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Zwick Center for Food and Resource Policy

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ECONOMIC AND SUSTAINABILITY IMPACTS OF CONNECTICUT'S PUBLIC ACT 09-229 TO SUPPORT DAIRY FARMING

Prepared for the Dairy Committee of the Connecticut Farm Bureau Association

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EXECUTIVE SUMMARY

Objectives and Scope

This report, produced at the request of the Dairy Committee of the Connecticut Farm Bureau Association, assesses the economic and dairy farm sustainability impacts of Connecticut's Public Act 09-229. The Act established a dairy farm sustainability and safety net program by providing payments to dairy farmers whenever the federal milk price falls below a minimum sustainable monthly cost of production. The Act has provided \$16.72 million in payments between 2010 and 2012. To this end, three supportive objectives are pursued:

- 1) to examine recent trends in Connecticut dairy farming and policies;
- 2) to assess the impact of the Act on dairy farming sustainability; and
- 3) to assess the economic impact of payments under the Act.

The focus is on dairy farming and does not take into account impacts beyond the farm gate or impacts on open space and other environmental benefits.

Major findings

The major trends in Connecticut dairy farming are:

- High volatility and a general downward trend characterize farm prices since 1990.
- Although milk production has been declining for decades, the decline has been arrested since 2006 in part due to emergency payments and PA 09-229. However, the number of farm operations continues to decline.

Simulations under alternative scenarios of payments under Public Act 09-229 indicate that:

- Current levels of payments have been enough to help stabilize production but have not been adequate to meet a minimum sustainable cost of production.
- Elimination of the Act would result in an approximately 9% permanent decline in milk production, or about 32 million pounds annually from 2010-12 levels.
- Permanent full support of the shortfall between milk prices and a sustainable cost of production for Connecticut dairy farming would increase milk production by approximately 26% or 94.7 million pounds annually from 2010-12 levels.

Input-output models were deployed using PA 09-229 payments between 2010 and 2012 as inputs and statewide sales and jobs as outputs. The results are:

- Payments under the Act have generated between \$21 million and \$34 million in statewide sales. This indicates a return of up to an additional dollar in sales per dollar paid to dairy farmers.

- Payments under the Act have generated approximately 75 jobs each year or about 10 to 15 jobs per every million dollars in payments.

Conclusion

Because dairy farmers purchase local goods and services from other state industries and hire local labor, payments under Connecticut's Public Act 09-229 to dairy farmers cascade throughout the state's economy. More specifically, for every dollar paid to dairy farmers, up to one additional dollar is generated in the economy. Between 2010 and 2012, the Act provided payments of \$16.72 million or an average of \$5.57 million per year. This has translated into \$21 to \$34 million in statewide sales and 75 jobs created every year.

PA 09-229 payments are crucial to the sustainability of dairy farming in the state. Whether or not the Connecticut dairy farming sector survives, thrives, or declines in the decades to come will depend on how policy makers and stakeholders respond to the challenges involved. Continuing to sustain dairy farming is not only economically important to the sector and the state but also in terms of preserving open space, strengthening food security, and maintaining the quality of life for future generations.

ECONOMIC AND SUSTAINABILITY IMPACTS OF CONNECTICUT'S PUBLIC ACT 09-229 TO SUPPORT DAIRY FARMING

Introduction

Recognizing the significant role of dairy farming in the state economy and in maintaining open space and providing quality of life benefits to state residents, the Connecticut state legislature passed Public Act 09-229 (herein “the Act”) signed into law on July 1, 2009.¹ This Act established a dairy farm sustainability and safety net program via providing financial assistance to Connecticut milk producers whenever the federal milk price falls below a minimum sustainable monthly cost of production. The Act has provided \$16.72 million in payments between 2010 and 2012.²

The overall goal of this report is to assess the economic benefits of Public Act 09-229. To this end, the following objectives are pursued:

- 1) to examine recent trends in Connecticut dairy farming and policies;
- 2) to assess the impact of the Act on the Connecticut economy during the 2010-2012 period;
and
- 3) to assess the impact of the Act on dairy farming sustainability.

