THE IMPACT OF THE REDUCTION IN THE AUSTRALIAN ORANGE-JUICE TARIFF

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## POLICY BRIEF SERIES

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#### Abstract

After substantial reduction in the Australian orange juice tariff, citrus growers in that country shifted their efforts away from Valencia orange production towards Navel oranges intended for the fresh market. Australia has been successful in penetrating the world market for fresh oranges. Given the large size of the orange industry in Florida, however, it is unlikely that Florida growers could follow the same model if the U.S. orange juice were substantially reduced or eliminated.


Keywords: Oranges, Tariffs, Australia

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## Introduction

Oranges are the dominant variety of citrus grown in Australia accounting for $79 \%$ and $78 \%$ of total Australian citrus production in 2000-01 and 2001-02, respectively (Table 1). Australian orange production has nearly tripled since the early 1960s growing from 177,832 metric tons (MT) in 1961 to 509,973 MT in 2000 (Table 2). Production reached a high point in 1993 when 616,496 MT were produced. Australian orange production accounts for about $1 \%$ of world production (Table 3), and its 2000 production (equivalent to 12.5 million 90 -pound boxes) was about $43 \%$ the size of Polk county's 2000-01 orange production level (29.3 million boxes).

Both fresh and processed orange segments are important in Australia. In recent year, however, the fresh segment has been expanding while the processing segment has been trending downward. The share of oranges utilized for processing has declined from approximately $60 \%$ in the latter half of 1980s and early 1990s to approximately $40 \%$ in recent years, while fresh utilization has grown (Table 4). Domestic fresh consumption has been relatively flat while fresh exports have more than tripled since the mid 1980s. Major export markets for oranges include Hong Kong, Malaysia, Singapore, Japan, New Zealand and the U.S.

About $60 \%$ of Australia's oranges are Valencias and $40 \%$ are Navels. Navel oranges are primarily grown for the fresh market (typically the fresh utilization rate is $60 \%$ to $65 \%$ ), while

[^0]Valencia oranges are primarily utilized for processing (typically the processed utilization rate is $70 \%)$.

In past years, Australia had protected its orange processing industry imposing various tariffs on orange juice imports. However, since 1982 this protection has been reduced. Notably, from 1988 to 1996, the tariff was reduced from an ad-valorem rate of $35 \%$ to $5 \%$. The Australia advalorem tariff is applied to the value of the product at the port of export, not the CIF (cost-insurancefreight) value or the value at the port of export plus transportation/insurance costs. The impact of this tariff reduction on Australia's orange-juice industry is considered in the next section.

## Impacts of Orange-Juice Tariff Reduction

Lower orange-juice tariff levels have resulted in reduced orange-juice prices for Australian growers, resulting in massive eradication of Valencia trees, reduced Valencia tree planting rates and a refocus from the Valencia juice market to the Navel fresh fruit export market. Australia is a price taker in the world orange-juice market dominated by Brazil and Florida. Hence, the $35 \%$ advalorem tariff in 1988-89 increased the world orange-juice price by $35 \%$ for Australian buyers, in contrast to the present situation where the tariff increases price by just $5 \%$. Thus, reduction of the Australian tariff since 1988 would have been expected to reduce the price of orange juice in Australia by $30 \%$, all else constant. Other factors, however, were not constant with Brazil and Florida orange-juice production increasing notably during the 1990s, resulting in decreases in the world orange-juice price. Thus, lower Australian orange-juice prices following the reduction of the

[^1]tariff are a result of both reduced tariff rates and lower world orange-juice prices. Elton, Hutton and Mullen indicate that processed orange prices fell below production costs in the 1990s. The USDA also reports processed prices at "very low" levels with some producers receiving prices well below the cost of production (USDA, FAS, "Australia Citrus Annual 2002,"\#AS2014, 5/1/2002).

Australia's non-bearing Valencia orange tree levels have declined from over a million in the mid to late 1980s to 189,000 in 1998-99 (Table 5). The 1998-99 Valencia non-bearing tree population is $83.7 \%$ lower than the 1985-86 level. In contrast non-bearing Navel orange tree levels have increased from 585,000 in 1985-86 to over a million in the mid 1990s. The total orange tree population grew from the mid 1980s through the early 1990s, but declined moderately since the mid 1990s. Based on data for the major production areas in Australia, these trends have continued in more recent years (Table 6).

