	28,287	77.4			
1983	35.8	3,165	113,325	184.1	3,327	119,120	193.5			

SOURCE: Fallert and Goodloe, 1984.

The guaranteed threshold for milk marketings is equal to total deliveries in 1981 plus 1 percent of this total.⁶ The guaranteed total quantity of milk for the Community is about 216 billion pounds of milk for each year the program is in operation. This quantity is allocated to each member country in proportion to their share of the EC's marketings in 1981. The three exceptions to this are Ireland and Italy which were allowed to use 1983 as their base, and Greece, which was given 105 percent of their 1983 deliveries as their guaranteed base. The guaranteed total for the ten countries are shown in Table 4.

Each country is responsible for allocating its allotment to producers (or plants) in the form of "reference quantities." Reference quantities (RQ's) are simply farm or plant-level marketing rights that entitle farmers or milk handlers the right to sell or buy a specified amount of milk without penalty over a 12-month period. Member countries are given two choices for determining RQ's: farm level or plant level RQ. The first formula allocates RQ directly to dairy farmers based on their historical share of the country's milk marketings (usually 1983). Under this formula, farmers receive the target price for all milk sold within their RQ. For milk sold above RQ the farmer receives only 25 percent of the target price. Unlike Canada or the U.S., there is only one price for raw milk regardless of whether it is used in fluid or manufacturing dairy products. The second formula allocates RQ to milk handlers based on their historical proportion of the country's total purchases of raw milk. The buyer pays the target price to farmers for all milk purchased within his or her RQ. For milk bought over the RQ, the handler is required to pay the government 100 percent of the target price. Handlers pass this liability down in the form of lower prices paid to farmers who have increased their plant deliveries. The money collected by the government from both formulas is used to pay for the cost of surplus disposal.

Unlike Canada, quotas cannot be bought or sold in the EC. Quotas can only be transferred in two manners: 1) to family members and 2) as part of a dairy farm sale. Each country may decide whether or not to tax some of the quota on such transfers. If a country does acquire some of the quota when transfers are made, then it adds it to the "national reserve." The national reserve is used by the government to deal with special cases that frequently arise, such as farmers who have successfully argued for additional quota.

⁶There are also similar quota arrangements for producers selling directly to consumers. In this case, their quotas are also equal to their 1981 sales plus 1 percent.

Table 4. Guaranteed Total Quantities of Milk Deliveries by Country in the EC, 1985-1990.

Country	Actual 1983 Deliveries	Guaranteed Quantity 1985/86-1989/90	Guaranteed Quantity as a Percent of 1983 Deliveries
	Million Pounds	Milk Equivalent	Percent
Belgium	7,111	6,849	96.3
Denmark	11,526	10,765	93.4
Germany	55,513	51,262	92.3
France	57,595	55,842	97.0
Greece	979	1,030	105.2
Ireland	11,642	11,642	100.0
Italy	18,352	18,352	100.0
Luxembourg	624	584	93.6
Netherlands	28,464	26,303	92.4
United Kingdom	36,570	33,796	92.4
EUR 10	228,376	216,425	94.8

SOURCE: Based on numbers in Green Europe No. 203, European Community, 1984.

The target price for milk is frozen at its 1984 level (27.43 ECU/100 kg of milk or, based on exchange rates for July 14, 1986, about \$11.56 per hundredweight in U.S. currency) for the duration of the program. Because the target price is frozen and farmers have to reduce their marketings, the EC plan is principally aimed at reducing government dairy expenditure rather than enhancing income.

There are two other supply management programs used in several countries of the EC. Germany, France, Italy, and the United Kingdom adopted a type of whole herd buyout program aimed at retiring small and older farmers from dairying. Although each program differs, the basic idea is to offer some payment plan from the government in exchange for the agreement to cease milk production permanently. In addition, the entire Community uses a "co-responsibility" levy to help pay for the quota program. This levy is equal to 3 percent of all milk marketings.

Differences Between the Canadian and EC Programs

There are several major differences between the Canadian and EC quota programs. These differences are briefly summarized in Table 5. The first difference has to do with the principal objectives of the program. In Canada, the main objectives appear to be price enhancement as well as supply control. On the other hand, the main objective of the EC quota program is to reduce government costs. This is evident from the fact that the target price was not increased to offset losses in revenue due to milk marketing reductions mandated from the program. Another difference is the duration of each policy. The Canadian program is a permanent policy that has been in operation for over 16 years. The EC quota system is a temporary measure that is scheduled to be reviewed in 1990. No one really knows whether the program will be continued or renewed at the end of this five-year period.

