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# The U.S. and World Sugar Industries under the EU and DOHA Trade Liberalization

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# Presentation Outline

- Characteristics of the U.S. and world sugar industries
  - Framework for the WTO negotiations
  - Sugar policy reform in the EU
  - Sugar simulation model
  - Simulation results
  - Summary and conclusions
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# Characteristics of the World Sugar Industry

- Sugar - produced in over 100 countries
  - Total production of sugar - over 133 million tons annually for the 1999- 2003 period
  - Total volume of sugar traded - about 28 million tons for the 1999-2003 period.
  - Market - volatile and distorted.
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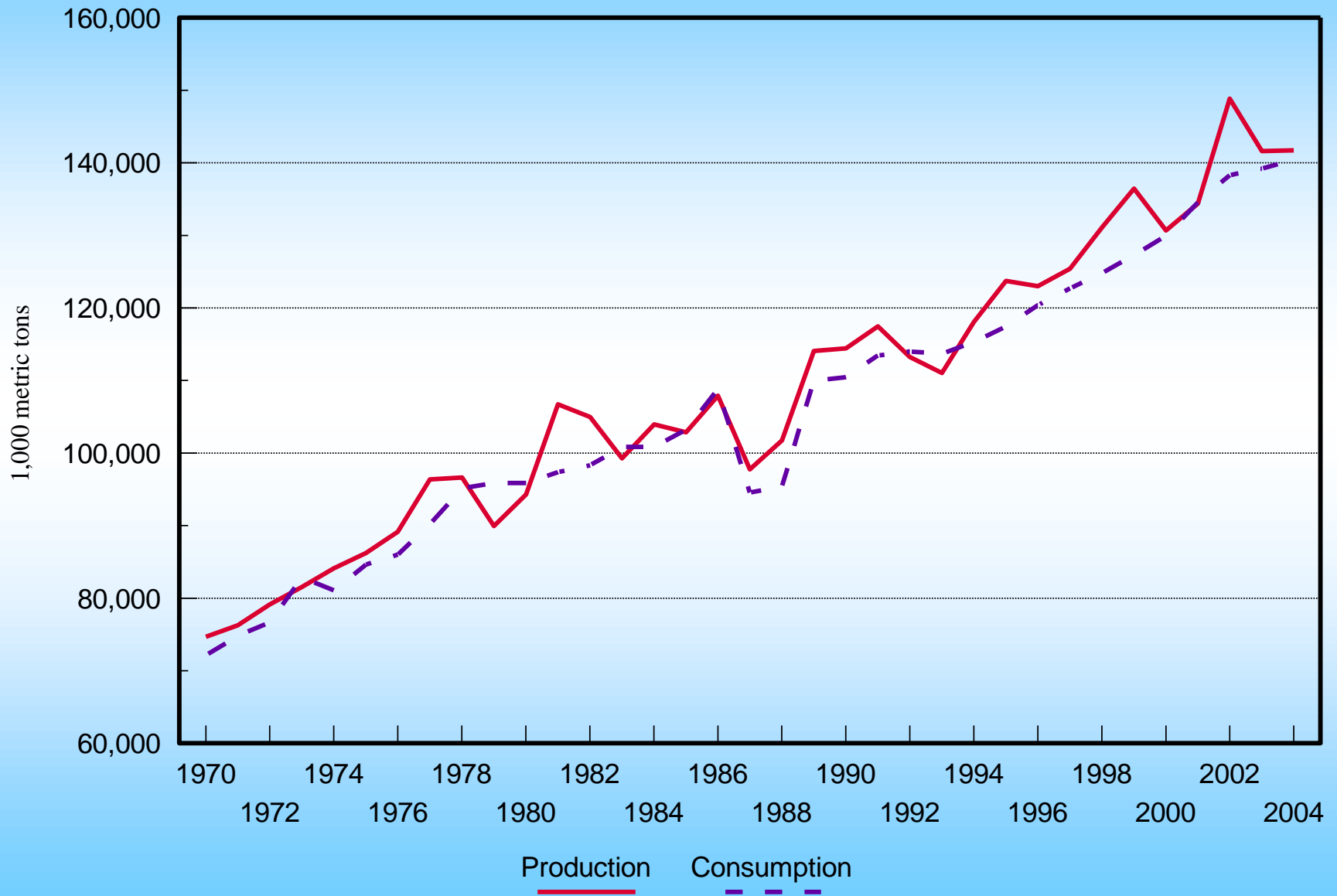
## World Sugar Supply and Utilization, 1999 to 2003 Average