The rest of the report is organized to meet the above objectives. To achieve objective 1, Connecticut farming data were obtained from USDA reports and payments provided by the Connecticut Department of Agriculture. To achieve objective 2, we used regional multipliers applied to dairy payments to obtain impacts on statewide sales and jobs. To achieve objective 3, we focused on impacts of payments under the Act on farm milk production, extending the analysis to two counterfactual scenarios: production without the Act and production if farmers received payments to fully cover the minimum sustainable milk price during 2010-12. One of the important limitations of the study is that it focuses primarily on the evaluation of a state government policy from the standpoint of dairy farmers and their suppliers, without taking into consideration impacts beyond the farm gate. Thus, the estimates presented should be deemed conservative.

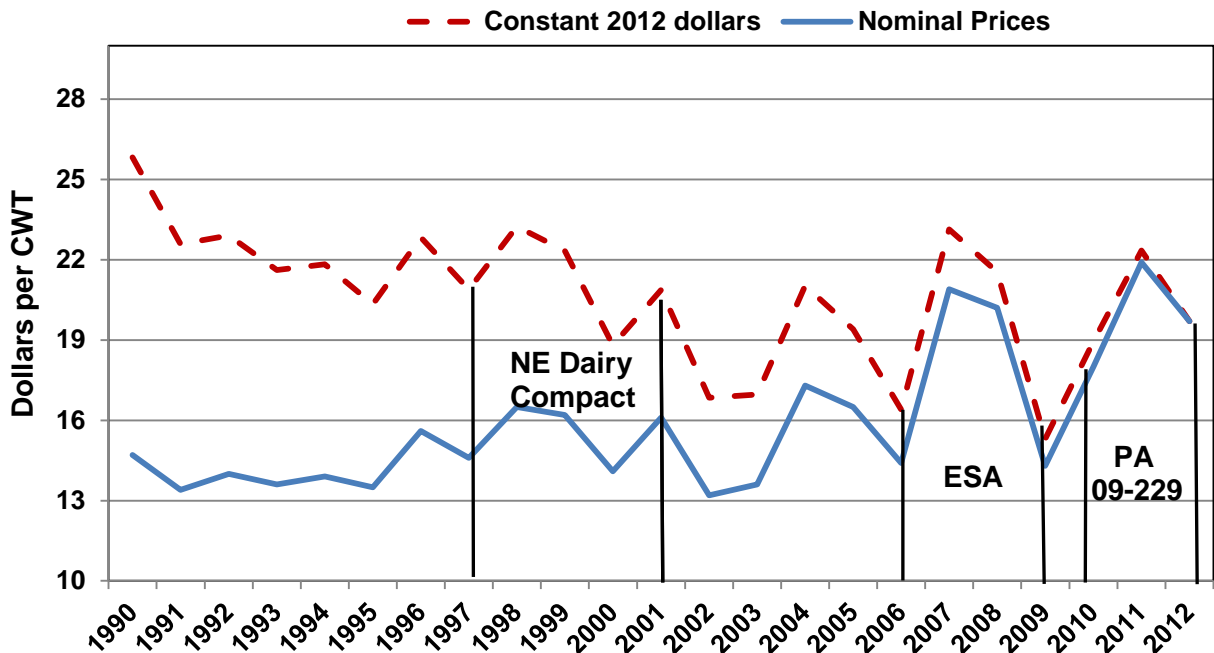
¹ For a description of the law, see sections 29 and 30 (State of Connecticut, 2009). The impact of the dairy industry, including dairy farming and processing, ranges between \$832 million to \$1.1 billion in state output and 2,465 to 4,242 in state jobs (DECD/DOA/DARE,2009)

² Prior to Public Act 09-229, the state legislature provided for three emergency assistance payments in 2006, 2007, and 2009 to help stem the decline of dairy farming in Connecticut. These emergency programs provided just under \$16 million during those three years.

Trends in Connecticut Dairy Farming

Figure 1 displays milk prices received by dairy farmers in Connecticut from 1990 to 2012. Between 1997 and 2001, the Northeast Dairy Compact established minimum payment for raw milk that provided a safety net against falling federal Class 1 prices. When this program disappeared in 2001, farm milk prices plummeted and dairy farming in Connecticut suffered. In response to record low milk prices in 2006, emergency support assistance (ESA in Figure 1) was provided to dairy farmers in 2006, 2007, and 2009 through separate one-time appropriations of funds. There were no state payments to dairy farmers in 2008 as record high market prices obviated the need for them. Effective July 1, 2009, the Public Act 09-229 created an agricultural sustainability account to provide financial assistance to Connecticut milk producers when the federal milk price falls below a minimum sustainable monthly cost of production. Between 2010 and 2012, the Act has provided a total of \$16.72 million in payments to dairy farmers, although these payments have only partially covered the minimum sustainable costs as discussed below.

