

**The contribution of the ‘biosector’  
to Ireland’s net foreign earnings:  
a provisional estimate for 2008**

**Department of Agriculture, Food and the Marine**

**June 2012**

**[www.agriculture.gov.ie](http://www.agriculture.gov.ie)**

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## EXECUTIVE SUMMARY

This report provides a provisional estimate of the contribution of the ‘biosector’ to Ireland’s net foreign earnings from exports of merchandise in 2008. The ‘biosector’ comprises the agriculture, forestry and fishing industries, as well as the industries processing their products, namely the food and beverage industries. In total, these industries comprise a large part of Ireland’s natural resource based industries and are distinguished by the biological origin of their products. For this reason the report refers to this group of industries as the ‘biosector’, to distinguish its coverage from any narrower definition of the agri-food sector.

These net foreign earnings are measured in terms of the net value of merchandise exports: that is the inflows associated with exports from the sector, plus international subsidy transfers, minus the associated outflows, principally on importing materials and repatriation of profits by foreign owned firms.

This report finds that, in 2008, the biosector accounted for **40** percent (over €8 billion) of net foreign earnings from merchandise exports. This is more than double the biosector’s **19** percent share (almost €16 billion) of merchandise exports in that year.

The main reasons for the biosector’s disproportionately large contribution to net foreign earnings from merchandise exports are lower import requirements per euro of exports, and higher receipts of EU payments.

Another way of expressing these results is in terms of balance of payment flows per €100 of merchandise exports. Put this way, in 2008, every €100 of exports from the biosector generated **€52** in net foreign earnings. This compares with every €100 of exports from the non-biosector, which generated only **€19** in net foreign earnings.

This report highlights the importance of the biosector's contribution to the Irish economy. The results for 2008 are provisional, and will be revised in the light of new Central Statistics Office (CSO) publications later this year. The report also updates the previously published estimate for 2005<sup>1</sup>.

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<sup>1</sup> B. Riordan (2008): *The net contribution of the agri-food sector to the inflow of funds into Ireland: a new estimate*, Department of Agriculture, Fisheries & Food, 2008  
[http://www.agriculture.gov.ie/media/migration/publications/2008/NetContributionofAgri-food2Funds\\_NewEstimate.pdf](http://www.agriculture.gov.ie/media/migration/publications/2008/NetContributionofAgri-food2Funds_NewEstimate.pdf)

# INTRODUCTION

## 1.1 Methodology

This report provides a provisional estimate of the contribution of the ‘biosector’ to Ireland’s net foreign earnings from exports of merchandise in 2008. The biosector comprises the agriculture, forestry and fishing industries, as well as the industries processing their products, namely the food and beverage industries. In total, these industries comprise a large part of Ireland’s natural resource based industries and are distinguished by the biological origin of their products. For this reason the report refers to this group of industries as the ‘biosector’, to distinguish its coverage from any narrower definition of the agri-food sector.

Export earnings of the sector are initially seen as part of receipts, or credit items, for merchandise in the Balance of International Payments (BOP). These receipts are supplemented by international Subsidy Transfers, mainly related to the Common Agricultural Policy (CAP). However, the sector’s net contribution is also affected by the size of the outflows related to these inflows. Outflows, seen as debit items in the Balance of International Payments, include imports of merchandise and services used up, directly or indirectly, in the process of producing the exports or in sustaining activities in receipt of international transfers. Also imported is much of the plant and equipment used on farms and in factories. However, the cost of these durable capital items is here spread over a number of years. Outflows of profit, and other payments to factors of production related to exports, must also be taken into consideration. These are prominent where foreign owned firms produce exports, as they do in many of the high technology industries, or what is frequently termed the ‘modern’ sector. Subtraction of all these outflows from the export receipts to which they relate gives the net contribution of a sector to the Balance of International Payments and thus to the economy as a whole.

## 1.2 Data sources

Data for this research came from the Central Statistics Office, particularly from sources that show transactions of industries, the most prominent being the *Census of Industrial Production* (CIP). Other data sources included: the National Accounts (NIE); Balance of

International Payments (BOP); the Supply and Utilisation and Input-Output (SUI-O) Tables; Trade Statistics and. Outputs, Inputs and Income in Agriculture (OIIA). The aim was to measure the net contribution of the biosector and the non-biosector in a way that is consistent with the National Accounts and reflects the structure of the economy in the Supply and Utilisation and Input-Output (SUI-O) Tables. The various sets of data and results were assembled in an MS Excel Workbook with a sheet per component. Further information on the detailed methodology is available in *Riordan (2008)*.