Country	Crop <sup>a</sup>	Consumption	Production	Net Exports	Ending Stocks	Per Capita Consumption
-----1,000 metric tons, raw value-----						kg
Algeria	B	948	9	-933	93	29
Australia	C	1,028	4,904	3,778	645	56
Brazil	C	9,484	20,752	11,450	895	53
Canada	B	1,259	55	-1,212	162	40
China	B/C	8,898	8,340	-458	1,436	7
Cuba	C	708	3,132	2,496	202	63
Egypt	B/C	2,153	1,381	-798	348	32
European Union	B	14,381	18,060	3,748	3,185	40
Former Soviet Union	B	10,882	3,954	-7,333	3,695	37
India	C	19,430	20,015	931	9,861	17
Indonesia	C	3,340	1,748	-1,740	1,343	16
Japan	B/C	2,255	804	-1,473	349	18
Mexico	C	4,877	5,026	244	1239	47
South Africa	C	1,576	2,741	1,197	468	36
South Korea	-	1,165	0	-1,152	91	24
Thailand	C	1,806	6,167	4,380	708	28
United States	B/C	8,680	6,969	-1,358	1,612	33
Rest of World	B/C	39,142	31,015	-11,368	7,750	18
World Total	B/C	133,187	133,712		33,915	20

<sup>a</sup> B = Sugarbeet; C = Sugarcane.

