ON THE UNIMPORTANCE OF EXPORTS TO AUSTRALIAN AGRICULTURE[1]

Mark McGovern
School of Marketing and International Business, Queensland University of Technology,
2 George Street, Brisbane 4000, Australia.

ABSTRACT Agriculture sells mainly to Australians. The importance of exports to Australian agriculture has been regularly overstated. This appears due, in part, to a combination of methodological errors and naive analysis. The resultant empirical estimates have been highly inaccurate and misleading. Exports, while important, are not dominant to the extent conventionally believed. Widely used, these estimates have significantly distorted both the development of rural and trade policies and the perception of policy options. Given that the conventional wisdom about Australian agriculture is wrong in significant ways, efforts are needed to establish an appropriate, methodologically sound and empirically accurate basis for policies involving agriculture, trade and rural Australia.

1. INTRODUCTION

Analysts of Australian agriculture have failed to properly inform others involved in analysis, policy and commerce about the extent of sectoral exports. Flawed empirical analysis and unsound methodology permeate conventional thinking. The problems so created are impediments to market, industry and enterprise successes. Analysts and others will need to revisit the foundations of their work and appropriately revise their positions if their efforts are to regain accuracy and relevance.

1.1 Flawed Understanding

Not knowing to whom you are selling is probably one of the greatest commercial mistakes that an industry could make. Not knowing the nature of trading relations is probably one of the greatest policy mistakes that a nation could make. Such is the case with Australian agriculture.

Flawed analysis provides the foundation for such mistakes. Neither industry nor government appear to understand the markets to which agriculture sells because they are fundamentally misinformed. Disappointingly, approaches to ministers, agencies and organisations over several years seeking to discuss these findings have had only limited success. Some, it seems, do not wish to know. This is in marked contrast to the keen interest shown in academic, community and regional

[1] I thank Rod Jensen, Annette Barbetti, Julian Morison, Roy Powell, an anonymous referee and the editors for their constructive comments on earlier drafts of this paper.

fora.[2].

The impacts of associated commercial and policy confusions are widely apparent in depressed rural regions, declining sectoral profitability and failing trade performance. Conventional analysis is deficient. Problems are exacerbated because of what is hidden by flawed assumptions. Theoretical as well as applied analysis are thus afflicted.

Agriculture sells mainly to Australians. The domestic market accounts for the bulk of sales. This is not the conventional understanding. As will be demonstrated in detail, the nature of the agriculture, food and fibre market is this:

1. In aggregate exports account for around a quarter of production. In 1993-94, the most recent year for which complete National account statistics are available, agriculture exported $5.0b or 22 percent of its production of $23.5b valued at farm gate. Food and fibre manufacturing exported $10.8b or 24 percent of its production of $45.5b valued at factory gate.
2. Australia imports some food and fibre products. Competing imports for agriculture are only $0.5b but around $6b for food and fibre manufacturing. On balance, net exports are then 19 percent for agriculture and around 10 percent for food and fibre manufacturing.
3. The Australian food and fibre market has a value of around $55b for raw and processed product after adjustment to avoid double counting and excluding retail and transport margins. A market of this size is very attractive to overseas traders. Unilateral reductions in protection by Australia make it accessible to them.

In seeking to increase its $16b exports Australia has allowed much greater access to a $55b market. The wisdom of this, particularly under recent and present market conditions, must be questioned.

The conventional understanding of export market dominance is flawed. The importance of exports to Australian agriculture has been regularly overstated. This has been particularly so at the Australian Commonwealth level. Ministers and advisers are incorrect when they assign three quarters or more of agricultural sales to exports.

1.2. Redressing the Problem

The problem is essentially one of misinformed understanding and consequent mistakes manifest as an operational irrationality. Effective operation is ideally built upon rational decision-making, market-relevant policies and informed participants. This requires adequacy in six areas: empirical accuracy, sound methodology, relevant perceptions, appropriate strategies, adequate idealisations, and discerning responsiveness.

1. Accurate empirical estimates are required. This is a first analytical need, one

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that is currently not met. Estimates developed for this paper indicate the extent of exports across a range of sectors involved with agriculture directly or in further processing of agricultural produce. This provides a consistent set of estimates that address this need free of further assumptions. While it could be desirable to investigate forward linkages, total requirements and the like, this was seen as not only methodologically fraught with difficulties but also somewhat off the point.

2. The conventional error arises because of inappropriate comparisons. The flaw lies in comparison of the total output of raw and processed food and fibre exports with the total output value of product at farm gate. Thus, chilled meat exports are compared with live animals valued at farm gate; cheese exports with bulk milk; wine exports with grapes; and biscuit exports with bulk grains. Thus, methodological foundations require exploration and critical review. A sound, robust and understood methodology is a second area of need.
3. As Australian agriculture as a whole earns most of its income within Australia, the export market, while important, is not dominant to the extent assumed. To assume otherwise seriously biases thinking. Thus, associated policy perceptions warrant examination, a third need.
4. Preoccupation with markets overseas has seen neglect of domestic market situations. Overlooking the larger part of the market where it could have considerable influence, the Australian government has preferred to spend its time negotiating internationally. International markets are important but the Australian approach has been from a needless position of weakness. Thus, current trade strategy warrants critical review as does institutional focus. These provide a fourth area of need.
5. Potential gains from trade reform for agriculture, its associated regions and the nation are a further area warranting critical review. While many may support arguments based upon comparative advantage, the potential for postulated gains will be inhibited if alternative positions or influences guide operational markets. Others may discount comparative advantage (Porter, 1990, for example, in his call for a paradigm shift to competitive advantage) or find the observable world non-conforming to this posited ideal (Leontief's 1954 "Paradox", for example). Whichever the preferred ideal, to have sensible policy import it needs to be practically realizable and not rendered inaccessible. Thus both the conceptual and operational adequacy of the trade liberalization agenda, particularly as regards agriculture and its regional impacts, warrants critical evaluation. This is a fifth need.
6. The relative inflexibility in current policy development processes is also illustrated, particularly in the second section. Such unresponsiveness is a wider failure, one that reveals a manifest inability of industry and government parties to address critical information promptly and expertly. In rational policy discussions, comments that appear contentious would warrant further discussion, appropriate criticism and adequate reflection. More adequate policy is developed through such activities. An organisational ability to respond is

manifestly lacking. Building such an ability is a sixth area of need.

The principal focus in this paper is on the first and second areas, addressing empirical and methodological needs. The sixth need, building discerning organisational responsiveness, is intertwined in the discussions. Issues associated with perceptions, strategies and idealisations are mentioned only in passing. They are developed more fully elsewhere (McGovern, 1999a, 1999b, forthcoming).

1.3. Recasting the Foundations.

Essentially it is the market foundations that are examined through a development in four main parts:

1. Estimating markets: Agriculture sells mainly to Australians.
2. Empirical estimates: National Account "consistent" and ABARE "conventional".
3. Evaluating alternative estimates.
4. Errors in the conventional wisdom.