The task of inter-relating data from these various sources for 2008 was particularly challenging. The reason was that it was a year of transition from one version of product and enterprise classification to another. In earlier years, data in all these sources was classified under Revision 1.1 of the NACE classification<sup>2</sup>. This continued to be used in the National Income and Expenditure (NIE) in 2008, while CIP data was classified under NACE Revision 2. A major effect of this transition was to re-classify computer software and software producers in the service rather than manufacturing sectors. These problems will be resolved with the publication of data for 2010, all of which will follow NACE Rev. 2.

*It is also notable that export data in this report is drawn from the CSO's Census of Industrial Production (CIP) rather than the CSO's Trade Statistics.* This was done to relate exports to exporting enterprises and whether these enterprises were Irish or foreign owned. The CIP also groups enterprises into broader categories than the detailed product classification used in the Trade Statistics. One outcome is that the data for the food and beverages industries in the CIP covers all enterprises and products in this sector, while data for exports of some of these products are aggregated with those of other sectors in the Trade Statistics. This is done to protect the confidentiality of data provided by major exporters when there are very few of them exporting a product. It is a practice that has resulted in large

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<sup>2</sup> NACE is the acronym for 'Nomenclature générale des activités économiques dans les communautés européennes' (General Industrial Classification of Economic Activities within the EU). The version used from 1991 to 2002 was NACE Rev.1 followed by a slightly amended NACE Rev.1.1 from 1<sup>st</sup> January 2003 and then Rev. 2 starting in 2008.

differences between the value of agri-food exports reported in the Trade Statistics and exports of the sector shown in the CIP. *For this reason, the CIP data show biosector exports of €16 billion in 2008, whereas agri-food exports are shown as €9 billion in the 2008 Trade Statistics.*

### **1.3 Acknowledgements**

This report was prepared by Economics & Planning Division, Department of Agriculture, Food and the Marine, under the supervision of Brendan Riordan, research economist.

The authors are greatly indebted to the Central Statistics Office for nearly all the data used in this report. Some of these data were not available on the CSO website and required special extractions to be made. The authors are thus very grateful to people in the CSO who were unfailingly helpful in their response to the special requirements of this study. In particular, considerable assistance was provided with data from the CIP by Kevin Phelan, Trade Statistics by Lorcan O’Broin, Balance of International Payments by Stephen McDonagh, and the National Accounts by Kieran Culhane and Chris Sibley. The authors are, of course, entirely responsible for the use they made of these data and for the content of this report.

## PROVISIONAL RESULTS FOR 2008

### 2.1 Provisional results 2008

**Table 1(a)** shows provisional results for 2008. It shows that the biosector's contribution to net foreign earnings from exports amounted to **40%** of that from all primary and manufacturing industries. This is more than double the biosector's contribution to exports in that year of 19%.

*Table 1(a): Summary of balance of payments flows arising from exports of the biosector, 2008*

Balance of Payments Flows	2008 Provisional € million
<b><u>Biosector industries (NACE 1, 2, 3, 10, 11)</u></b>	
Exports of enterprises	15,830
EU Transfers related to exporting industries <sup>1</sup>	1,797
<i>Deductions</i>	
Imports exported without further processing	0
Imports for production of exports in Ireland	6,631
Operating surplus of foreign businesses from exports <sup>2</sup>	2,630
Net Balance of Payments inflow from exports	8,366
Balance of Payments debit for exporters' imports of capital goods	177
<b>Net foreign earnings of exports</b>	<b>8,189</b>
<b><u>All merchandise producing industries (NACE 1, 2, 3, 10-39)</u></b>	
Exports of enterprises	81,722
EU Transfers related to exporting industries <sup>1</sup>	1,797
<i>Deductions</i>	
Imports exported without further processing	2,900
Imports for production of exports in Ireland	45,127
Operating surplus of foreign businesses from exports <sup>2</sup>	13,969
Net Balance of Payments inflow from exports	21,523
Balance of Payments debit for exporters' imports of capital goods	832
<b>Net foreign earnings from exports</b>	<b>20,690</b>
<b>Biosector as a percentage of all merchandise producing industries</b>	
Exports	19%
Net inflow from exports	39%
<b>Net foreign earnings of exports</b>	<b>40%</b>
<sup>1</sup> All Payments to these industries from the EU including subsidies on exports.	
<sup>2</sup> Operating surpluses stated after deduction of corporation tax at 12.5 percent.	
<i>Source: Estimates derived from CSO data</i>	



**Table 1(b)** presents these results in terms of balance of payment flows per €100 of merchandise exports. Put this way, in 2008, every €100 of exports from the biosector generated €52 in net foreign earnings. This compares with every €100 of exports from the non-biosector, which generated only €19 in net foreign earnings.