Source: USDA, *PS&D View*, 2004

# World Sugar Production and Consumption, Raw Sugar Equivalent, 1970-2004

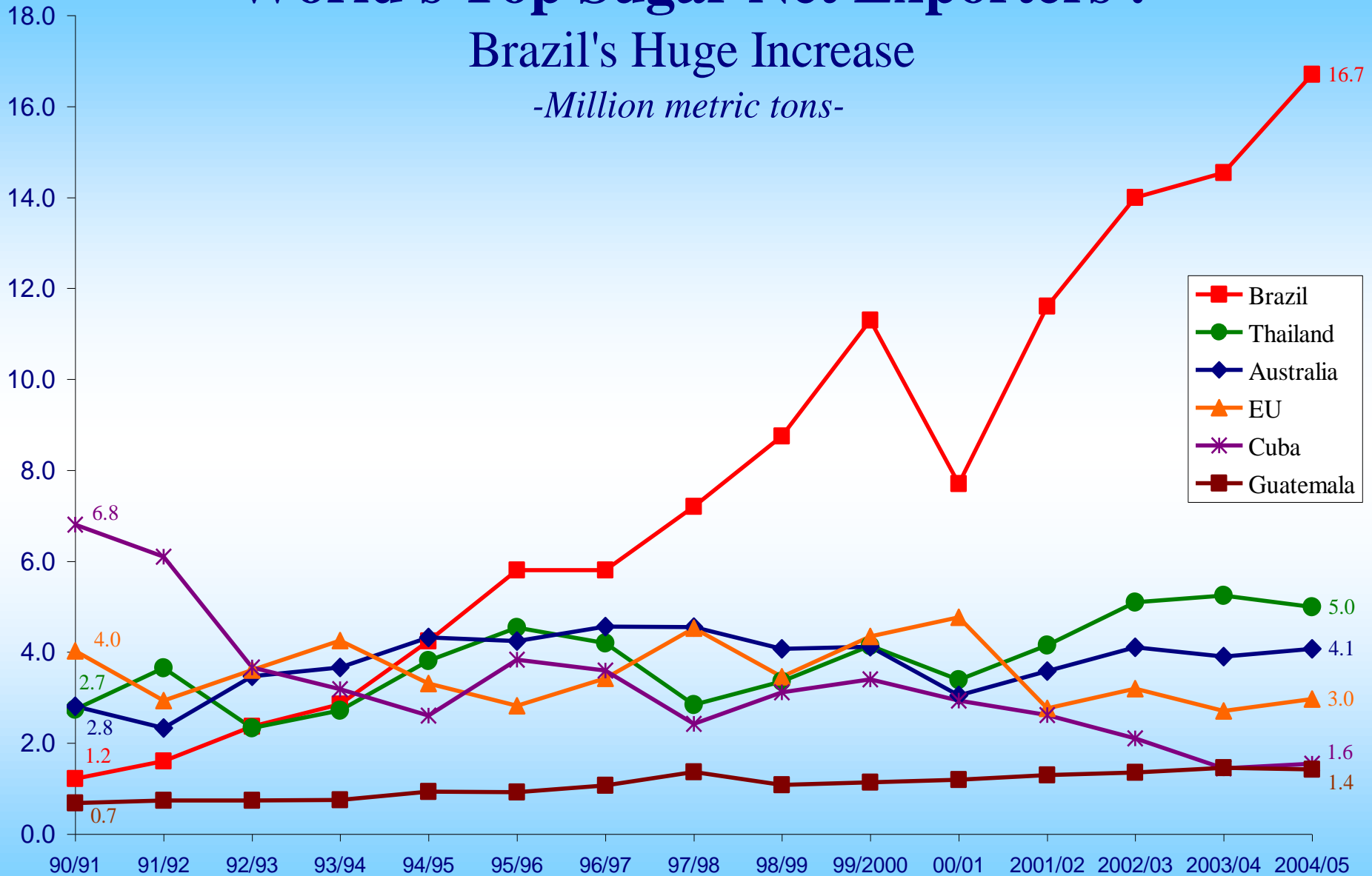


Source: USDA-ERS Sugar and Sweetener Situation and Outlook, various issues

# World's Top Sugar Net Exporters :

## Brazil's Huge Increase

*-Million metric tons-*

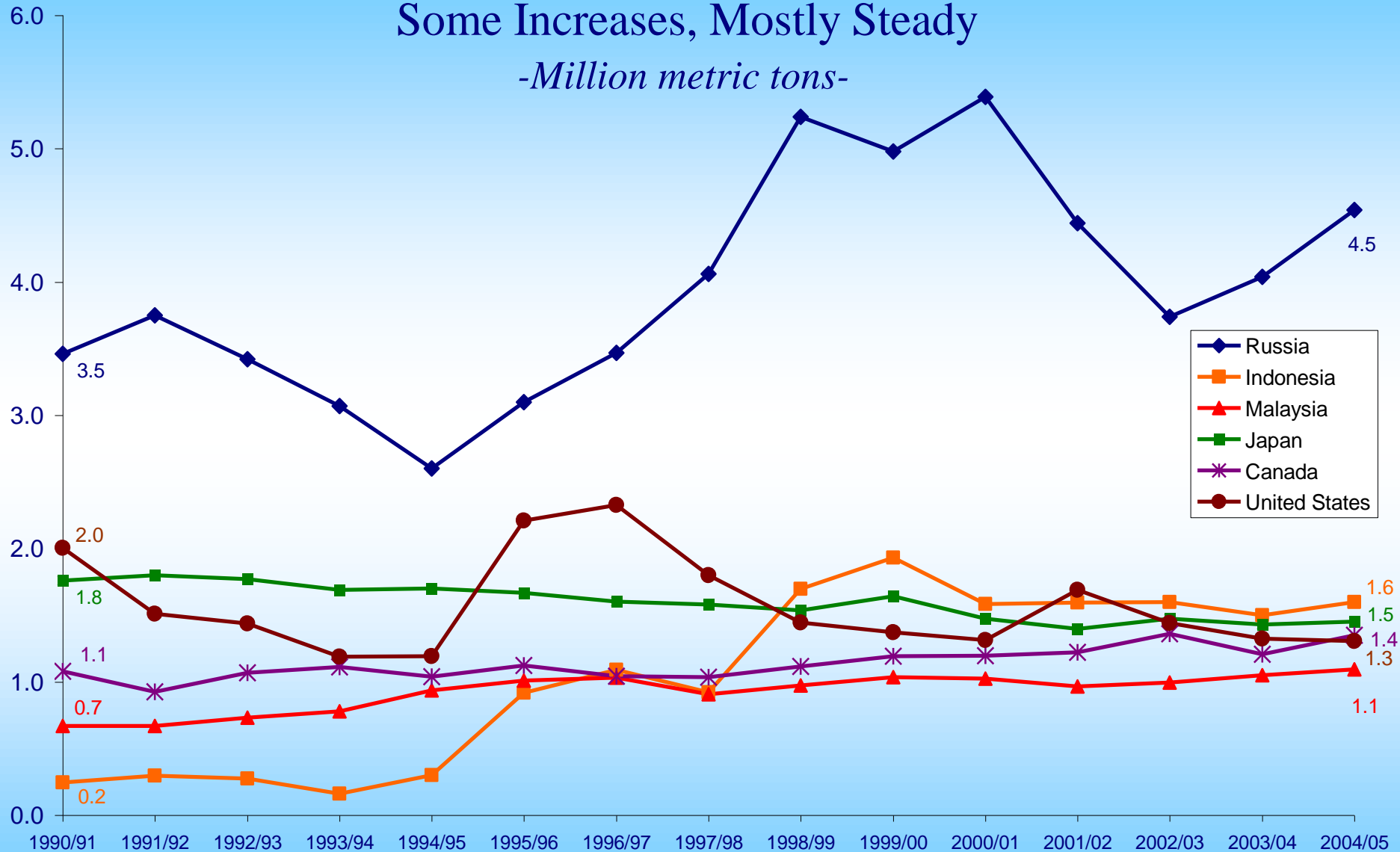


Source: USDA, May 2004