Australian agriculture and its advisers have not known, apparently, to whom they are selling. They have made one of the greatest commercial mistakes that an industry could make. Analytical advice and government policy have compounded this. Thus, current positions and policies need fundamental reassessment, not only by Australians but also by those similarly predisposed to agricultural trade.

New foundations are needed. Rationally, these are best constructed when all analytical needs are well met. Currently analytical flaws hide ongoing problems. Proper recognition and resolution of analytical needs will be one step forward. Another will be redressing the effects of flawed understandings.

A strong foundation needs to be established for viable agriculture and trade success. Such a foundation presently does not exist in either conventional Australian thinking or operational activity.

2. ESTIMATING MARKETS: AGRICULTURE SELLS MAINLY TO AUSTRALIANS

The products of Australian agriculture are mostly sold to firms and consumers in Australia as is shown in Table 1. The main sectors to which agriculture directly sells are food and fibre processors within Australia which take 60 percent of Agricultural output. Agriculture directly exported 22 percent of output worth $4.8b in 1992-93.

A falling proportion of direct agricultural exports may be expected as an economy develops. Using the national accounts (ABS 5209.0) for earlier years, agricultural exports valued (in 1992-93 dollar values) at $5.0b in 1982-83 were 25 percent of output; 1968-69 exports of $5.9b were 27 percent of output. Thus on these measures agricultural exports fell both as a share of output and in real terms.

Food and fibre manufacturing also principally serves the Australian domestic

market, exports only accounting for a maximum[3] of 23 percent of sales in 1992-93 (up from 19 percent three years earlier). Further details are presented with Table 2 wherein disaggregated sector details are provided.

Today, Australian agriculture (Ag) is a $24 billion[4] industry, which cannot make ends meet. Food and fibre manufacturing (F&FM) with *gross* sales of $41 billion is experiencing, at best, mixed fortunes. Exports were valued at $4.8 billion (Ag) and $9.6 billion (F&FM) in 1992-93; competing imports were $0.4 billion and $5.4 billion respectively. Australian households final consumption expenditures were $2.8 billion and $22.2 billion respectively in 1992-93.

It is apparent that the bulk of agricultural output is chiefly used in the Australian economy. While notable differences occur between specific commodity groups and between regions, the greatest sources of returns to agriculture are markets within Australia.

Table 1. Disposition of Agricultural Output.

Australian agriculture made sales to...	1992-93 ($ b)	proportion	1989-90 ($b)	proportion	Change 1989-90 to 1992-93 ($b)	relative change
Intermediate sectors						
to itself	1.8	8%	2.4	10%	-0.6	-25%
meat and milk products	7.6	34%	7.1	30%	0.5	7%
food products nec	2.4	11%	2.4	10%	0	0%
beverages, tobacco products	0.5	2%	0.6	3%	-0.1	-17%
textiles	1.0	5%	0.5	2%	0.5	100%
recreational etc services	0.6	3%	0.4	2%	0.2	50%
others (28 and 22 sectors resp)	0.4	2%	0.1	0%	0.3	300%
Total intermediate usage	14.3	64%	13.5	56%	0.8	6%
Final consumption expenditure	2.9	13%	2.6	11%	0.3	12%
Increase in stocks	0.2	1%	2.5	10%	-2.3	-92%
Exports	4.8	22%	5.4	23%	-0.6	-11%
Total Supply	22.2	100%	24.0	100%	-1.8	-8%
					CPI rise	9%

Source: ABS 5209.0, ***Australian National Accounts: Input-Output Tables.*** Tables used are the industry by industry flow matrix in basic values (ex plant value, in terms of net price received by producer exclusive of taxes and subsidies) for 1989-90 (Table 11) and 1992-93 (Table 4). The latter was the latest available at the end of 1996 being published in September 1996. Recall that seasonal conditions did vary between the two years. The reclassification from 28 sectors to 35 sectors has no significant effect on the sectors under consideration.

[3] See note to Table 2.

[4] Total sales varies from year to year. $24b is the top value of Australian agricultural production recorded: $23.8b in 1989/90 and $23.6b in 1993/94. It was $22.4b in 1992/93, the latest year for which full economic information was available. 1992/93 and 1989/90 are used as reference years in the disaggregated analysis. Further sectoral details are in McGovern (1996a).

Table 2. Total and Export Sales, by Agriculture and by Food and Fibre Manufacturing, 28 Sectors.

Commodity sector	1992-93 Australian production ($m)	1992-93 Exports (%)	1989-90 Aust production ($m)	1989-90 Exports (%)	Change 1989-90 to 1992-93 Australian Production ($m) relative change		Change 1989-90 to 1992-93 Exports ($m) relative change	
AGRICULTURE basic value at farm gate								
Sheep	558	18%	492	17%	66	13%	18	21%
Wool	2228	72%	5559	42%	-3331	-60%	-735	-32%
Cereal grains	3889	47%	3884	62%	-15	0%	-617	-25%
Meat cattle	3636	2%	3762	1%	-126	-3%	27	61%
Milk cattle - chilled milk	2314	0%	1749	0%	565	32%	0	
Pigs	596	0%	599	0%	-3	-1%	0	
Poultry	999	0%	1097	0%	-98	-9%	-1.7	-61%
Sugar cane	799	0%	887	0%	-88	-10%	0	
Raw cotton and seed	528	8%	486	67%	42	9%	-232	-84%
Cotton (excl ginned)	662	96%	628	38%	54	9%	418	174%
Hay	638	0%	602	0%	36	6%	0	
Other agriculture	4384	10%	3527	15%	857	24%	-65	-13%
Services to ag	823	3%	1222	3%	-299	-24%	-3	-10%
TOTAL agriculture	22154	21%	24494	23%	-2340	-10%	-900	-16%
Exports	*4767*		*5657*					
Competing imports	*438*		*439*					
MANUFACTURING (gross) basic value at factory gate								
Meat and meat products	10082	40%	9664	32%	418	4%	884	29%
Dairy products	5239	22%	4298	15%	941	22%	466	70%
Meat and Milk products	15321	33%	13962	27%	1359	10%	1350	36%
Fruit and vegetable products	2307	18% (I)	1968	9% (I)	339	17%	232	133%
Oils and fats	730	9% (I)	766	10% (I)	-36	-5%	-12	-15%
Flour mill products and cereal foods	2357	15%	1927	13%	430	22%	83	32%
Bakery products	2651	1% (I)	2611	1% (I)	40	2%	8	32%
Confectionery	1155	8% (I)	1022	5% (I)	133	13%	42	91%
Other food products	6273	34%	5827	30%	446	8%	407	24%
Total other food products	15473	20%	14121	16%	1352	10%	759	33%
Soft drinks, cordials and syrups	1857	1%	1521	2% (I)	336	22%	-15	-41%
Beer and malt	2384	5%	2184	8%	200	9%	-35	-21%
Wine and spirits	1210	22% (I)	970	9% (I)	240	25%	182	207%
Tobacco products	754	1%	793	2% (I)	-39	-5%	-8	-67%
Beverages and tobacco products	6205	7%	5468	6%	737	13%	124	41%
Wool scouring	909	82%	797	86%	112	14%	59	9%
Textile fibres, yarns and woven fabrics	1801	8% (I)	1635	4% (I)	166	10%	68	94%
Textile products	1482	9% (I)	1932	4% (I)	-450	-23%	70	100%
Total textiles	4192	25%	4364	18%	-172	-4%	197	24%
TOTAL food and fibre manufacturing	41191	23%	37915	19%	3276	9%	2430	34%
Exports	*9646*		*7215*					
Competing imports	*5412*		*4631*					

Source: ABS 5215.0, ***Australian National Accounts: Input-output table Commodity Details.*** 1989-90 and 1992-93.