As a result of the move away from Valencia to Navel oranges, Australian orange-juice production has trended downward since the early 1990s (Table 7). This decline, however, has been moderated by two factors. One is the growth in Navel orange production and its contribution to processing through packinghouse eliminations; the second factor is the growth in fresh orange-juice (NFC) consumption which now accounts for $30 \%$ to $35 \%$ of total orange-juice consumption in Australia. The Australian industry hopes that increasing NFC demand will stabilize Valencia orange production.

With the reduction in the orange-juice tariff and lower world orange-juice prices, frozen concentrate orange juice (FCOJ) imports have increased sharply from 5,323 MT @ 65 degree Brix in 1985-86 to 23,448 MT in 2001-02, although the variation in import levels over this period has been relatively large ranging from 1,621 MT in 1986-87 to 42,415 MT in 1997-98.

As a result of the growth in FCOJ imports, orange-juice consumption increased by over 70\% from 1985-86 to 2001-02. Australia's orange-juice production as a percent of orange-juice consumption has declined sharply from $82 \%$ in 1985-86 to $46 \%$ in 2001-02. Again, over this period there has been substantial variation in this percentage.

## Implications for the Florida Orange-Juice Industry

If the U.S. tariff on FCOJ were eliminated the impact on the U.S. orange-juice price would be expected to be similar to the price impact in Australia resulting from the $30 \%$ tariff reduction there. The U.S. tariff on $\mathrm{FCOJ}^{2}$ is about $\$ .289$ per pound solids (PS) which is equivalent to a CIF ad-valorem rate of $27 \%$ based on the current Florida bulk FCOJ price of $1.07 /$ PS. The U.S. and Australian tariffs can be compared either as ad valorem rates or dollar per pound solids levies. Consider a dollar comparison which requires transforming the Australian ad-valorem tariff to dollars per pound solid. Recall that the Australian tariff is applied to the price of the product at the port of export which in general would be the Brazilian FOB price. When the U.S. is a net importer of FCOJ, the Brazilian FOB price would be expected to be equal to the U.S. or Florida price minus the \$.289/PS tariff minus transportation costs of about \$.10/PS. Hence, in this case, the Brazilian price would be expected to be $\$ .68 / \mathrm{PS}$, and a $30 \%$ reduction in the Australian tariff in context of this price is equal to $\$ .20 / \mathrm{PS}$. For each $\$ .10 / \mathrm{PS}$ increase in the U.S. and Brazil FOB prices, the Australian tariff in dollars would increase by $\$ .03 / \mathrm{PS}$; thus, for example, if the U.S. FOB price were $\$ 1.27 / \mathrm{PS}$,

[^2]the Australian tariff would be $\$ .26 /$ PS $^{3}{ }^{3}$ Under the assumption that the U.S. is a price taker in the world orange-juice market, eliminating the U.S. tariff would be expected to reduce the U.S. price by $\$ .289 / \mathrm{PS}$ which would be greater than the $\$ .20 / \mathrm{PS}$ impact (or perhaps somewhat larger depending on the world price) on the Australian price due to the $30 \%$ reduction in their ad-valorem rate. The U.S., however, being both a large producer and buyer of orange juice is not a price taker in the world market. Both Spreen, Brewster and Brown, and Brown, Spreen and Lee have estimated that elimination of the U.S. FCOJ tariff would result in a decrease in the U.S. price of orange juice of $\$ .20 / \mathrm{PS}$ to $\$ .21 / \mathrm{PS}$ or roughly equivalent to the Australian tariff reduction at current prices.

The large reduction in Australian Valencia orange planting levels following the reduction of the Australian orange-juice tariff and lower prices suggests that Florida orange tree planting may also decline sharply with elimination of the U.S. tariff. In the study by Brown, Lee and Spreen, reduced Florida planting levels consistent with the Australian experience were considered. Florida orange production over the period from 2001-02 through 2021-22 was projected to decrease from 237 to 136 (198) million boxes, assuming zero planting levels (assuming planting levels are reduced by $50 \%$ ). In addition, with orange-juice prices currently at relatively low levels, eliminating the tariff may reduce the U.S. price below the cost of production for some growers, resulting in some of these growers going out of business.