# World's Top Sugar Net Importers:

Some Increases, Mostly Steady

*-Million metric tons-*



Source: USDA, May 2004

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# Characteristics of the U.S. Sugar Industry

- World's fifth largest producer and consumer
  - World's fourth largest importer
  - Produce both beet and cane sugar
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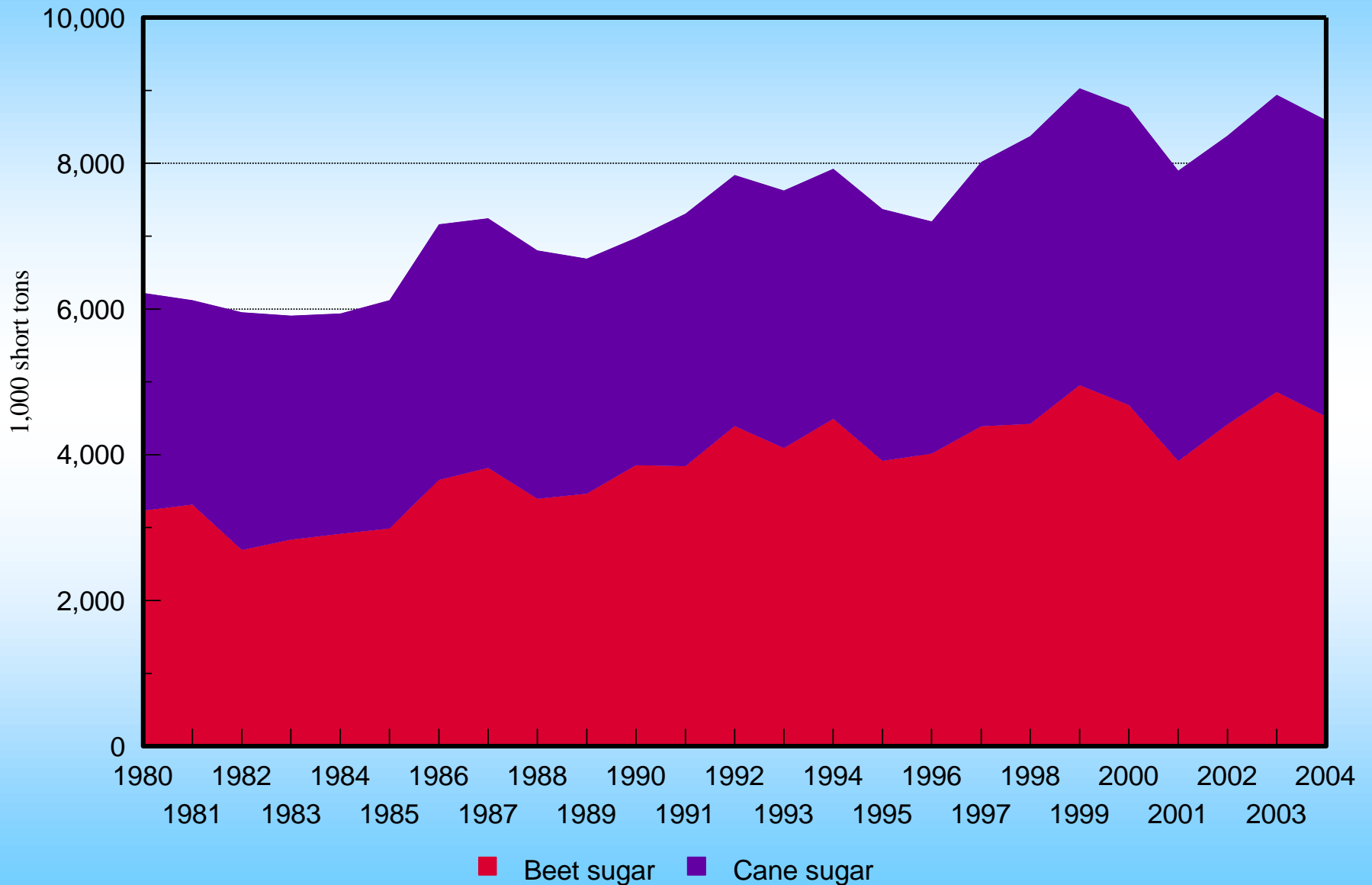