Notes: Sectors are shown at two main levels of aggregation, totals being formed from the component sectors immediately above. **(I)** indicates that the sector appears a net importer, exports (at factory gate) being less than competing imports (cif plus duty).

The export shares are maximum estimates since there is no consideration made in calculations for competing imports some of which may have been re-exported. In both periods the value of competing imports was very low for the agriculture sector and minor to moderate for manufacturing.

Inadequate returns are being earned from the domestic market by agriculture (McGovern, 1996a). In spite of this, Australian consumers do not seem to receive cheap food (McGovern, 1997). Australian households during the 1980s spent a greater proportion on food than did consumers in the UK, Germany, US and Hong Kong to name a few (World Bank, 1993; Table 10). This paradox warrants investigation.

The sales situation varies from sector to sector as shown in Table 2.

- The sector "Meat and milk products" has the greatest level of exports with a third of sales being to overseas; the other two-thirds is used within Australia.
- Sales within Australia for "Other food products" are 80 percent, "Beverages and tobacco products" 93 percent, and "Textiles" 75 percent.
- Significant competing imports exist for a number of sectors. Thus calculated export shares are a maximum percentage.
- A number of the food and fibre manufacturing sectors appear as net importers.

Chasing overseas markets is only a quarter of the story. The major markets for Australian agriculture are in Australia. Not only are Australian farmers receiving inadequate returns from production, Australian consumers appear to be spending proportionately more for food than those in some other countries, some of which have significant agricultural subsidies. The economics of this warrant investigation. What happens between the farm gate and the consumer plate?

3. EMPIRICAL ESTIMATES: NATIONAL ACCOUNT "CONSISTENT" AND ABARE "CONVENTIONAL"

The previous section was presented as a single-sheet handout at a "Rural Survival" Forum in Brisbane in December 1996 (McGovern, 1996b; only slight edits have been made here). The Federal Minister for Primary Industries and Energy contradicted the central claims of this paper and asserted that "the fact of the matter is that the overwhelming bulk of our agricultural product goes abroad" (Forum proceedings, p 24). This contrary position has been maintained despite efforts to develop a constructive dialogue.

3.1 National Account "Consistent"

The estimates in the previous section were derived from the *National Accounts: Input-output Tables* using standard interpretations. They were checked at the time both with the ABS (Barbetti, *pers comm*) and with another recognised expert (Jensen, *pers comm*) who agreed that they were a proper interpretation of the published figures.

Publication of the 1993-94 Input-output Tables (ABS 5209.0) allows both an update and greater disaggregation within the manufacturing sector, no manufacturing census having been conducted in 1992-93. The position is little changed overall.

- Australian agricultural production was valued at $23.537b in 1993-94 at farm gate with exports valued at farm gate of $5.071b, or 22 percent of production.
- Food and fibre manufacturing valued at factory gate totalled $45.512b in 1993-94 with exports of $10.801b, or 24 percent of production, with these constituent sectors:

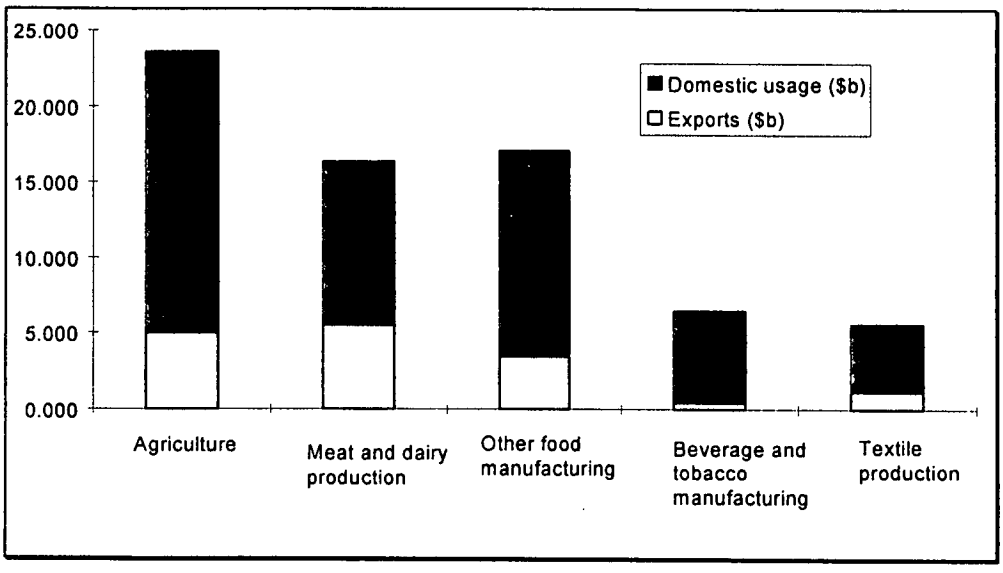

Figure 1. Aggregate Australian Agricultural, Food and Fibre Production (Ag,F&FM) 1993-94

Source: ABS 5209.0, 1997

- Meat and dairy production of $16.293b of which exports were $5.580b.
- Other food manufacturing of $17.094b, exports being $3.500b.
- Beverages and tobacco of $6.507b, exports being $0.528b.- Textile production of $5.616b, exports being $1.193b.

- Combined "ag, food and fibre" (Ag, F&FM) exports valued at point of establishment dispatch were $15.872b in 1993-94 compared to $14.408b in 1992-93 and $12.872b in 1989-90 (Table 2)
  These estimates are consistent with other published materials.
- DFAT (1996b) using its TREC[5] classification puts 1994 unprocessed food exports at $5.150b and processed food at $9.046b for a total $14.196b fob Australian port of shipment. Alternately, DFAT (1996a) estimates exports in 1994 as unprocessed foods $5.067b, processed food $9.072b and other rural $5.384b for a total of $19.523b fob[6] recorded trade basis. The basis of this discrepancy remains unclear.
- BIE (1996) discusses the agri-food industries in terms of food and beverage manufacturing; fresh, unprocessed foods are excluded. For 1992-93 agri-food turnover was $36.190b (Table 2.1, sourced from ABS 8221.0). For 1994-95, exports were $10.572b and imports $3.042b (Table 2.6). A rough calculation

[5] The Trade Exports Classification (TREC) developed by the Australian Department of Foreign Affairs and Trade (DFAT) is based on Revision 2 of the Standard International Trade Classification (SITC).