As in Australia, the U.S. orange processing industry has been and would be expected to continue to be supported by NFC consumption. High transportation costs of importing NFC would

[^3]be expected to limit NFC imports and help support U.S. NFC prices and grower returns for oranges utilized for processing. As in Australia, the Florida orange processing industry may become more focused on NFC production.

The impact of eliminating the U.S. FCOJ tariff would be expected to differ from the Australia experience with respect to fresh market opportunities. While Australia citrus growers were able to refocus to a notable extent on fresh Navel production, opportunities for the Florida orange industry to move in this direction are limited. Fresh orange consumption in the U.S. has been relatively flat with growth in the availability of other types of fresh fruit. Additionally, California's dominance as a fresh orange supplier limits the potential for Florida to move more oranges in fresh channels. Overall, the magnitude of Florida's orange processing sector relative to its fresh sectorFlorida processes about $95 \%$ of its oranges with the remaining $5 \%$ utilized fresh—indicates the impact of eliminating the U.S. tariff on the Florida orange industry would be very different than in Australia. In short, the portion of the Florida orange crop that is utilized in processed form can not be turned into fresh orange sales.

## Concluding Comments

Reduction in Australia's orange-juice tariff in the late 1980s and the 1990s and the resulting adjustments in the Australian orange industry provide a case study for analyzing the potential impact of eliminating the U.S. orange-juice tariff on the Florida orange-juice industry. Australia's tariff reduction resulted in lower processed orange prices and was a major factor underlying the sharp reduction in Valencia orange tree planting levels. The Australian orange industry has been able to refocus on fresh sales with export opportunities in Asia and the U.S. Growth in NFC orange juice
consumption has been another factor alleviating the impact of the tariff reduction. Australia's NFC market may help stabilize Valencia orange production.

Based on the Australian experience, it is likely that Florida would experience major reductions in orange-juice prices, orange tree planting levels and orange-juice production if the U.S. orange-juice tariff were eliminated. In contrast to Australia, opportunities for expanding sales of fresh Florida oranges would be limited. On the other hand, the NFC segment is expected to provide increasing support to the Florida orange-juice industry as in Australia. But FCOJ, predominately imports, would still be expected to account for a major part of the overall orange-juice market in the U.S. given its cost advantage, limiting the size of the NFC business and ultimately the Florida orange processing sector.

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Table 1. Australian citrus production.


SOURCE: Australian Citrus Growers, Inc. (web site: http://www.austcitrus.org.au).

Table 2. Australia orange area and production. ${ }^{\text {a }}$

| Year | Area Harvested | Production |
| :---: | :---: | :---: |
|  | - hectares - | - metric tons - |
| 1961 | 15,996 | 177,832 |
| 1962 | 15,996 | 177,832 |
| 1963 | 16,503 | 202,634 |
| 1964 | 16,983 | 190,184 |
| 1965 | 17,439 | 235,922 |
| 1966 | 17,828 | 198,931 |
| 1967 | 17,828 | 232,455 |
| 1968 | 18,371 | 214,370 |
| 1969 | 19,464 | 263,845 |
| 1970 | 19,379 | 234,347 |
| 1971 | 19,300 | 322,424 |
| 1972 | 19,000 | 291,014 |
| 1973 | 18,700 | 351,904 |
| 1974 | 18,200 | 310,036 |
| 1975 | 17,800 | 341,042 |
| 1976 | 17,700 | 361,522 |
| 1977 | 18,000 | 321,674 |
| 1978 | 18,300 | 356,538 |
| 1979 | 18,500 | 368,554 |
| 1980 | 19,400 | 392,092 |
| 1981 | 20,600 | 424,494 |
| 1982 | 21,200 | 376,317 |
| 1983 | 21,800 | 409,995 |
| 1984 | 22,400 | 391,841 |
| 1985 | 23,300 | 444,953 |
| 1986 | 22,700 | 486,000 |
| 1987 | 24,100 | 503,760 |
| 1988 | 24,100 | 478,918 |
| 1989 | 24,900 | 399,248 |
| 1990 | 25,200 | 487,177 |
| 1991 | 25,700 | 453,262 |
| 1992 | 26,400 | 469,881 |
| 1993 | 27,300 | 616,496 |
| 1994 | 28,200 | 582,095 |
| 1995 | 26,900 | 517,242 |
| 1996 | 27,000 | 442,077 |
| 1997 | 27,400 | 522,622 |
| 1998 | 27,000 | 499,784 |
| 1999 | 26,200 | 445,840 |
| 2000 | 26,600 | 509,973 |
|  |  |  |
|  |  |  |
|  |  |  |

${ }^{a}$ FAOSTAT data in this table differ somewhat from those in Tables and 3 but indicate the long-range trend. SOURCE: Food and Agriculture Organization of the United Nations, FAOSTAT (agricultural data).

