An Examination of the contribution of off-farm income to the viability and sustainability of farm households and the productivity of farm businesses

**DAFF Project Ref No:** RSF 05 206

**Start date:** 01/01/06

**End date:** 31/10/08

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Please tick below the appropriate area on the research continuum where you feel this project fits

BASIC/FUNDAMENTAL ——— APPLIED/PRE COMMERCIAL

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**Key words:** economic research, policy analysis, part-time farming, off-farm employment, skills and training, poverty and productivity
1. **Rationale for Undertaking the Research**

The reliance of farm households on non-farm income is a growing phenomenon in Ireland. When this project was originally undertaken recent research had shown that approximately 40 percent of farm households have an off-farm income and that almost 30 percent of the farming population are only sustainable because of off-farm income, Hennessy (2004). Clearly the increased incidence of part-time farming has implications for the amount of labour available on the farm and the commitment given to farming by those working off-farm. However, the implications of this shift towards part-time farming for the productivity and competitiveness of the sector were not fully understood when this research was undertaken. DAFF have recognised the importance of off-farm income to the sector and they have recommended that future policies focus on farm household viability in all its dimensions, including farm and off-farm income sources (2000). The main objective of this project was to conduct research that could inform policy making.

Some initial research that was conducted prior to this project had revealed that farmers were typically employed in “vulnerable” sectors of employment and that the long-term sustainability of their off-farm income sources may be under threat. Loss of these off-farm income sources was likely to expose some farm households to poverty and deprivation and was also likely to threaten the continuation of the farm business. Again, the implications of this and the effects for the farm sector were not understood before this research project was conducted.

The objective of the research was to provide quality scientific based policy advice and recommendations on issues pertaining to farm viability, off-farm employment and the implications for the productivity of the farming sector. Specifically, the project was aimed at assessing the contribution of off-farm income to the sustainability of farm households and farm businesses with a view to advising government on how policy affects the number of farmers working off farm. The hypothesis that many marginal farm businesses can only be continued by subsidising the business with income earned outside the sector was tested. If policy makers wish to develop future policies to ensure the viability of the maximum number of farm households, they will require some insight into the future number of farmers and farmers’ spouses that may be job searching as well as their employment prospects. Hence the research conducted during the course of this project was important for informed policy making.

The project also aimed to identify the sectors which farmers and their spouses are typically employed and to profile their employability/skills. The objective here was to assess the long-term sustainability of off-farm employment. Along this vein, the exposure of farmer households to poverty was also examined. The final component of the project explored the implications of an increased incidence of part-time farming for the productivity of the sector was also explored.
2. Research Approach

This project had five main tasks the text below summarises the research approach taken for each task.

1. Examining the contribution of off-farm income to the viability of farming.

Teagasc National Farm Survey (NFS) data was used to identify the number of farmers and spouses employed off farm as well as the types of employment. A number of different datasets were acquired to estimate total household income. A model of farm investment was developed to ascertain whether farmers are re-investing off-farm income in farm activities. Probit, tobit and two stage econometric investment decision models were specified and estimated using NFS data.

2. Estimating the future number of farm households with off-farm income

3. Econometric models of labour supply were developed. A probit model of the decision to work off farm was specified to quantify the factors affecting this decision and thus the impact of policy instruments. Conditional on the decision to work off-farm, a sample selection bias corrected ordinary least squares model was used to estimate the factors affecting the number of hours spent working off farm. An interdependent bivariate probit model was also specified. This model allows for the interdependence between farmers’ and spouses’ labour decisions making. All models were specified using both cross-sectional and panel data. The advantage of panel data is that relationships across individuals as well as through time can be explored. Furthermore, unobservable characteristics of individuals, such as management ability, can be controlled.

4. Identifying the skills and training needs of farmers in order to enhance their employability

Quarterly national household data, secured from FAS, was used to profile farmers’ skills and training needs. Farmers were profiled in terms of their human capital by examining their age, education level and region of residence. In addition, farmers’ efforts to improve their human capital through training or education were examined. Using the ESRI labour market projections and the estimates of farmers’ human capital the probability of farmers retaining their current employment and/or finding new employment was assessed. Based on this analysis recommendations on retraining and upskilling for farmers were made.

