An Evaluation of Tools to Manage Dairy Farm Income Volatility in Ireland

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Overview

• Nature of the Problem

• Tools to Address the Problem
  1. CAP Payments
  2. Forward Contracts for Milk
  3. Taxation Measures
     • Income Averaging
     • 5-5-5 Income Stabilisation Tool
  4. Farm Margin Insurance

• Ensure that Irish Agri-Food sector remains competitive/ profitable
Net Margin per litre

Farm Milk Price

Source: Teagasc National Farm Survey

Source: Central Statistics Office (2018)
Average Dairy Family Farm Income (Left Axis)
Year on Year % Change (Right Axis)

Source: Teagasc National Farm Survey
1. Direct Payments and Farm Income

- Dairy income highly variable due to:
  - volatility in dairy prices
  - volatility in input prices
  - influence of weather (production risk)

- Benefits of Direct payments:
  - Boosts farm income
  - Reduces the volatility of farm income
    - fixed value of support
  - But smaller % of income on dairy farms derived from support payments
    - compared to other farm types

Graph showing the percentage share of direct payments as a % of farm income from 2005 to 2016.
• Average % support for dairy farms is low
  • compared with other systems

• Support is greater % of income on some dairy farms than it is on others
  • Wide variations around the average

• Support is **decoupled**
  • Expressed here in cent per litre equivalent
  • Support is effectively worth approx. 3 cent per litre on average (2016)
  • For comparison the **average**
    • milk price (2016) was 35 cent per litre
    • production cost (2016) 23 cent per litre
The future of CAP support

• CAP support is likely to change in future

• Several factors
  1. Pressure to spend EU budget on other things
  2. Loss of net EU budget contribution from UK (Brexit)
  3. Pressure to reduce payment inequalities across EU
  4. Pressure to reduce payment inequalities within IRL
  5. Desire to achieve more environmental benefits from CAP expenditure
  6. Expansion in milk production which dilutes support
Impact of 10% Pillar I reduction and 20% increase in milk production per farm

<table>
<thead>
<tr>
<th></th>
<th>Payment Per Litre in 2016</th>
<th>Payment Per Litre with 20% Rise in Milk Production</th>
<th>Payment Per Litre under 10% support cut and 20% Rise in Milk Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>90th Percentile</td>
<td>5.1 Cent</td>
<td>4.4 Cent</td>
<td>3.8 Cent</td>
</tr>
<tr>
<td>Median</td>
<td>3.1 Cent</td>
<td>2.6 Cent</td>
<td>2.3 Cent</td>
</tr>
<tr>
<td>10th Percentile</td>
<td>2.2 Cent</td>
<td>1.8 Cent</td>
<td>1.7 Cent</td>
</tr>
</tbody>
</table>

- Key points
  - Effective support per litre produced falls even in the level of support per farm is unchanged (due to expansion)
  - A reduction in support, a possible outcome of Brexit/CAP Reform would reduce the support per litre further
2. Forward Contracts for Milk

Chart: Level and duration of milk price forward contract available to dairy farmers from various processors

Direct comparisons between contracts not appropriate given varying timing and duration of contracts.
Non-Adopters and Adopters of **Forward Contracts** in 2016

Non-Adopters on average have lower incomes

Non-Adopters on average receive a higher share of their income in support payments

**Source:** Authors’ calculations using the Teagasc National Farm Survey data
Non-Adopters and Adopters of **Forward Contracts** in 2016

### Non-Adopters have on average higher production costs

<table>
<thead>
<tr>
<th></th>
<th>Overhead Costs Per Litre [Cents]</th>
<th>Direct Costs Per Litre [Cents]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Adopters</td>
<td>9.3</td>
<td>13.0</td>
</tr>
<tr>
<td>Adopters</td>
<td>8.8</td>
<td>11.7</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations using the Teagasc National Farm Survey data