# U.S. sugar industry profiles for 2003/2004

(million short tons, raw value)

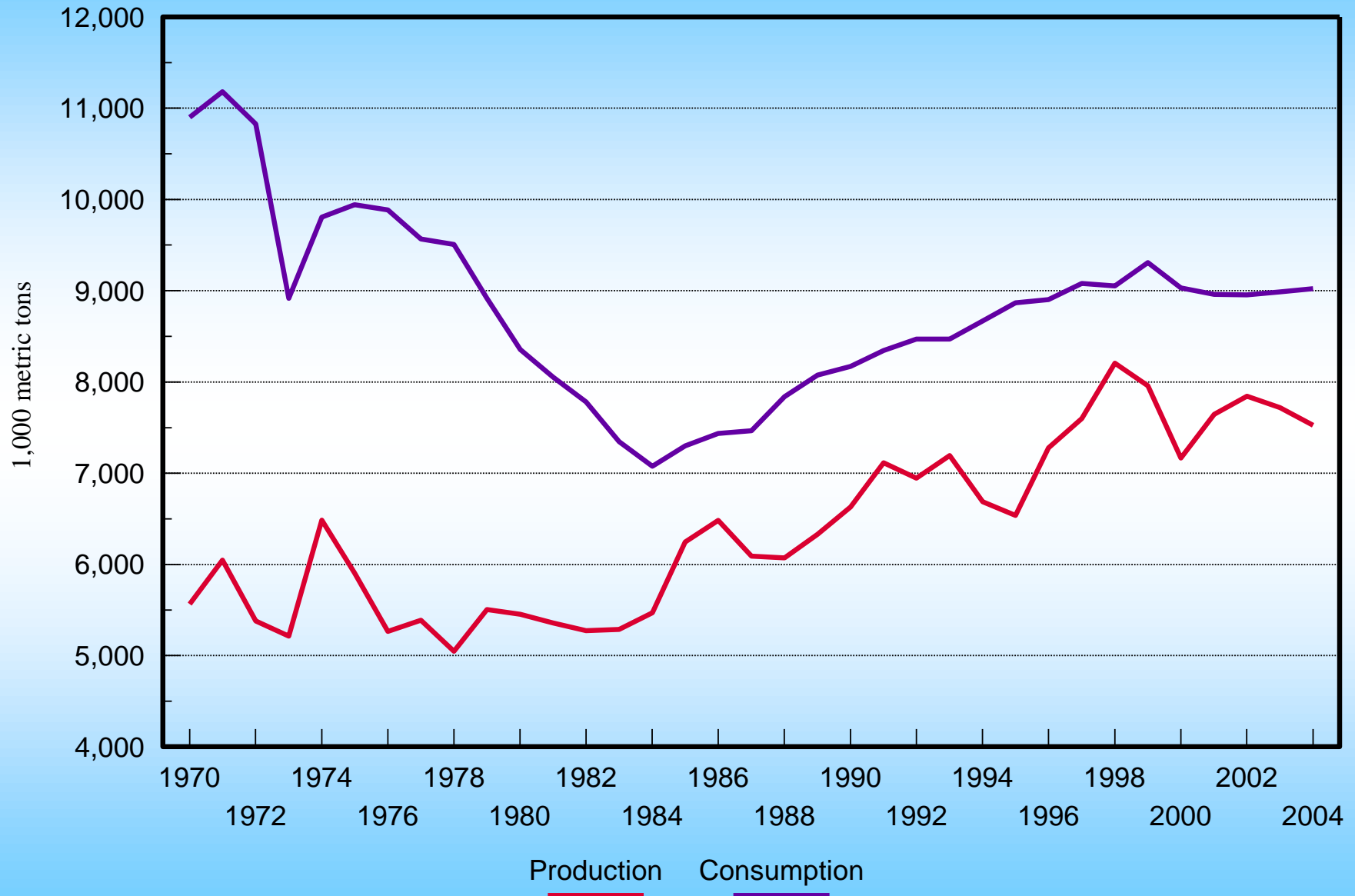
- Beet sugar production: 4.81 from 26 factories in 10 states
- Cane sugar production: 4.05 from 24 cane mills in 4 states
- Total production: 8.86 from 50 facilities in 14 states
- Sugar consumption: 9.87
- TRQ imports: 1.23 from 41 quota-holding countries.
- Cane sugar refineries: 8 in 6 states.