Figure 1. Connecticut Farm Milk Prices, 1990-2012



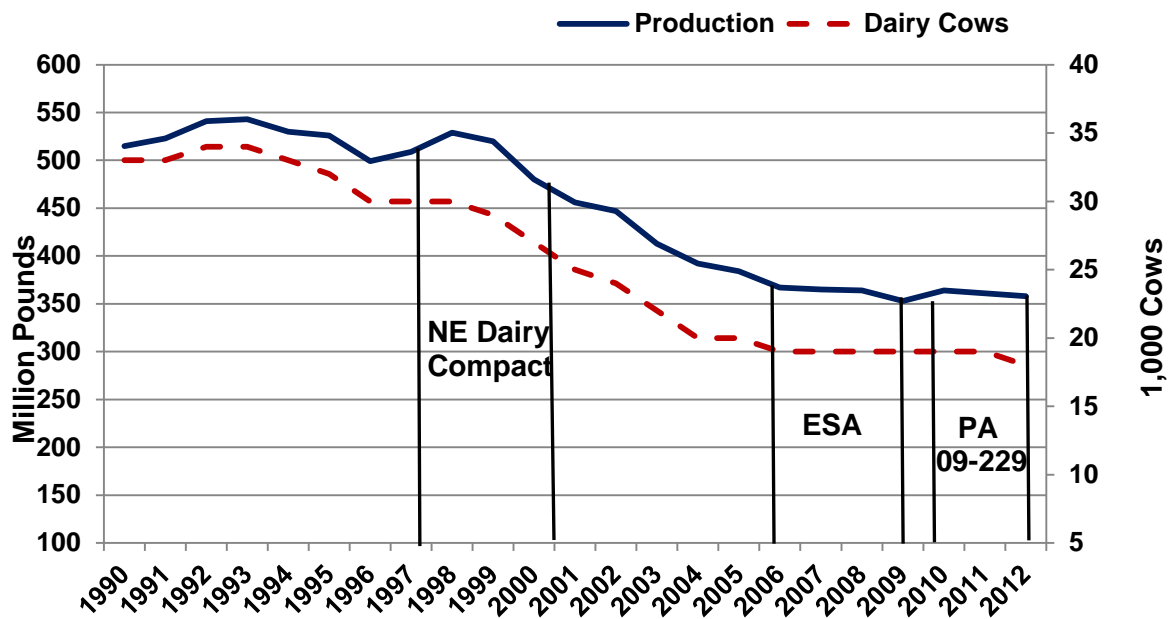
Note: Milk Prices from *USDA National Agricultural Statistics Service Milk Production, Disposition, and Income Annual Summary, 2012*, United States Department of Agriculture. ESA = Emergency State Assistance

Figure 2 displays Connecticut's milk production and number of cows from 1990 to 2012. Two trends are noteworthy. First, milk production in Connecticut significantly and steadily decreased between 1999 and 2006. Second, the production decline was arrested in 2006, remaining quite stable and relatively flat at least until 2012.

Figure 3 displays the number of dairy operations in Connecticut from 1990 to 2012.³ Unlike production, the number of operations continued to decline even after 2006. This comparison between overall production and the number of dairy farms reflects the fact that the average size (milk production or cows) per farm is increasing. Given the existence of economies of size in Connecticut dairy farming (Bravo-Ureta et al., 2012), whereby the average cost of producing milk falls with size, smaller dairy operations with higher than average costs of production are the most likely to exit while surviving farms expand production.

While it does appear that the safety net provided to dairy farmers has helped reduce the trend in dairy farms exiting the industry, the exact reasons for a continued decline is one that is not easily determined. From prior research on dairy farm exit decisions we know that price support programs such as Public Act 09-229 are an effective means of helping keep dairy farms in business.⁴ However, if the safety net is not sufficient to cover the full differential between the minimum sustainable cost of production and the price received by dairy farmers, this will not deter the decline in the number of farms, particularly smaller ones as they experience higher than average production costs and a larger spread between their actual COP and the price received for their milk.