[6] "Fob" means "free on board". It is the value when loaded on board a ship or plane.

made ignoring the difference in years (which overstates the importance of trade) would see exports at 29 percent of turnover (and net exports at 20 percent)[7].

While definitional differences are present, the general consistency of these estimates with those arising from the national accounts is apparent.

3.2 ABARE "Conventional"

The "conventional" position as espoused by the Minister for Primary Industries and Energy, amongst others, is different, however: "But in terms of what farmers have to accept for their product, the overwhelming bulk of it is utterly dependent on reigning global prices, because that is where the bulk of it goes" (Forum, p 25). This claim has been widely repeated in public discussions (such as on *Lateline* 24th June 1998 and in *The Courier Mail* on 27th June 1998[8]) and in various publications (such as Auditor General, 1997, p 11; House of Representatives, 1998, p. 3; Carson and Lyon, 1999; WTO 1999). Yet even some official reports, such the BIE report above, present a contrary position[9]

It seems that the origin of this convention lies in ABARE and some ABS estimates. A simple and widely available example of conventional estimates is contained in "Farmstats Australia" (ABARE, 1996, 1998). This small leaflet has under the heading "Farm Sector" a table of three main parts that are summarised in Table 3. The published Table lists "Crops" and "Livestock" as the components of the first row; along with "Other" they form the third row. The 1998 version matches that of 1996 with some numerical values revised and "Other" farm exports being distributed to crops or livestock. The convention has thus been maintained despite correspondence with the Director (Fisher, 1997) and others (Penm, 1998) in ABARE.

Taken at face value, the percentage of "farm exports" (F_x) in "farm production" runs respectively 74, 76, 77 and 79 per cent (using 1996 published values) or 75, 74, 79 and 80 percent (1998 published values). The domestic market then appears not only a smaller but a declining part of the market for "farm" products.

Review of ABARE's flagship publication *Australian Commodity Statistics* (1997) reveals the same information in two Tables.

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[7] For 1994-95 using ABS 8221.0 export percentage of goods produced is 17 percent for food, beverages and tobacco manufacturing.

[8] Anderson said: "... and trade is our lifeblood and four out of five farmers depend upon trade for their livelihood."

[9] As the BIE report was written in conjunction with ABARE, involved an evaluation of $17.625m of public expenditures, and reported to the Minister for Industry, Science and Tourism and the Minister for Primary Industries and Energy, it is surprising that the inconsistency with the conventional position was not noted.

Table 3. "Farm Sector" Aggregates as Reported by ABARE

	1993-94 ($m)	1994-95 ($m)	1995-96 ($m)	1996-97 ($m) Forecast	1997-98 ($m) Forecast
Gross value of farm production	23627	23590 23744	26658 27327	25944 27544	27315
Farm costs	20377	20933 21550	22481 22830	22827 23362	23133
Value of farm exports (F_x)	17501	17945 17886	20437 20264	20425 21861	21733

Source: ABARE, 1996 and 1998

Note: The two sources provide slightly different values for the overlap years. Both sets are presented with the 1998 (presumably revised) value below.

- The first two rows of the above Table can be found in the first two columns of Table 19 (ABARE, 1997). This third listing corresponds exactly to neither of the previous sets. While differences are typically slight at 200 million or so, a closer correspondence could be expected between the latter two estimates which were published only two months apart.
- Corresponding to row three is "Value of Farm Exports" (ABARE, 1997; Table 6) which includes the footnote "Includes exports of wine." Again some instability of values is evident.
- "Farm Sector Rural Exports" (Table 24) disaggregates the 1993-94 total of $19019m as shown in Figure 2. Total values in Table 24 (and the current Figure 2) exceed those in ABARE Table 6 (and the above Table 3) by two billion dollars (around 10 percent) for the last few years. Note the inclusion by ABARE of "products" and "preparations" in headings as well as of "wine, paper and paperboard, and tuna which are not included in rural exports by the ABS." Thus ABS (5302.0; Table 11) totals "Rural exports *fob*" to $18 445m, the difference of $574m reflected in the component "Other rural" at $6 513m.

Due to incomplete footnotes and a lack of explanatory notes, it is not possible from the ABARE publication alone to determine either the basis of estimates or what is included in "Farm". Three distinct usages are evident in the above. The three estimates are farm exports (F_x) of $17501m, and rural exports ABARE R_x of $19019m and ABS R_x of $18445m.

4. EVALUATING ALTERNATIVE ESTIMATES

These two estimates of export importance contrast markedly. Both see agriculture as servicing two markets but their relative importance is a matter of dispute. The first "consistent" position sees the domestic market as "three-quarters of the story" while the second "conventional" position is a polar opposite, assigning the export market this dominant role.

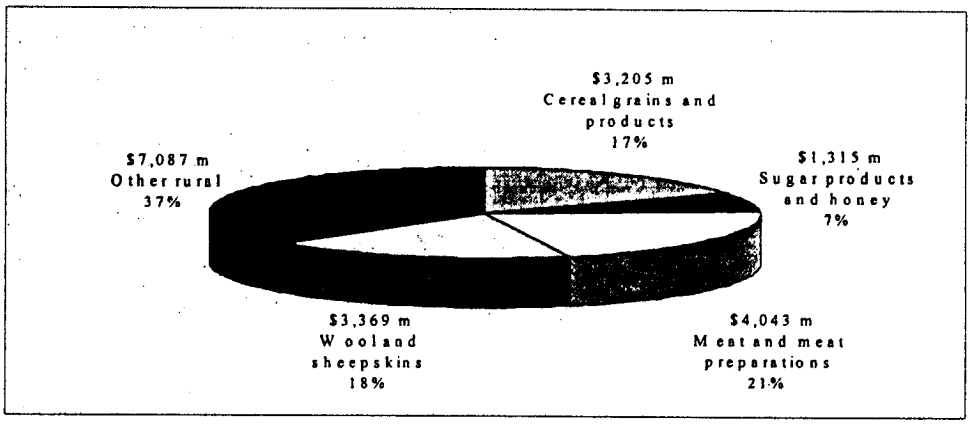

Figure 2. ABARE "Conventional" Farm Sector Rural Export Estimates (R_x), $19,019m in 1993-94

Sources: ABARE; 1997, Table 24 citing ABS as a *primary* source.ABS 5302.0 December 1996, Table 11, Rural exports *fob* are $18.445b for 1993-94.

The situation is one of confusion. Investigating these competing estimates requires a more disaggregated empirical analysis as well as methodological discussion. Both are undertaken in this section.