The two programs also differ in the type of milk covered and the agents receiving the quotas. In Canada, the quota system is actually two separate programs, a national program for manufacturing milk and individual provincial programs for fluid milk. The EC plan makes no distinction between fluid and manufacturing milk. All users of raw milk, be they fluid processors or cheese makers, pay the same price for this commodity. All quota holders in Canada are dairy farmers. In Europe, depending on the country, milk handlers may be issued quotas instead of producers. In the case where buyers receive RQ's, penalties for over-quota purchases are passed down to farmers that have increased milk deliveries.

If the European and Canadian quota systems have anything in common, it is the very high penalties paid for selling milk

Table 5. Differences Between the Canadian and EC Quota Programs.

Item	Canada	European Community
Principal Objectives:	Supply Control & Enhance Prices	Control Government Costs and Supply
Duration:	Permanent	5 Years
Classes of Milk Covered:	Fluid (Provincial) Manufacturing (National)	No Distinction
Quota Allotments:	Farm Level	Farm or Plant Level
Penalties for Over-Quota Sales:	89% of Support Price	75% of Support Price
Quota Exchange:	Yes	No
Additional Supply Management Programs:	No	Yes. Whole Herd Buyout

above the quota. For the 1985-86 marketing year, Canada's penalty is almost 90 percent of the target price and Europe's penalty is 75 percent of the target price for milk. Another similarity is that both Canada and the EC use levies on all milk sales so that farmers share the cost of dairy programs. Europe employs a 3 percent co-responsibility levy so that farmers share in the cost of these programs. In Canada, farmers selling milk within their MSQ must pay a levy (\$2.27/cwt.) on their milk deliveries to help pay for program costs and surplus disposal.

There are two final differences between programs. While quotas may be bought and sold in Canada, in the EC they can only be transferred either through farm sales or given to family members. Quotas are still valuable assets in Europe, but no estimates on their value are currently available. Another difference has to do with additional programs to manage milk supplies. In Europe, several other measures are taken in some countries. As was mentioned, several countries use a type of whole herd buyout program aimed at retiring small and older farmers from production. There are no equivalent voluntary supply management programs in Canada.

Advantages and Disadvantages of Quotas

As is the case with any policy, there are advantages and disadvantages of quota programs. Most of the pros and cons of mandatory supply management have to do with equity and efficiency implications. The following is a list of some of the strengths and weaknesses of such programs.

Advantages

1. Much of the cost of surplus milk production is transferred to those farmers causing the problem. If a farmer stays within his base, then she or he is rewarded by a "fair" price. Farmers producing above their quotas must pay stiff penalties on this surplus. As has already been stressed, these penalties are in the neighborhood of 80 percent of the price supports in Canada and the EC. This is a sharp contrast with the U.S. price support program where penalties are not used.
2. Quotas provide a mechanism (the over-quota levy or penalty) to discourage excess production. It is important to note, however, that there are forms of voluntary supply management that also provide these mechanisms. For example, the U.S. whole herd buyout program offered producers a chance to quit farming for 5 years by paying them to slaughter or export their dairy cattle. The Milk Diversion Program also reduced milk production by paying participants to cut back on their marketings.