Figure 2. Milk Production and Number of Dairy Cows in Connecticut, 1990-2012

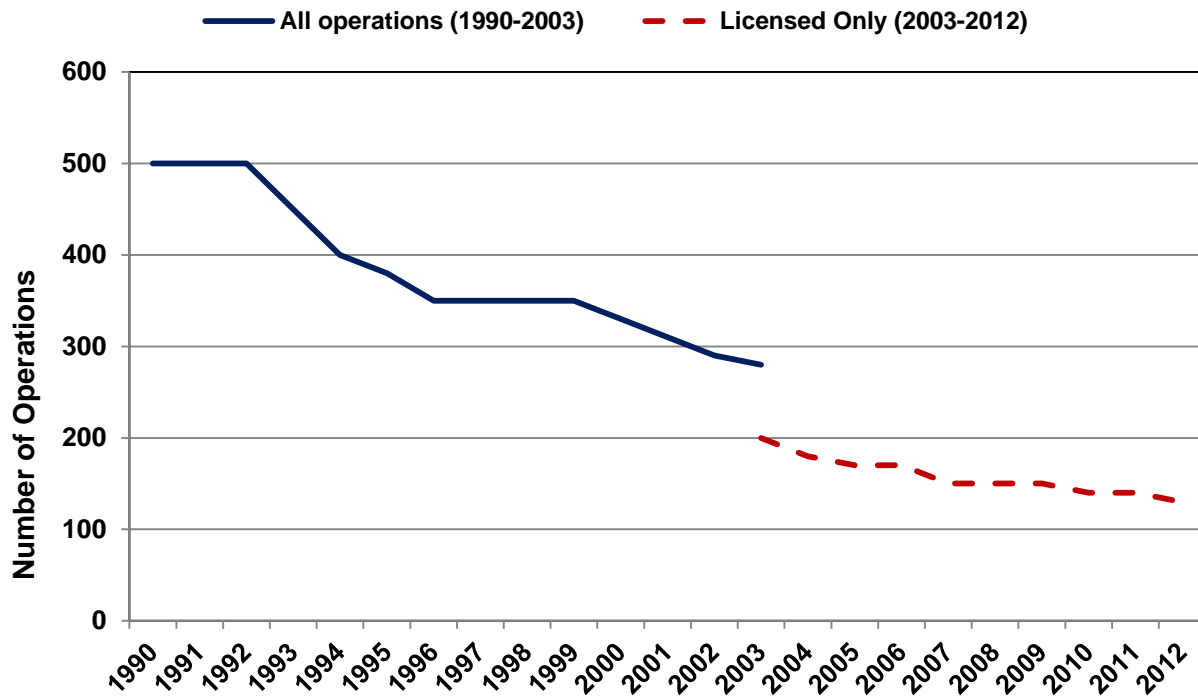


Note: Production and Dairy Cows from *USDA National Agricultural Statistics Service Milk Production Reports, 2012*, United States Department of Agriculture. ESA = Emergency State Assistance

³ The 1990-2003 period displays the number of dairy operations in Connecticut including farms with at least one cow that produces milk. In 2003 the measurement changed to the number of licensed dairy operations, i.e. those that are licensed to sell milk in Connecticut.

⁴ Foltz (2004); Bragg and Dalton, (2004); Tauer (2006). Additionally, we know that other factors such as farmer's age, off-farm income, and diversity of on-farm income also contribute to the decision of dairy farmers to continue in operation or exit the industry

Figure 3. Dairy Operations in Connecticut, 1990-2012



Note: Dairy Operations from *USDA National Agricultural Statistics Service Milk Production Reports, 2012*, United States Department of Agriculture.

Dairy Sustainability Impacts of PA 09-229

Table 1 shows the annual breakdown of payments during the 2010-2012 periods.⁵ The statistical uniform price is the federal pay price in the Hartford area of Federal Milk Marketing Area 1. The cost of production (COP) estimates shown are based on USDA estimates for Vermont from 2006-2010 and Connecticut for 2011-2012.⁶ The minimum sustainable COP is 82% of the total cost estimates as stipulated in the Act. Since the inception of the Act, the minimum sustainable COP has been at least \$5/cwt. (1 cwt. = 100 lbs.) higher than the average annual statistical uniform price. This is far below the \$1.12-\$2.19/cwt. actual payments made to farmers under the Act. This table helps illustrate not only the benefits of tying payments to highly volatile milk prices, but also the fact that dairy farmers still require additional funds beyond what is available through the current program if they are to meet the average state minimum sustainable cost of production.