4.1 The Definitional Basis of Aggregate Estimates

Disaggregated commodity details from the Australian national accounts for 1993-94 (ABS 5215.0) are presented in Table 4. Sectors included have been extended to include further fibre processing and timber products. Exports from this extended set of nine industries (agriculture; forestry and fishing; food, beverage, tobacco, fibre2 and forest manufacturing; Ag,ff,FF_2&FM)[10] of 53 sectors totalled $17.273b in 1993-94.

The inclusion of paper, clothing and footwear along with some other manufactures would appear open to challenge if this was to be taken as indicative of farm exports. Yet some such assumptions must lie behind ABARE estimates of $17.501b for farm exports (F_x) in 1993-94 (Table 3).

Moving the point of measurement to ports sees "farm sector rural exports" rise to $19.019b fob ($R_x$) with an apparently similar product mix (Figure 2). This includes freight, wharf handling and like services so as to arrive at values on a fob basis. Such extension along the supply chain so as to value "on ship" or "on plane" is of questionable validity.

There are then three main concerns:

[10] Agriculture has been disaggreagated to 13 sectors (as opposed to 9 previously); Forestry and Fishing have been added; Food manufacturing has been disaggregated to 19 sectors (8 previously); Fibre2 manufacturing is the extended set of fibre sectors, which includes some fibres of non farm origin; Forest manufacturing is 4 wood and paper products sectors. This is fully detailed in Table 4.

1. there are considerable doubts about the "farm" nature of many products;
2. points of export measurement lie well past the farm gate; and
3. variations in the extent of competing imports would need to be considered in interpreting the economic importance of exports. While agriculture has a low level of competing imports, this is not so for food and fibre manufacturing (Table 4).

The definitions needed to obtain estimates of agricultural export shares of three-quarters and more, the "conventional" position, are not only inconsistent but also manifestly inappropriate.

4.2 Further Refutation of the "Conventional" Estimates

A direct challenge to the "conventional" estimates is to be found in ABS Merchandise trade figures (5422.0, June 1994, Table 7). 1993-94 exports from Agriculture[11] were $6.646b fob, that is "on board". The increase of $1.575b past farm gate value includes the cost of moving and managing from farm gate to ship (or plane) deck as well as some statistical adjustments. Similarly, food beverage and tobacco[12] exports totalled $10.347b fob, an increase of $0.748b past factory gate.

As well, in OECD (1998) export shares for "agriculture"[13] are detailed for 29 countries in 1994. Export share for Australian agriculture is 22.0 per cent of trade. With 1993-94 merchandise exports totalling $64b, agricultural exports would total $14b. This is in general agreement with the consistent estimates and further supports the refutation of the conventional position.

4.3 The Basis of "Rural" Exports

It seems that the word "rural" is the pivotal one. "Rural exports" are those that were "once upon a farm" but may have been since considerably transformed. "Rural" relates an initial product source in a commodity description based on final products. It has been erroneously compared to (usually raw) products passing "farm" gates.

"Rural exports" as defined by the ABS (5351.0,1996 p7 for example) are consistent with the United Nations Standard International Trade Classification (SITC) Revision 3. This classificatory system has its peculiarities. "For example, *canned fruit salad* is included in rural while *cotton yarn* is not - both items might equally well have been classified to *rural* (on the basis of origin), or to *non rural* (due to the high proportion of value adding during subsequent processing)." (*ibid*)

"Rural" under this "basis of origin" approach is indeed "once upon a farm".

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[11] including services: ANZSIC sectors 01, 02

[12] ANZSIC sector 21

[13] The definition of agriculture is not provided.

Table 4. Nine Industries as 53 Commodity Sectors, Chosen Aggregates and Ratios, 1993-94

	Commodity Sector (c)	1993-94			Share of Australian Production		
Code (a)		Australian Production	Competing Imports	Exports	Exports	Net Export Position	
	AGRICULTURE	($m)	($m)	($m)	(%)	(0.00 = Balance)	
1. Agriculture, Hunting and Trapping							
01240010	Sheep	654.6		128.3	20%	0.20	
01240020	Wool	2155.7		1511.3	70%	0.70	
01210010	Wheat	2209.5	0.1	1622.8	73%	0.73	
Rem 0102	Other cereal grains	2130.4	25.0	514.9	24%	0.23	
01250010	Cattle and calves	4040.6	1.1	111.1	3%	0.03	
01300010	Whole milk	2448.0			0%	0.00	
01510010	Pigs	598.2		1.2	0%	0.00	
01410010	Poultry	925.2		1.2	0%	0.00	
01420010	Eggs	192.7		0.9	0%	0.00	
01610010	Sugar cane	942.6		0.1	0%	0.00	
01110010	Plant nurseries	406.7	24.9	21.7	5%	-0.01	
01620010	Cotton (excl ginned)	641.8			0%	0.00	
02110010	Cotton (ginned)	740.0		622.6	84%	0.84	
02110020	Cotton seed	89.3		30.7	34%	0.34	
01690050	Hay	569.5	0.1	1.4	0%	0.00	
Rem 0107	Other agriculture	3632.8	439.5	490.8	14%	0.01	
Rem 0200	Services to ag	1159.2	17.6	11.9	1%	0.00	
	TOTAL Agriculture	**23536.8**	**508.3**	**5070.9**	**22%**	0.19	**Ag**
2. Forestry and Fishing							
0300	Forestry and logging	1456.3	12.6	41.7	3%	0.02	
0400	Commercial fishing	2116.6	71.4	421.0	20%	0.17	
	TOTAL Forestry and Fishing	**3572.9**	**84.0**	**462.7**	**13%**	**0.11**	**ff**

Table 4 (continued)

	Commodity Sector (c)	1993-94			Share of Australian Production	
Code (a)		Australian Production	Competing Imports	Exports	Exports	Net Export Position
	MANUFACTURING	($m)	($m)	($m)	(%)	(0.00 = Balance)
21110010	Fresh meat	5735.5	38.4	3582.5	62%	0.62
21120010	Poultry slaughtered	1665.2	1.6	14.7	1%	0.01
21130010	Bacon and ham	651.1	4.8	1.4	0%	-0.01
21110060	Raw hides and skins	542.4	6.1	257.7	48%	0.46
Rem 2101	Other meat and meat products	1508.4	13.0	406.8	27%	0.26
21210010	Liquid whole milk	1016.4	1.5	30.7	3%	0.03
21210020	Flavoured liquid whole and skim milk	572.7	0.0	0.2	0%	0.00
21210030	Other liquid whole milk (incl pasteurised)	446.3	0.0	0.2	0%	0.00
21290060	Cheese and curd	1290.8	122.4	492.9	38%	0.29
Rem 2102	Other dairy products	2754.2	65.8	776.3	28%	0.26
5. Other Food Products						
2103	Fruit and vegetable products	2558.3	473.2	365.9	14%	-0.04
2104	Oils and fats	620.6	290.7	64.7	10%	-0.36
2105	Flour mill products and cereal foods	2609.9	106.0	489.9	19%	0.15
2106	Bakery products	2608.0	107.2	37.7	1%	-0.03
2107	Confectionery	1064.3	227.8	152.4	14%	-0.07
21710010	Raw sugar	1670.7	0.9	1053.8	63%	0.63
21730030	Lobster, crayfish	304.6	3.1	185.5	61%	0.60
21730040	Processed seafoods	522.3	252.3	378.4	72%	0.24
Rem 2108	Other food products	5058.7	744.7	782.5	15%	0.01
6. Beverages and Tobacco Products						
2109	Soft drinks, cordials and syrups	1881.3	238.9	20.0	1%	-0.12
2110	Beer and malt	2281.7	33.1	129.7	6%	0.04
2111	Wine and spirits	1406.9	324.8	369.6	26%	0.03
2112	Tobacco products	894.8	63.8	5.5	1%	-0.07