Table 3. Australian and world orange production.

| Country | $1999-00$ |  |  |
| :--- | :---: | :---: | :---: |
|  | Quantity | Share of Total |  |
|  | $--1,000$ metric tons - | $--\%--$ |  |
| Australia | 616 | 1.0 |  |
| United States | 11,040 | 17.3 |  |
| Brazil | 18,360 | 28.8 |  |
| Other | 33,684 | 52.9 |  |
| WORLD | 63,700 | 100.0 |  |

SOURCE: Food and Agriculture Organization of the United Nations, "Citrus Fruit, Fresh and Processed, Annual Statistics 2001."

Table 4. Supply and utilization of Australian oranges.

| Season | Production | Imports | Exports | Consumption | Processed | Processed Share of Production |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | -------- | --- - 1 | ,000 metric tons | - - - - - - - - - | ------ | - - \% - - |
| 1985-86 | 519 | 7 | 42 | 168 | 316 | 60.9 |
| 1986-87 | 475 | 7 | 47 | 162 | 273 | 57.5 |
| 1987-88 | 394 | 15 | 41 | 135 | 233 | 59.1 |
| 1988-89 | 544 | 9 | 32 | 209 | 312 | 57.4 |
| 1989-90 | 458 | 4 | 45 | 142 | 275 | 60.0 |
| 1990-91 | 485 | 4 | 71 | 123 | 295 | 60.8 |
| 1991-92 | 612 | 6 | 81 | 135 | 402 | 65.7 |
| 1992-93 | 578 | 7 | 90 | 155 | 340 | 58.8 |
| 1993-94 | 651 | 7 | 91 | 217 | 350 | 53.8 |
| 1994-95 | 416 | 7 | 80 | 148 | 195 | 46.9 |
| 1995-96 | 589 | 13 | 117 | 185 | 300 | 50.9 |
| 1996-97 | 556 | 12 | 113 | 190 | 265 | 47.7 |
| 1997-98 | 448 | 8 | 111 | 155 | 190 | 42.4 |
| 1998-99 | 515 | 13 | 111 | 188 | 229 | 44.5 |
| 1999-00 | 624 | 13 | 143 | 192 | 302 | 48.4 |
| 2000-01 | 437 | 9 | 150 | 136 | 160 | 36.6 |
| 2001-02 | 591 | 13 | 150 | 180 | 274 | 46.4 |

[^4]Table 5. Australian bearing and non-bearing trees.

| Season | Navels |  |  | Valencias |  |  | Total |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Bearing | NonBearing | Total | Bearing | NonBearing | Total | Bearing | NonBearing | Total |
|  | ------------------------------1,000 trees ----------------------------------- |  |  |  |  |  |  |  |  |
| 1985-86 | 1,569 | 585 | 2,154 | 3,130 | 1,166 | 4,296 | 4,725 | 1,761 | 6,486 |
| 1986-87 | 1,667 | 663 | 2,330 | 3,533 | 1,179 | 4,712 | 5,228 | 1,853 | 7,081 |
| 1987-88 | 1,704 | 772 | 2,476 | 3,452 | 1,092 | 4,544 | 5,183 | 1,874 | 7,057 |
| 1988-89 | 1,708 | 913 | 2,621 | 3,648 | 1,003 | 4,651 | 5,384 | 1,928 | 7,312 |
| 1989-90 | 1,765 | 959 | 2,724 | 3,734 | 880 | 4,614 | 5,528 | 1,851 | 7,379 |
| 1990-91 | 1,856 | 979 | 2,835 | 3,906 | 763 | 4,669 | 5,801 | 1,753 | 7,554 |
| 1991-92 | 1,960 | 1,079 | 3,039 | 4,056 | 578 | 4,634 | 6,062 | 1,668 | 7,730 |
| 1992-93 | 2,106 | 1,039 | 3,145 | 4,246 | 446 | 4,692 | 6,410 | 1,514 | 7,924 |
| 1993-94 | 2,213 | 1,043 | 3,256 | 4,297 | 396 | 4,693 | 6,587 | 1,475 | 8,062 |
| 1994-95 | a | a | a | a | a | a | a | a |  |
| 1995-96 | a | a | a | a | a | a | a | a |  |
| 1996-97 | a | a | a | a | a | a | a | a |  |
| 1997-98 | 2,109 | 1,119 | 3,228 | 4,077 | 365 | 4,442 | 6,214 | 1,511 | 7,725 |
| 1998-99 | 2,468 | 937 | 3,406 | 3,849 | 189 | 4,038 | 6,336 | 1,151 | 7,488 |
| 1999-00 | a | a | a | a | a | a | a | a |  |
| 2000-01 | a | a | a | a | a | a | a | a |  |