⁵ Although the Act was signed into law effective on July 1, 2009, only \$90,000 was paid out during the rest of 2009. Thus, 2009 is a transition year as the full impact of the Act was not felt until 2010 and onwards. Thus, the analysis focuses on 2010 to 2012.

⁶ For a detailed discussion on the cost of production estimates, including an explanation of the change from Vermont to Connecticut and the methodology to estimate Connecticut cost of production, see: Bravo-Ureta et al., 2012.

Year	Average Statistical Uniform Price	Minimum Sustainable (82%) Cost of Production	Shortfall between Price and COP	Actual State Payments	Shortfall between Price and Sustainable COP
2010	16.82	23.77	6.95	1.12	5.83
2011	20.54	25.85	5.30	1.35	3.95
2012	18.53	28.34	9.81	2.19	7.62
Average 10-12	18.63	25.99	7.36	1.55	5.81

Note: SUP from *USDA Agricultural Marketing Statistics Milk Marketing Order Statistics, 2012*, United States Department of Agriculture. COP from *USDA Economic Research Service Milk Cost of Production Estimates, 2012*, United States Department of Agriculture.

Recall from Figure 2 that Connecticut milk production remained fairly stable between 2010 and 2012 under the PA 09-229 payment system. In order to quantify change in milk production under alternative levels of state payments, we performed two simulations and compared them with the status quo production between 2010 and 2012. Milk production was compared under three different scenarios:

1. Baseline production as observed between 2010 and 2012 with actual payment levels of \$1.12-\$2.19/cwt. (fifth column, Table 1);
2. No state payments to farmers, e.g. elimination of PA 09-229 or similar programs; and
3. Farmers fully compensated for the shortfall between price and a sustainable cost of production (fourth column, Table 1).

Scenario 1 is the benchmark for comparison and it represents the status quo. Since production was stable between 2010 and 2012 during the existence of PA-09-229, the average yearly milk production (361 million pounds) and farm price received by farmers including state payments (\$21.45/cwt. = \$19.90 price + \$1.55 average state payment) during those three years.⁷ Scenario To simulate scenario 2, we remove the PA 09-229 payments and therefore assume that the average prevailing price during 2010-12 was \$19.90/cwt. The corresponding average milk production was estimated using the price elasticity of supply for Connecticut milk.⁸ For scenario 3, we assume that the average prevailing price was \$27.26 (\$19.90 + \$1.55 average state payment + \$5.81 average shortfall between price and sustainable COP) and again used the price elasticity of demand to estimate the resulting milk production in the state. The results for average levels of milk production under the three scenarios are presented in Figure 4.