Table 4 (continued)

Code (a)	Commodity Sector (c)	1993-94 Australian Production ($m)	Competing Imports ($m)	Exports ($m)	Share of Australian Production: Exports (%)	Net Export Position (0.00 = Balance)	
	MANUFACTURING						
7. Textiles							
22110010	Wool scouring	771.4	47.8	554.1	72%	0.66	
Rem 2201	Other textile fibres, yarns and fabrics	2266.5	1853.1	445.1	20%	-0.62	
2202	Textile products	1613.0	757.4	164.2	10%	-0.37	
2203	Knitting mill products	1040.1	508.3	61.6	6%	-0.43	
8. Clothing and Footwear							
2204	Clothing	3394.1	1452.7	154.3	5%	-0.38	
2205	Footwear	570.3	673.5	37.7	7%	-1.11	
2206	Leather and leather products	656.4	487.1	406.5	62%	-0.12	
9. Wood and Wood Products							
2301	Sawmill products	2102.4	211.6	12.9	1%	-0.09	
2302	Other wood products	3369.2	354.5	96.4	3%	-0.08	
10a Paper and Paper Products							
2303	Pulp, paper and paperboard	1949.2	1684.1	130.6	7%	-0.80	
2304	Paper containers and products	2692.9	221.8	77.0	3%	-0.05	
2100 to 2300	**TOTAL Food, Fibre2 and Forest Manuf.**	**60090.6**	**11372.0**	**11739.4**	**20%**	**0.01**	**$F_{BT}F_2$&FM**
Of which 2100	SUBTOTAL Food, Beverages, Tobacco	39665.1	3120.1	9599.0	24%	0.16	F_{BT}
2100 to 2203	SUBTOTAL Food and Fibre Manufacturing	45356.1	6286.7	10824.0	24%	0.10	F_{BT}&FM
	TRADED TOTAL, all 9 Industries	--- (b)	11964.3	17273.0	---	---	

(a) 8 digit IOCC or four digit commodity code; rem = remainder. The nine input-output industry groupings used are italicised.

(b) Total manufactures includes as input the values of purchases from agriculture, forestry and fishing

(c) Sectors included are those in Table 2 of agriculture (commodities 0101 to 0200), food products (2101 to 2108), beverages and tobacco (2109 to 2112) and textiles (2201 to 2203) *along with* forestry and logging (0300), commercial fishing ((0400), other clothing and footwear (2204 to 2207), and wood products including paper (2301 to 2304).

Source: ABS 5215.0 Australian National Accounts: Input-output tables, Commodity details, 1993-94 Table 1.

"Farm sector" is apparently something similar. To be consistent, the conventional approach should also allocate many manufactures to mining since the raw products were "once upon a mine". It is then an organisational inconsistency for ABARE and others to not similarly classify mining and then find (very) high proportions of mine output to be exported.

Clearly, the conventional claim that over three-quarters of agricultural output is exported is nonsense, empirically and methodologically. Commercial and government decisions that reflect this nonsense are suspect.

4.4 Fifty-Three Differentiated Sectors: a Disaggregated Analysis

The disaggregation into 53 sectors reveals considerable diversity in export orientation across agriculture and food and fibre manufacturing. The net trade ratio is calculated as net exports divided by Australian production. Net importing sectors show negative ratios, exporters positive ratios. This ratio is used to rank sectors from highly traded (absolute values of 1 indicating a net trade position equal to domestic production) to no net trade (values of 0).

As is evident in Table 5, the situation ranges from heavily import penetrated (footwear; pulp, paper and paperboard; various textiles, for example) through those close to trade balance (including total food, fibre and forest manufacturing) through to those heavily oriented to exports (such as cotton, wool, wheat).

In aggregate, total agriculture at 0.19 net (or 0.22 gross) shows significant export orientation, exports of $5.1b being countered by $0.5b of competing imports. Total food, fibre2 and forest manufacturing at 0.01 net is virtually in balance, the $11.7b (or twenty percent) of manufacturing production exported being countered by a similar level ($11.4b) of competing manufactured imports.

The heavily export oriented sectors are of particular interest. Exports account for 25 percent or more of production in only twelve of the fifty three sectors. Exports from these twelve sectors total $11.1b which is 0.56 of their Australian domestic production. Details are shown in Figure 3. Individual sector production varies markedly in size, from $89m for cotton seed to $5736m for fresh meat while the export orientation increases from left to right.

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The first five sectors (wherein exports account for a quarter to a half of production) have exports of $1 964m and domestic usage of $4 221m. The other seven sectors (wherein exports are more than half the value of Australian production) have exports of $9 133m and domestic usage of $4 455m. Exports totalled only $5 713m from over $40 000m production by the 41 sectors previously excluded.

Table 5. Net Trade Position of 53 Agricultural, Food and Fibre Sectors, 1993-94.

Heavily Import Penetrated	Significant to Some Import Penetration	At Balance	Some to Significant Export Orientation	Heavily Export Oriented
-0.49 to -0.25	-0.24 to -0.02	-0.019 to 0.019	0.02 to 0.24	0.25 to 0.49
Knitting mill products	Leather and leather products	Plant nurseries	Forestry and logging	Other dairy products
Clothing	Soft drinks, cordials and syrups	Bacon and ham	Cattle and calves	Other meat and meat products
Textile products	Sawmill products	Services to ag	Liquid whole milk	Cheese and curd
Oils and fats	Other wood products	Whole milk	Wine and spirits	Cotton seed
	Confectionery	Cotton (excl ginned)	Beer and malt	Raw hides and skins
	Tobacco products	Sugar cane	Flour mill products and cereal foods	
-0.74 to -0.50	Paper containers and products	Flavoured liquid whole and skim milk	Commercial fishing	0.50 to 0.74
Other textile fibres, yarns and fabrics	Fruit and vegetable products	Other liquid whole milk (incl pasteurised)	TOTAL agriculture	Lobster, crayfish
	Bakery products	Poultry	Sheep	Fresh meat
		Pigs	Other cereal grains	Raw sugar
-1 to -0.75		Hay	Processed seafoods	Wool scouring
Pulp, paper and paperboard		Eggs		Wool
		TOTAL food, fibre2 and forest Manufacturing		Wheat
		Other food products		
< -1 *most penetrated*		Poultry slaughtered		.075 to 1.0 *most export oriented*
Footwear		Residual agriculture		Cotton (ginned)

Source: Calculations using data from ABS 5215.0 1993-94, Table 1.