5. Investigating the implications for the productivity of the farming sector of an increased incidence of part-time farming

The relative productivity of farmers with and without off-farm employment was analysed using stochastic frontier models. This measures efficiency and Total Factor Productivity (TFP) for all farming systems in the NFS from 1995 to 2005. The efficiency of each individual farm refers to its productivity level in relation to ‘best practice’ farms. TFP is the product of efficiency change, technical change (a shift in the frontier) and scale efficiency change (producing at a more optimal scale) through time. These models were used to test if there is a significant difference in the productivity levels of full and part-time farmers. Following this initial analysis, the implications for average productivity levels was estimated based on predicted changes in off-farm employment participation rates.

6. Examining the role of off-farm income in insulating vulnerable farm households from poverty

Non-monetary deprivation indicators were developed for three household types; farm, non-farm and part-time farm. Measures of income inequality, the Gini index of income inequality and the General Entropy Indices, were also computed. The statistical probability of each household type experiencing consistent poverty (relative income poverty plus an enforced lack of basic deprivation items) was estimated. This probability was estimated by taking the socio-demographic characteristics of each household, sources and level of income, deprivation scores and
problems with indebtedness into account. A specially constructed dataset pooling farm households from the 2006 EU SILC survey with the 2006 NFS was used for propensity score analysis. This analysis identifies and quantifies the differences between various income strategies adopted by rural households in Ireland.

3. Research Achievements

Part-time farming is a growing trend and the NFS shows that the number of farm households where the spouse and/or operator is working off the farm has increased from 37% in 1995 to 58% today. The reliance on non-farm income is also increasing. In 1994 about 54% of income in farm households that engage in off-farm employment was still derived from the farm. By 2006 this had fallen to 34%. This increased reliance on non-farm income has improved the welfare of farm families. In 2001 the net income per household member in farm households lagged behind the average for rural non-farm and urban households; but by 2006 average farm household income had surpassed other household types.

However, the results of this project showed that income inequality remains high among farm households. Farmers relying solely on farm income have a higher probability of poverty and deprivation. While off-farm income is improving the welfare of the household, there may be a perception that this may impact negatively on the productivity of the farm business. However, the results show that farms operated on a part-time basis are no less productive than those where the farmer does not work off the farm.

The link between off-farm income and farm investment was also explored. The results showed that when the farmer works off the farm, the investment in the farm business usually declines. However, when the farmer works full-time on the farm, and the spouse works off the farm, the investment in the farm business is usually higher than when no off-farm income is present. In other words, income earned by the farmer’s spouse is often used to ease the budgetary pressure in the farm household and thus allows more of the farm profit to be used for reinvestment in the farm business.

The research showed that the increases in the number of farmers working off farm over the last number of years has been as a result of both push and pull factors. Declining farm incomes relative to non-farm incomes have pushed farmers out of full-time farming, while the buoyant macroeconomy has pulled farmers out of full-time farming. The outlook seems somewhat different from the last decade however. The push factor of declining farm incomes is likely to continue and recent policy developments such as the decoupling of direct payments from production is also likely to continue to push farmers out of full-time farming. The opportunities available to farmers are likely to be significantly curbed due to the economic slowdown. Data shows that farmers that work outside of the farm are typically employed in the agri-food sector (as contractors or in food processing), the construction sector and traditional manufacturing. These are the sectors of employment that are most vulnerable to the recent economic slowdown. Furthermore, farmers tend to be employed at the lower skilled end of the employment spectrum which further exacerbates their exposure to the economic downturn. The situation for farmers’ spouses is more optimistic with a large majority of them employed in professional and associate professional jobs in the public sector, such as teachers, nurses and administrators. These jobs are considered more “secure” in the medium term.
4. Impact of the Research

The conclusions of the research point towards challenging times for part-time farmers in both securing and retaining off-farm employment. Specifically a number of recommendations were made arising from the research results. These are as follows;

Data Collection
Data on total farm household income in Ireland is very limited. It would be beneficial to have an annual data source on total farm household income in order to gain a better understanding of the welfare and viability of farm households. This is especially true in the case of income support policies. Many agricultural policies are designed to support the income of farm households but it is now clear that farm income contributes a small and declining proportion of total income for many farm households.

Supporting productivity improvements on farms
The farm productivity analysis presented in this report suggested that when the size and system of the farm are controlled for, part-time farmers are no less efficient than full-time farmers other things being equal. This result raises questions about the labour efficiency of full-time farms and possible issues of underemployment on some farms. This highlights the need for many full-time farmers to critically assess their on-farm time-management in an effort to explore the possibility of substituting a proportion of their on-farm labour with part-time off-farm employment. The productivity analysis also revealed that efficiency levels are positively correlated with extension use. Clearly, there is a role for extension officers to help farmers evaluate their time management and improve their labour efficiency.