${ }^{\mathrm{a}}$ Data not available for all regions.
SOURCE: Australian Citrus Growers, Inc., various "Australian Citrus Growers Annual Reports."

Table 6. Australian bearing and non-bearing trees - Riverina (NSW), Sunraysia (Victoria), Riverland (SA). ${ }^{\text {a }}$


[^5]Table 7. Australian orange-juice stocks, production, imports, exports and consumption.

| Season | $\begin{aligned} & \text { Beginning } \\ & \text { Stocks } \end{aligned}$ | Production | Imports | Exports | Consumption | Ending Stocks | Production Share of Consumption |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 1,000 metric tons |  |  |  | - - \% - - |
| 1985-86 | 0 | 21,528 | 5,253 | 592 | 26,189 | 0 | 82 |
| 1986-87 | 0 | 19,330 | 1,621 | 1,060 | 19,891 | 0 | 97 |
| 1987-88 | 0 | 16,953 | 22,659 | 2,003 | 27,787 | 9,822 | 61 |
| 1988-89 | 9,822 | 22,705 | 10,993 | 1,596 | 30,200 | 11,724 | 75 |
| 1989-90 | 11,724 | 20,012 | 5,532 | 1,636 | 27,845 | 7,787 | 72 |
| 1990-91 | 7,787 | 21,468 | 14,284 | 988 | 27,669 | 14,882 | 78 |
| 1991-92 | 14,882 | 29,253 | 6,975 | 998 | 32,803 | 17,309 | 89 |
| 1992-93 | 17,309 | 24,742 | 11,178 | 1,174 | 34,684 | 17,371 | 71 |
| 1993-94 | 17,371 | 25,469 | 12,504 | 1,501 | 35,661 | 18,183 | 71 |
| 1994-95 | 18,183 | 14,190 | 21,009 | 1,587 | 36,149 | 15,647 | 39 |
| 1995-96 | 16,015 | 22,918 | 21,662 | 1,939 | 42,000 | 16,656 | 55 |
| 1996-97 | 16,273 | 19,833 | 25,582 | 1,628 | 43,965 | 16,095 | 45 |
| 1997-98 | 16,095 | 14,370 | 42,415 | 1,881 | 43,965 | 27,035 | 33 |
| 1998-99 | 27,035 | 17,214 | 21,990 | 2,557 | 43,965 | 19,717 | 39 |
| 1999-00 | 19,717 | 22,609 | 23,267 | 2,670 | 44,942 | 17,981 | 50 |
| 2000-01 | 17,981 | 11,979 | 25,361 | 2,430 | 44,942 | 7,949 | 27 |
| 2001-02 | 7,949 | 20,513 | 23,448 | 2,443 | 44,942 | 4,525 | 46 |

[^6]
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[^2]:    ${ }^{2}$ The U.S. also imposes a $\$ .166 /$ PS tariff on NFC. Domestic producers of this product are also naturally protected by relatively high transportation costs of importing this product.

[^3]:    ${ }^{3}$ This analysis assumes that the U.S. continues to be a net importer. However, as the U.S. moves in the direction of a net exporter the difference between the U.S. and Brazilian FOB prices would be expected to narrow.

[^4]:    SOURCE: USDA: various "World Horticultural Trade and U.S. Export Opportunities" and Attache reports.

[^5]:    ${ }^{a}$ Trees for New South Wales (NSW), Victoria and South Australia (SA) account in aggregate for around $85 \%$ to $90 \%$ of Australian orange production. SOURCE: Australian Citrus Growers, Inc.

[^6]:    SOURCE: USDA: various "World Horticultural Trade and U.S. Export Opportunities" and Attache reports.