*Table 1(b): Balance of payments flows per €100 of merchandise exports, 2008*

<b>Items</b>	<b>2008 Provisional € per €100</b>
<b>Biosector industries</b>	
<i>Inflows:</i>	
Exports of Enterprises at purchasers' prices	100
EU Transfers related to exporting industries <sup>1</sup>	11
<i>deduct outflows as follows:</i>	
Imports exported without further processing	0
Imports for production of exports	42
Operating surplus of foreign businesses from exports <sup>2</sup>	17
Balance of Payments debit for exporters' imports of capital goods	1
<b>Net foreign earnings of Biosector exports</b>	<b>52</b>
<b>Non-Biosector Industries</b>	
<i>Inflows:</i>	
Exports of Enterprises at purchasers' prices	100
EU Transfers related to exporting industries <sup>1</sup>	0
<i>deduct outflows as follows:</i>	
Imports exported without further processing	4
Imports for production of exports	58
Operating surplus of foreign businesses from exports <sup>2</sup>	17
Balance of Payments debit for exporters' imports of capital goods	1
<b>Net foreign earnings of non-biosector exports</b>	<b>19</b>
<sup>1</sup> All Payments to these industries from the EU including subsidies on exports.	
<sup>2</sup> Operating surpluses stated after deduction of corporation tax at 12.5 percent.	
<i>Source: Estimates derived from CSO data</i>	

## 2.2 Commentary on provisional 2008 results

The large contribution of the biosector to net foreign earnings from exports reflects several outstanding features of this sector, namely:

- Its share in total exports of merchandise in 2008 was 19%. This reflects the inclusion of all industries in the sector ranging from agriculture, forestry and fisheries to every food and beverage industry. Their combined exports in 2008 amounted to nearly €16 billion, though only €9 billion of this appears as exports of the agri-food sector in the Trade Statistics, as already explained in section 1.2 on data sources above.
- EU transfers related to exporting biosector industries, particularly agriculture and food, also boost sectoral inflows. Table 1(b) shows that in 2008 these represented an 11 percent addition to the value of these exports.
- Outflows per €100 of exports are generally lower than those of the non-biosector as is evident in Table 1(b). In particular, the biosector imports, directly and indirectly, far less than the non-biosector per €100 of exports. Outflows arising from the operating surpluses of foreign owned biosector enterprises are higher than might be expected, due to the large scale of exports by foreign owned enterprises in the broad definition of the biosector used in this study.

As a result of these considerable differences between the two sectors the biosector generated €52 of net inflows per €100 of exports relative to the non-biosector's €19 in 2008.

## 2.3 Comparison of results for 2005 and 2008

Tables 2(a) and 2(b) present previously published results for 2005 (*Riordan, 2008*) together with the revised results for 2005 and the provisional results for 2008.

Provisional results for 2008 are not directly comparable with Riordan's results for 2005 (Riordan, 2008). There are three main reasons for this, namely:

- Results for 2008 draw on the *2005 Supply and Utilisation and Input-Output Tables for Ireland* that were not available when Riordan calculated results for 2005. Data in these tables differ considerably from those in the *2000 Supply and Utilisation and Input-Output Tables* that Riordan relied upon for estimating the performance of the economy in 2005. In particular the revised results for 2005 reflect a zero level of imports exported without further processing by the biosector. In addition the import content of products exported has been calculated using the Leontief multiplier for imports in the 2005 Input-Output table, rather than projections of these multipliers from the *2000 Supply and Utilisation and Input-Output Tables for Ireland*.
- Since 2005, NACE Revision 2 has been introduced to replace NACE Revision 1.1, as noted in section 1.2 above. This change alone accounted for much of the reduction in turnover and exports reported for the manufacturing sector between 2005 and 2008.
- New sources of data on outflows of direct investment income arising from Foreign Direct Investment and on Consumption of Fixed Capital using the recently introduced perpetual inventory method.

Results for 2005 have thus been adjusted to take account of the significant differences between assumptions made in Riordan's calculations and data published subsequently. These amended results are in Table 2(a) for 2005 next to those for 2008. Notable features include:

- A rise in the biosector share in merchandise exports from 16% in 2005 to 19% in 2008. This reflects an 11% rise in biosector exports but also an 11% fall in total exports of merchandise between the two years. However, the fall in total exports largely reflects the reclassification of software exporters as providers of a service rather than as manufacturers.

- The share of the biosector in net foreign earnings arising from merchandise trade was 40% in both 2005 and 2008.
- EU transfers related to these industries, almost wholly to the biosector, declined by 20% between 2005 and 2008.
- Imports exported without further processing in 2005 are reported to be zero for the biosector while, going on the results for 2000, Riordan had estimated them to be €1,723 million (Riordan, 2008). Similarly he had estimated such imports by the non-biosector to be €1,057 million making the total for biosector and non-biosector to be €2,774 million. However, subsequent data indicates that total imports for re-export were likely to have amounted to €2,900 million in 2005 and to be entirely from the non-biosector. No evidence was found to estimate a different figure for 2008. Revisions of these data for 2005 would be a major explanation for the upward revision in the net contribution of the biosector in 2005 to 40%.