Protecting Farm Households from poverty
The main risk of exposure to poverty originates from having all household income derived from less diversified sources. The introduction of decoupled payments has mitigated some of the risk associated with farm income as the value of the payment is known in advance and is not exposed to volatility. However, recent policy developments support freer world trade and this has already led to more volatile commodity markets and it is expected that this will become the norm in the future. Consequently, farm income is likely to become more volatile in the future, therefore intensifying the need for alternative less risky income sources. Given the increased difficulty that farmers are likely to face in trying to secure an off-farm job, support schemes for low income farmers, such as Farm Assist, are likely to become more important in the future.

Improving the employability of farmers
The results of this research show that the existing skill profiles of farmers do not coincide with the projected demand for skills in the future. The Options Programme, run by Teagasc in co-operation with FÁS, aims to assist farmers in confronting economic challenges. The results of this research showed that some problems exist with this programme. Recommendations for improvement of this programme include:

The Options Programme should provide guidance in relation to the existing job opportunities for farmers seeking off-farm employment, particularly in the areas where their skill profile meets the demand; this would require that advisers on the programme have detailed up-to-date information on the labour market conditions at occupational level.

The Options Programme should provide guidance in relation to up-skilling; advisers should inform farmers of the spectrum of up-skilling routes on offer. The links with education and training providers should be expanded beyond FÁS to include other providers in further and higher education and training.

Recording system on the existing Options Programme should be improved to provide data necessary for policy formulation and programme evaluation.
5. **Exploitation of the Research**

The objective of this project was to conduct research on a number of issues pertaining to part-time farming with a view to providing evidence based policy advice to government. As such, the objectives of the project were not to generate any technology or intellectual property that could be adopted by industry.

The recommendations arising from this research have been presented to officials at the Department of Agriculture, Fisheries and Food, to officials at FAS and Teagasc. It has also formed the basis of other research that has been used to inform policy making at the Department of Community, Rural and Gaeltacht Affairs.

The recommendations have been taken on board but given the slow pace at which policy making occurs it is as yet difficult to comment on whether policy has evolved in response to this research.

6. **Summary of Research Outputs**

(a) Intellectual Property applications/licences/patents
1. N/A
2. 

(b) Innovations adopted by industry
1. N/A
2. 

(c) Number of companies in receipt of information
N/A

(d) Outcomes with economic potential
1. N/A
2. 

(e) Outcomes with national/policy/social/environmental potential
1. N/A

(f) Peer-reviewed publications, International Journal/Book chapters.


(g) Scientific abstracts or articles including those presented at conferences


(h) National Report

(i) Popular non-scientific publications

(j) Workshops/seminars/ open days at which results were presented (excluding those in (g))
7. Permanent Researchers

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<th>Institution Name</th>
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<th>Total Time contribution (months)</th>
<th>Average time contribution per permanent staff member</th>
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<tr>
<td>Teagasc</td>
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<td>3</td>
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<td>FAS</td>
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<tr>
<td>Central Bank of Ireland</td>
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<td>2</td>
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8. Researchers Funded by RSF

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<th>Average time</th>
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<td>Contract Researchers</td>
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<td>PhD postgraduates</td>
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<td>Masters postgraduates</td>
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<td>Temporary researcher</td>
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<tr>
<td>Other</td>
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9. Postgraduate Research

Total Number of PhD theses: _____

Please include authors, institutions and titles of theses and submission dates. If not submitted please give the anticipated submission date

Total Number of Masters theses: _____

Please include authors, institutions and titles of theses and submission dates. If not submitted please give the anticipated submission date
10. **Project Expenditure**

Total expenditure of the project: €184,334

Total Award by RSF €184,334

Other sources of funding (specify) €

1.

2.

Breakdown of Total Expenditure

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<th>Category</th>
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<th>Name FAS</th>
<th>Name Central Bank</th>
<th>Name Institution 4</th>
<th>Total</th>
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<tr>
<td>Temporary staff</td>
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<td>Post doctorates</td>
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<td>Post graduates</td>
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<td>Consumables</td>
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<td>Travel and subsistence</td>
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<td>Durable equipment</td>
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<tr>
<td>Other</td>
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11. **Future Strategies**

Work is still ongoing on the preparation of papers for submission to peer reviewed journals.

12. **Industry Collaboration**

N/A