### Non-Adopters on average deliver smaller milk volume

<table>
<thead>
<tr>
<th></th>
<th>Number of Litres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Adopters</td>
<td>317,210</td>
</tr>
<tr>
<td>Adopters</td>
<td>403,164</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations using the Teagasc National Farm Survey data
Forward Contract Simulation, 2016, Baseline versus 20% Adoption Scenario

Chart: Milk Spot price and price achieved on the basis of 20% milk in fixed contract in 2016

- In 2016 the fixed milk price out performed the spot price
- However, averaged over several years, we should expect the fixed price to under perform the spot price, reflecting the reward for risk being borne by those in the futures market

Source: Authors’ calculations using the Teagasc National Farm Survey data
3. Taxation: Issues with Income Averaging

• Income averaging system
  • The rules relating to household off-farm employment are restrictive
    • over half of all specialist dairy farms are automatically excluded from participation in the system
    • due to presence of non-farm income in the household
  • Risk that more farms will permanently opt-out of income averaging
    • following the abolition of the milk quota system, income are expected to trend upward due to an increase in farm size
  • Budget 2017 allowed for a temporary opt-out
    • but this is only a temporary suspension of the tax liabilities
    • the outstanding amounts must be paid in instalments over the following four years
3. Taxation: Proposed 5-5-5 Tool

A proposed income stability tool with three components

1. **5 year income averaging for tax purposes**
2. **5% of annual milk receipts deposited in an account**
   - permits farmer to defer up to 5% of their milk receipts in any one year
3. **5 year draw down period**
   - deferred funds to be drawn down and taxed at any time within a max 5 years

**Advantages**
- Significantly reduce the volatility of after-tax household disposable income
  - Without greatly reducing the overall tax contribution
  - Highly unlikely to breach the European Commission Regulation on De Minimis Aid
  - Offers farmers a great deal of scope for decision-making
- But farmers will require professional financial advice prior to participation in such a scheme
Deductions as a Share of Household Income: The Case of a Married Dairy Farmer with two Children

- Volatility of farm incomes can significantly change the household’s effective tax rate, from year to year
- During relatively good years, the farm household may incur particularly high tax liabilities
  - not reflective of the farms’ longer term average or typical income

Note: Assume no Off-Farm Sources of Income or Spouse Employment
### Income and Deductions 2013-2017: Dairy Farmer with no Off-Farm Income

<table>
<thead>
<tr>
<th>Year</th>
<th>Farm Income</th>
<th>Total Milk Receipts</th>
<th>Income Threshold</th>
<th>Maximum Deferral</th>
<th>Chosen Deferral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>€45,000</td>
<td>€200,000</td>
<td>€36,000</td>
<td>€10,000</td>
<td>€9,000</td>
</tr>
<tr>
<td>Year 2</td>
<td>€60,000</td>
<td>€200,000</td>
<td>€36,000</td>
<td>€10,000</td>
<td>€10,000</td>
</tr>
<tr>
<td>Year 3</td>
<td>€35,000</td>
<td>€200,000</td>
<td>€45,000</td>
<td>€10,000</td>
<td>€0</td>
</tr>
<tr>
<td>Year 4</td>
<td>€30,000</td>
<td>€200,000</td>
<td>€45,000</td>
<td>€10,000</td>
<td>€0</td>
</tr>
<tr>
<td>Year 5</td>
<td>€65,000</td>
<td>€200,000</td>
<td>€45,000</td>
<td>€10,000</td>
<td>€10,000</td>
</tr>
</tbody>
</table>

- When farm income is above the income threshold, the farmer defers money into the account.
- When farm income is below the income threshold, the farmer draws down money from the account.
- The farmer may defer a maximum amount of money equalling five per cent of total milk receipts.
Impact of 5-5-5 scheme on Volatility of Household Pre-Tax Income

Hypothetical Example

- The effect of application of the 5-5-5 tool is to reduce the inter-annual variability of pre-tax income
- The example refers to a married couple with no off-farm income
- Even with the tool, there is little that can be done to alleviate a low income year if it occurs early in the operation of the scheme
  - eg 2009 in this example
4. Insurance