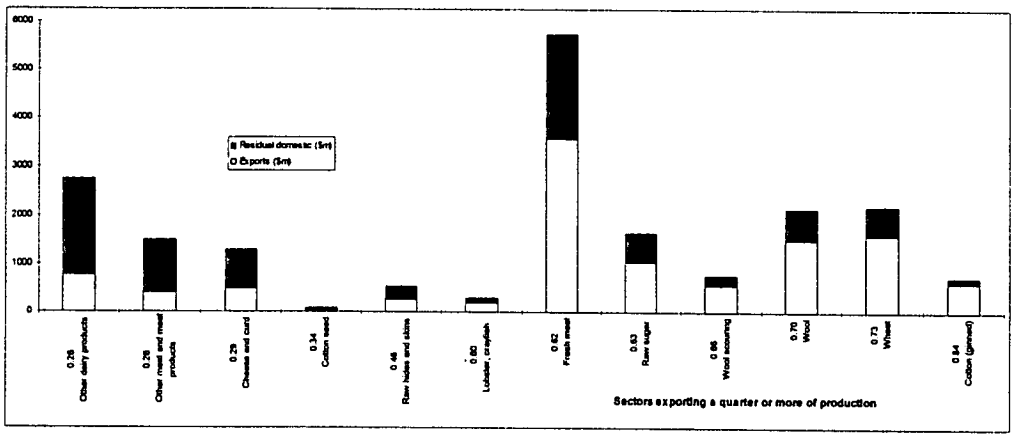

Figure 3. Australian Food and Fibre Sectors Exporting a Quarter or More of Production, $m, 1993-94.

Source. ABS 5215.0, 1993-94

Sectors taken individually reveal diverse export orientation. Most are close to balance with only a dozen exporting more than a quarter of the value of their production. Aggregated, agriculture as well as food and fibre manufacturing export less than a quarter of the value of production.

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Yet Ministers in this and previous governments, ABARE and various others contend that exports dominate and posit a position of high external dependency as a result. It is in definitions and the reference points chosen for comparison that the essential differences lie.

4.4 Consolidation

The pattern of sales from farm-gate-on can be considered as in Figure 4. Such a diagram structures and consolidates the earlier discussions.

Key aspects include:

- Agriculture (Ag) is shown as selling directly to four main sectors: food, fibre2 and forest manufacturing (53 per cent of output); Australian consumers (11 per cent); overseas purchasers (22 per cent); and other users (14 per cent, including others in the sector itself[14]).

[14] Powell (*pers comm*) has noted if the sector is made net of intra-sectoral purchases (Ag production then totalling $21.1b) the export proportion does rise, but still only to 24 percent.

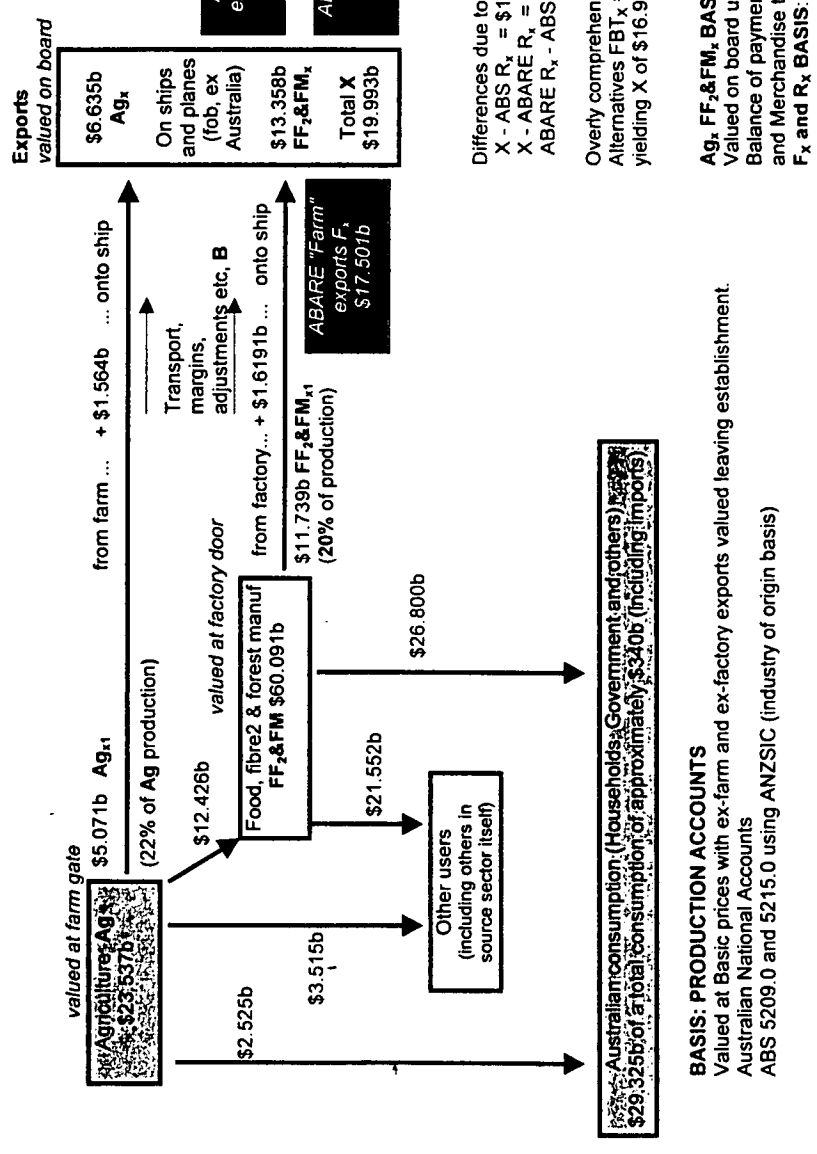

Figure 4. A Products-From-Farm Chain, 1993-94

- Food, fibre2 and forest manufacturing (FF_2&FM) is shown as selling to three sectors: Australian consumers (45 per cent); overseas purchasers (20 per cent); and "other users" now including agriculture (35 per cent).
- Additional costs incurred from farm gate to port and onto ship and plane allow free on board (fob) calculations which indicate the "on ship" or "on plane" cost to purchasers. The agricultural component Ag_x at \$6.635b and the processed component $FF_2\&FM_x$ at \$13.358b total to a raw and processed exports, X, of \$19.993b.This estimate X can be compared to the two "rural" export estimates, R_x. Differences arise from the classifications used. The overly comprehensive nature of sector FF_2&FM (as discussed earlier) is evident. Using alternative groupings such as FBT or F&FM total X down from \$19.993b to \$16.959b and \$19.164b respectively. Clearly some consistency with an agreed, acceptable classification is needed.