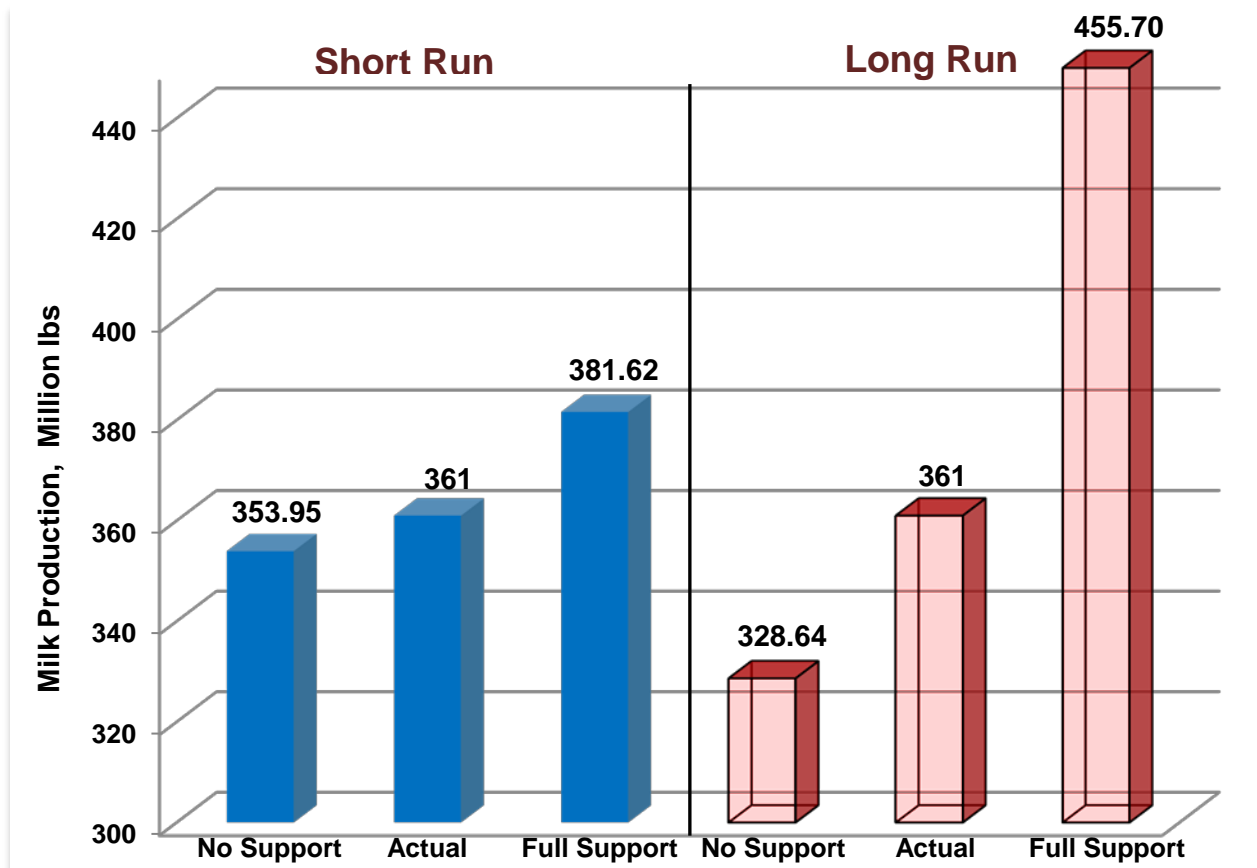
⁷ Note that the price received by farmers includes premiums that are not included in the statistical uniform price. We also do not consider Federal support programs in this analysis.

⁸ The price elasticity of supply measures the quantity change in supply in response to a one percent change in price, other things being held constant. The estimates for Connecticut milk supply are 0.27 in the short run and 1.24 in the long run as provided by Lopez et al. (1994).

Scenario 2 assumes a decrease in state support to zero that effectively reduces prices by 7.23%. This would have resulted in a short run decline of production of 2% (first bar, Figure 4) and a long run loss of production of 9% (fourth bar). From current production levels, this corresponds to a loss of about 7 million pounds in the short run and 32 million pounds in the long run. Thus, eliminating this program will result in a significant decline in production of milk in Connecticut.

Under scenario 3 prices would have increased by 21.2%, resulting in a short run increase in production of 5.7% and a long run increase in production of 26%. Based on current production levels, this translates into an increase of 20.6 million pounds (third bar) in the short run and 94.7 million pounds in the long run (sixth bar). This is a significant increase in milk production and would also likely arrest or even reverse the exit of small dairy operations.

Figure 4. Impact of Public Act 09-229 on Connecticut Milk Production, 2010-2012 Averages



Source: Calculated based on the price elasticity of supply for Connecticut milk at 0.27 in the short run and 1.24 in the long run as provided by Lopez et al. (1994).