- Currently no revenue/margin insurance products for Irish dairy farmers
- Margin insurance (available in US)
  - Relatively new type of insurance
  - Protects gross margin (revenue – production costs)
  - Difficult to design, as it needs a lot of data on prices, production and input costs
- Risk of moral hazard
  - Data influenced by behaviour of insured farmer
  - Means that an index based measures that proxies farm circumstances is used
- Index based policies create basis risk
  - Risk that hedging strategy will not be fully effective against the underlying risk
- Risks associated with dairying in Ireland are largely systemic
  - i.e. milk prices and production costs tend to rise and fall for all farmers simultaneously
  - some form of public-private partnership may well be necessary to encourage insurers to enter this market
Simple Revenue Insurance Contract: Irish Example

- January 2010 to December 2017
- Low target price of 26 cent
- Monthly indemnity is shown in graph on the right
- Higher target price would create larger indemnity
Simple Revenue Insurance Contract

• Indemnity costs rise in an almost exponential manner
  • as the target price increases

Table: Protection level and estimated indemnities for a simple milk revenue insurance product

<table>
<thead>
<tr>
<th>Target</th>
<th>26</th>
<th>27</th>
<th>28</th>
<th>29</th>
<th>30</th>
<th>31</th>
<th>32</th>
<th>33</th>
<th>34</th>
<th>35</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cent/Litre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payout</td>
<td>0.16</td>
<td>0.29</td>
<td>0.48</td>
<td>0.72</td>
<td>1.00</td>
<td>1.37</td>
<td>1.78</td>
<td>2.26</td>
<td>2.84</td>
<td>3.50</td>
<td>4.23</td>
</tr>
</tbody>
</table>

• e.g. to get cover at 36 c/litre would cost a farmer 4.23c/litre

• NB: Administration costs and profit for any underwriter would inflate costs further
  • notional administration cost of €75 million would inflate costs by a further 1 c/per litre
Margin Insurance in Ireland?

Insurance product would need to address

• Price of output (milk)

• Cost of inputs
  • Note volatility of input (fertiliser & feed) prices

• Volume of inputs
  • volatile input use (variability in grass volumes)
  • due to variations in weather conditions
  • creates varying requirement for feed use

• Systemic risk
  • Risks associated with dairying in Ireland are largely systemic
  • Most dairy farmers face same risks at the same time
Conclusion

• **CAP support payment**
  - Useful buffer against dairy market price volatility, but likely to be watered down as dairy farm output increases
  - Nature of such support could change in the context of Brexit and CAP Reform

• **Forward contracts for milk**
  - Forward contracting of milk is useful - milk price received will likely over and under-perform the spot price from year to year

• **The income averaging scheme**
  - Income averaging of somewhat limited usefulness
  - Participating farms vulnerable in a situation where farm income in a particular year falls well below the preceding four years
  - Eligibility rules relating to off-farm employment mean many dairy farms are automatically excluded from participation
Conclusion

• **5-5-5 Income stability tool**
  • managed in the right way, the proposed tool looks promising
  • but the report envisages farmers seeking advice from a professional (such as their accountant)

• **Dairy Margin Insurance**
  • US experience relatively unsuccessful to date, due to the low level of farmer take up
  • Not available at all in Ireland at this time
  • Such insurance in Ireland could be costly
  • Tiered levels of cover with different associated costs would be required
  • Public support, to at least cover part of the farmer’s premium payment, would also be needed to attract private insurance industry
Overall Conclusions

Some factors driving dairy farm volatility can be farm specific so ideally any tools to manage volatility should be

- Voluntary
- Customised to meet each farmer's needs. There is virtue in farmers exploring a suite of measures suited to their farm circumstances
- Dairy farmers should avoid reliance on just one tool.
- Flexible as farmers' needs will change from year to year.

There is a need for education around the suitability and use of these tools.