3. Because prices are generally higher (or not lower) under quota programs as compared to other policies, quotas may increase the chances of survival for the small farmer. For example, a recent report by the Office of Technology Assessment concluded that the probability of a 52-cow Minnesota dairy farm surviving with current policy over the next 10 years is 74 percent. Under a quota program, which the report assumed would increase farm prices and reduce production, the chance of survival is estimated to be 92 percent.
4. Alternatively, quotas may actually speed up the process of farm exit from the industry, which has the positive effect of reducing total supplies and raising prices. This is due to the fact that quotas may have effects similar to that of a whole herd buyout program. Because quotas become valuable assets in their own, some farmers may choose to sell them and retire from dairy farming. Although mandatory supply management programs may have conflicting effects on farm survival, the Canadian experience shows that the dominant effect may be to encourage an exodus by some producers. Canadian quotas have caused a larger exodus from dairy farming than would have otherwise been the case. For example, between 1970 and 1985 (the years that the national program has been in place), the number of dairy farms in Canada fell 64 percent. This compares to a 57 percent decline in U.S. dairy farms for the same period.
5. If designed properly, quotas could be a relatively inexpensive or even a self-supporting policy. A self-sufficient quota program which would not cost taxpayers anything could be designed. However, in practice the price effect of quota programs must be balanced against political considerations regarding increases in consumer prices. For example, Canada subsidizes industrial milk prices by paying farmers \$2.66 per hundredweight in order to keep consumer prices down while still enhancing farm income. In fact, the dairy subsidies are the largest share of all agriculture subsidies in Canada. This suggests that quota programs are not always budget savers compared with other alternatives.
6. Quota programs generally reduce price uncertainty. Farmers in Canada and the EC know with a fair degree of certainty the price they will receive for their milk sales over the marketing year. Both the EC and Canadian programs have also been successful in curbing excess milk production. In the EC, for example, the gap between production and consumption went from being 48,510 million pounds (milk equivalent) to 26,460 million pounds between 1983/84 and 1984/85, a decrease of 46 percent. With penalties as high as they are in the EC, this trend should continue over the duration of the program.

Disadvantages

1. One major disadvantage of mandatory quotas is that they lead to a less economically efficient farm sector. The most efficient farmers are more restricted from increasing production. This is inefficient from a societal perspective because it inhibits the lowest cost farmers from producing more milk even though they have a comparative advantage. Quotas also lock in geographical production patterns, effectively prohibiting adjustment over time. One might question whether maintaining an inefficient region's dairy farms in an age where transportation technology enables milk to move freely from one region to another is good economic policy. Finally, if quotas are not transferable among regions (like the rules of quotas in Canada and the EC), changes on the demand side are ignored. For instance, some regions may experience significant increases in population, but may have a small quota allocation. In this situation, these regions will have to import much of their milk to satisfy demand, even when it might be more efficient for them to increase internal production.
2. For farmers, one unattractive aspect of quotas is the loss of freedom in decision making. Quotas are quite restrictive in the sense that producers are told how much they can and cannot produce. This is quite a departure from current U.S. dairy policy, which places no mandatory production restrictions on the farmer.
3. Another disadvantage of quotas is the political difficulty that may arise in administering the program. The allocation of marketing rights among regions in the country has caused political problems in Canada, as well as the EC. It is very difficult to design an allocation scheme which makes everyone happy. If the U.S. adopted a quota system, how should regional shares be allocated? Should Wisconsin and Delaware get a share equal to some historical base period of marketings? Should quotas be transferable between states? These are very difficult questions to address and inter-regional tension would in all likelihood be a side effect of quotas.
4. Quotas become valuable property to the initial holders, but they represent significant costs to new farmers or farmers wishing to expand. The important point is that benefits to existing farmers constitute a once-and-for-all capital gain, paid for by future generations of dairy farmers and consumers in the form of higher prices. Some may consider this undesirable from a policy perspective.
5. Consumers bear the burden of these programs in the form of higher prices. If the program is not designed properly,

higher consumer prices could cause significant reductions in consumption, leading to the need to reduce quotas. But if quotas are further reduced, prices would have to be increased to offset the drop in farmer income. This process could become an endless cycle unless subsidies were paid directly to farmers in order to avoid this vicious circle.

6. Finally, once adopted, a quota program would be very difficult and costly to dismantle. Those owning quotas would have to be paid to give them up. In some respects, it is similar to the Social Security Program. The government is unlikely to pull the plug on the Social Security Program without paying back people who have contributed to it over their lives. The same analogy would hold for those who bought their way into dairy farming by purchasing quota marketing rights.

Summary

This paper has presented an overview of quota programs in Canada and the EC. It has also examined some of the pros and cons of mandatory quota programs in general and in light of the EC and Canadian experience. It is important to note that the design of existing programs depends heavily on the culture, economic and political institutions of each nation. If the U.S. decides to implement a quota program, the architects must build a program viable for the U.S. economy, rather than trying to produce a carbon copy of either the EC or Canadian systems.

Since quota programs would be a drastic departure from current U.S. dairy policy, farmers and policy makers should spend a good deal of time weighing the advantages against the disadvantages of this form of supply management. There are certain to be gainers and losers from such a policy shift. Also, as previously noted, once in place, a quota program would be nearly impossible to remove. This reinforces the argument that quotas must be closely studied before enacted as U.S. dairy policy.

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