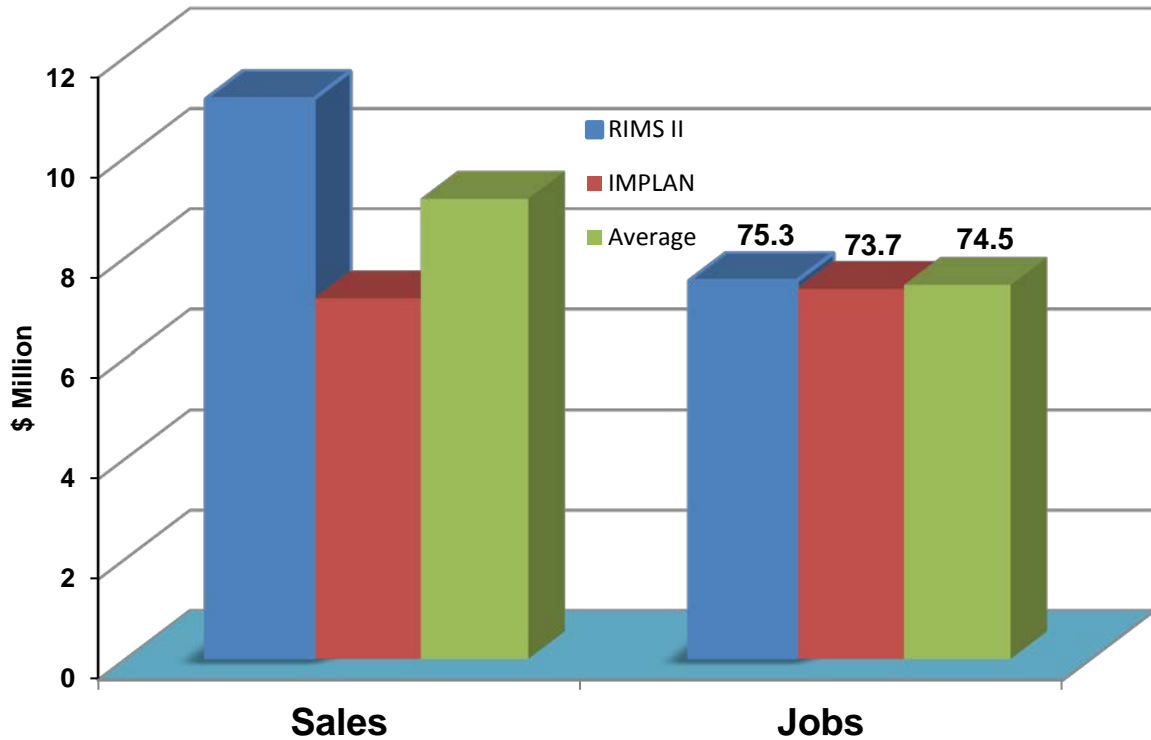
Economic Impacts of PA 09-229

Because dairy farms purchase goods and services from other industries and hire local labor, their economic impact cascades throughout the economy. Dairy farmers in the state support businesses including feed suppliers, veterinary services, equipment manufacturers and repair, and financial services. They also support short-term contractual jobs such as engineering, construction, plumbing, electrical work and inspection. To capture these spillover effects from supporting sectors, we deployed two common input-output models of impact analysis [see RIMS II (BEA, 2010) and IMPLAN (2010)]. PA 09-229 payments are used as the input to be converted to outputs (sales or jobs) by applying multipliers that capture effects on suppliers. The results for each year are displayed in Table 2 and the averages are presented in Figure 5. Note that the analysis does not include sectors beyond the farm gate such as milk processing that may rely on local milk. Neither are other scenic or environmental benefits included. Thus, the estimates should be regarded as conservative.

Activity/Year	Act Payments	Statewide Impacts			
Year	\$million	Sales (\$M) RIMS II	Sales (\$M) IMPLAN	Jobs RIMS II	Jobs IMPLAN
2010	4.02	8.05	5.18	54	53
2011	4.85	9.71	6.25	66	64
2012	7.85	15.72	10.11	106	104
Average 2010-12	5.57	11.16	7.18	75.3	73.7
Total 2010-12	16.72	33.48	21.54	226	221

Source: Act payments from W. Kasacek, personal communication, April 9, 2013. Multipliers used are from DECD/DOA/ARE (2009).

Figure 5. Impact of PA 09-229 Payments on Statewide Sales and Jobs, 2010-2012 Averages



Source: Multipliers used are from DECD/DOA/ARE (2009).

Overall, the results indicate that in these three years, payments under the Act have generated between approximately \$21 and \$34 million in statewide economic activities (cf. total payments of \$16.72 million). For every dollar of payment to farmers, the economy responds with an increase in sales of \$1.3 to \$2 dollars. This indicates a return of up to an additional dollar in sales in other sectors per dollar paid to dairy farmers. The number of jobs generated by the payments is practically the same under the two models, at approximately 75 jobs per year generated since the Act took effect. This translates into 10 to 15 jobs generated per every million dollars disbursed under the program. It is a significant number of jobs if one considers that annual payments averaged \$5.6M.

Conclusion

Because dairy farming is local and important to the state economy, payments under Public Act 09-229 provide not only a safety net to Connecticut dairy farmers but also a stimulus to the state economy in terms of statewide sales and jobs. With the state emergency payments in 2006, 2007, and 2009, and the PA 09-229 payments in 2010 to 2012 the decline in milk production has been arrested but any decrease or elimination in payments to dairy farmers will have an adverse effect on the state economy and will precipitate increasing exits of dairy farming operations, particularly smaller ones.

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