The error in the conventional overstatement of export importance is apparent:

- ABARE and most others compare F_x to Ag.
- Still others alternately compare R_x to Ag.
- The correct approach would be the consistent one: compare Ag_{xl} to Ag and $FF_2\&FM_{xl}$ to FF_2&FM (or some lesser set of manufactures). These yield the empirical estimates discussed earlier. Raw and processed agricultural exports are each less than a quarter of the value of production.

The error in the conventional over-estimates is a methodological one that should be corrected as a matter of urgency.

4.5 Contrasting Methods of Estimation

The "conventional" position as to the dominance of exports rests upon these assumptions:

- an extremely extensive definition of "rural" exports
- a valuation of processed goods for export at factory gate, after value adding production has occurred
- a comparison with unprocessed goods valued at farm gate
- a preference for a single aggregate "farm product" rather than a recognition of product and sectoral diversity.

Individually the appropriateness of each of these is arguable. Taken together they provide a flawed image and erroneous estimates.

The comparison is between markedly dissimilar product sets valued at different points along the production chain. Such a ratio of values of exported bottled produce, processed meats and like manufactures to live animals, grains and other unprocessed products is more an arbitrary measure and mathematical curiosity than a useful economic indicator. Including freight to ports and handling therein exports approach 100 percent of farm output.

The contention that ABARE (and similar) estimates and the "conventional" position are in error has thus been demonstrated both empirically and methodologically. A summary is provided in Table 6.

Table 6. Contrasting National Account "Consistent" and ABARE "Conventional" Estimates

	National Account "Consistent"	ABARE "Conventional"
Methodological basis	Empirical estimate on historical figures using standard SNA interpretations	Empirical estimates on historical figures using non-standard interpretations.
Estimate form	Within-sector for each sector. Comparison of likes. Aggregate objects consistent.	Between "Farm sector" and "farm". Comparison of unlikes. Aggregate objects inconsistent.
Estimator	Shares of sector final demand	Ratio of value of either "Farm sector" or "Rural" composite to "product" value at farm gate.
Aggregate empirical estimates of market share (1993-4)	77% min domestic 23% max export	26% domestic 74% export

Note. SNA, System of National Accounts

Table 7. Contrasting the "Consistent" and "Conventional" Positions

	"Consistent"	"Conventional"
Likely market focus	Domestic market primary. Exports as supplementary.	Exports primary. Domestic markets minor ("tiny"), and declining.
Policy predisposition	Local importance. Apparently favours more locally exposed components.	External dependence. Apparently favours more externally exposed components.
Strategic orientation	Sectors as servicing dual markets. Worth succeeding at home and abroad.	Sectors as Price takers. Overseas conditions of scarcity to be cost-efficiently met.
Sectoral orientation	Differentiated sectors variously engaged locally and overseas.	Need for international competitiveness whatever the sector.
Dynamic orientation	Build on strengths, particularly via incremental developments. Casualties amongst the ill-adapted.	Meet the market, particularly via productivity gains. Inevitable casualties amongst the inefficient.
Likely negotiating preferences	Domestic market access valuable. External markets varyingly useful.	Domestic market access tradeable.
Likely negotiating perception	The world's nth biggest national market amongst various other national markets.	A small player in global markets needing to negotiate so as to "even up the odds".

Notes: The "consistent" position has been interpreted more in a pluralist manner, the "conventional" more in a globalist one. This is something of a natural fit yet neither the pluralist nor the globalist need not adopt all the orientations or preferences indicated.

5. ATTENDANT ERRORS IN THE CONVENTIONAL WISDOM

Two distinct positions arise from such markedly different views of Australian agriculture. These may be conveniently called the "consistent" and the "conventional" positions. While they remain fundamentally informed by the earlier estimates of market shares, the full position involves further interpretation and elaboration.

A development of these two positions is detailed in Table 7. That the conventional position is seriously flawed conceptually as well as empirically and methodologically is explored elsewhere (McGovern *forthcoming*). For the moment it is simply noted that current Australian economic policy appears conventionally informed and so rests upon an inconsistent foundation.

Such a development indicates contrasting approaches that are likely to follow from the alternative empirical foundations detailed in the previous sections. Thus questions of empirical accuracy intertwine with those of analytical validity and policy adequacy. Important as it is, an investigation of such questions lies beyond this paper.

6. CONCLUSION

Not knowing to whom you are selling is probably one of the greatest commercial mistakes that an industry could make. This will be compounded if government acts when similarly misinformed. It has been established that such is the case with Australian agriculture.

At the root of the problem is flawed analysis. Essentially, "unlikes" are inappropriately compared. Also the different methodological bases of sectoral and trade accounts appear unrecognised. These mistakes open the way for errors and fanciful estimates. Analysis inadequately based will be deeply flawed. Policy so informed will be suspect.

Developments detailed in this paper include:

- Consistently estimated, agricultural exports account for less than a quarter of Australian production. Claims of exports accounting for three-quarters of farm income are wrong.
- There is considerable diversity as to the importance of exports to Australian "agricultural" sectors. Net exports exceed half of production in only seven of 53 disaggregated sectors.
- A "consistent" empirical statement as to the export position of Australian agriculture as presented by the author has been contested by representatives of the Department of Primary Industries and Energy, the Department of Foreign Affairs and Trade, National Farmers Federation and other organisations. The investigation reported here demonstrates that it is their "conventional" analysis that is in serious error.
- Industry positions and policies built upon such "conventional" foundations will be flawed. Adequate, informed responses are needed from relevant organisations.

Such developments challenge core policy stances and beliefs about the benefits from agricultural trade liberalisation.

It is not only these challenges that should be investigated. This current question of export importance is but one of five serious flaws identified so far in the foundations of current conventional wisdoms associated with agriculture and the economy in Australia.

There is an urgent need for a revitalised research agenda. Fundamental questions need to be competently addressed. Serious attention, careful, expert research and critical review are needed. Organisational reforms also appear necessary.

An encompassing issue is: How can more adequate analysis and properly informed usage be encouraged? Adequate peer and informed media review have clearly not occurred. Developmental dialogue appears effectively absent. Instead inaccuracies have been allowed to prosper unchallenged. Sadly, approaches over several years seeking to discuss these findings with the relevant agencies and organisations have been in vain to date, except for the notable case of the Australian Bureau of Statistics whose staff have shown a strong and most professional interest.

At first glance it seems surprising that such major misunderstanding should have persisted. The apparent lack of critical appreciation of such a fundamental aspect of Australian agriculture highlights a serious shortcoming in the analytical and policy communities. It appears to be in all our interests to remedy such a situation.

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