In terms of Balance of Payments flows per €100 of exports, the results for 2008 (see Table 2b) are quite similar to the revised figures for 2005. Biosector net foreign earnings per €100 of exports are reckoned to be the almost same in 2008 at €52 (€53 in 2005) per €100 of exports. This results from a decline in the contribution of EU transfers being offset by a decline in the import content of exports. For the non-biosector there was an increase in net foreign earnings per €100 of exports from €14 to €19 due to declines in imports for production of exports and a steeper decline in the operating surplus of foreign businesses earned by their exports. Part of this latter decline again reflects the movement of software firms from manufacturing to services, as these enterprises were foreign owned in large measure and would have generated operating surpluses from their exports of over €3 billion in 2005.

*Table 2(a): Summary of balance of payments flows arising from exports of the biosector, 2005 (published 2008), 2005 (revised), 2008 (provisional)*

<b>Balance of Payments Flows € million</b>	<b>2005 Published</b>	<b>2005 Revised</b>	<b>2008 Provisional</b>
<b>Biosector industries (NACE 1, 2, 3, 10, 11)</b>			
Exports of enterprises	14,299	14,299	15,830
EU Transfers related to exporting industries <sup>1</sup>	2,239	2,239	1,797
<i>Deductions</i>			
Imports exported without further processing	1,723	0	0
Imports for production of exports in Ireland	5,495	6,453	6,631
Operating surplus of foreign businesses from exports <sup>2</sup>	2,185	2,185	2,630
Net Balance of Payments inflow from exports	7,135	7,901	8,366
Balance of Payments debit for exporters' imports of capital goods	277	277	177
<b>Net foreign earnings of exports</b>	<b>6,858</b>	<b>7,624</b>	<b>8,189</b>
<b>All merchandise producing industries (NACE 1, 2, 3, 10-39)</b>			
Exports of enterprises	91,929	92,145	81,722
EU Transfers related to exporting industries <sup>1</sup>	2,239	2,239	1,797
<i>Deductions</i>			
Imports exported without further processing	2,774	2,900	2,900
Imports for production of exports in Ireland	50,588	53,556	45,127
Operating surplus of foreign businesses from exports <sup>2</sup>	17,405	17,405	13,969
Net Balance of Payments inflow from exports	23,402	20,523	21,523
Balance of Payments debit for exporters' imports of capital goods	1,669	1,669	832
<b>Net foreign earnings from exports</b>	<b>21,733</b>	<b>18,854</b>	<b>20,690</b>
<b>Biosector as a percentage of all merchandise producing industries</b>			
Exports	16%	16%	19%
Net inflow from exports	30%	38%	39%
<b>Net foreign earnings of exports</b>	<b>32%</b>	<b>40%</b>	<b>40%</b>
<sup>1</sup> All Payments to these industries from the EU including subsidies on exports.			
<sup>2</sup> Operating surpluses stated after deduction of corporation tax at 12.5 percent.			
<i>Source: Estimates derived from CSO data</i>			

*Table 2(b): Balance of payments flows per €100 of merchandise exports, 2005 (published 2008), 2005 (revised), 2008 (provisional)*

€ per €100	2005 Published	2005 Revised	2008 Provisional
<b>Biosector industries</b>			
<i>Inflows:</i>			
Exports of Enterprises at purchasers' prices	100	100	100
EU Transfers related to exporting industries <sup>1</sup>	16	16	11
<i>deduct outflows as follows:</i>			
Imports exported without further processing	12	0	0
Imports for production of exports	38	45	42
Operating surplus of foreign businesses from exports <sup>2</sup>	15	15	17
Balance of Payments debit for exporters' imports of capital goods	2	2	1
<b>Net foreign earnings of Biosector exports</b>	<b>48</b>	<b>53</b>	<b>52</b>
<b>Non-Biosector Industries</b>			
<i>Inflows:</i>			
Exports of Enterprises at purchasers' prices	100	100	100
EU Transfers related to exporting industries <sup>1</sup>	0	0	0
<i>deduct outflows as follows:</i>			
Imports exported without further processing	1	4	4
Imports for production of exports	58	61	58
Operating surplus of foreign businesses from exports <sup>2</sup>	20	20	17
Balance of Payments debit for exporters' imports of capital goods	2	2	1
<b>Net foreign earnings of non-biosector exports</b>	<b>19</b>	<b>14</b>	<b>19</b>
<sup>1</sup> All Payments to these industries from the EU including subsidies on exports.			
<sup>2</sup> Operating surpluses stated after deduction of corporation tax at 12.5 percent.			
<i>Source: Estimates derived from CSO data</i>			

## 2.4 Future work programme

These provisional results for 2008 will be revised in light of data that the CSO expects to publish in the third quarter of 2012. It should then also be possible to estimate the results for 2009 and 2010.