# U.S. Production of Beet and Cane Sugar, 1980 to 2004



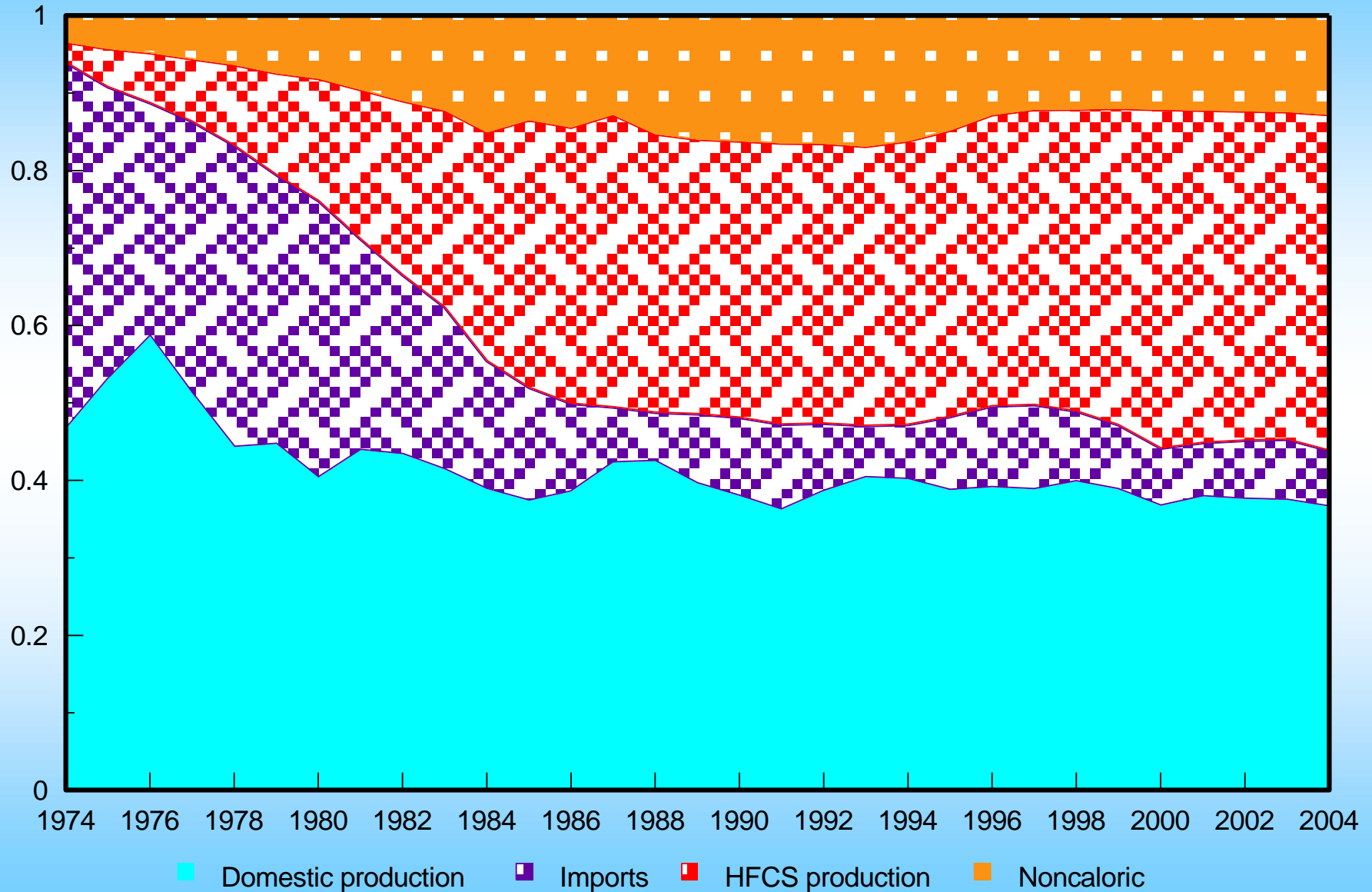
Source: USDA-ERS Sugar and Sweetener Situation and Outlook, various issues

# U.S. Sugar Production and Consumption, 1970-2004

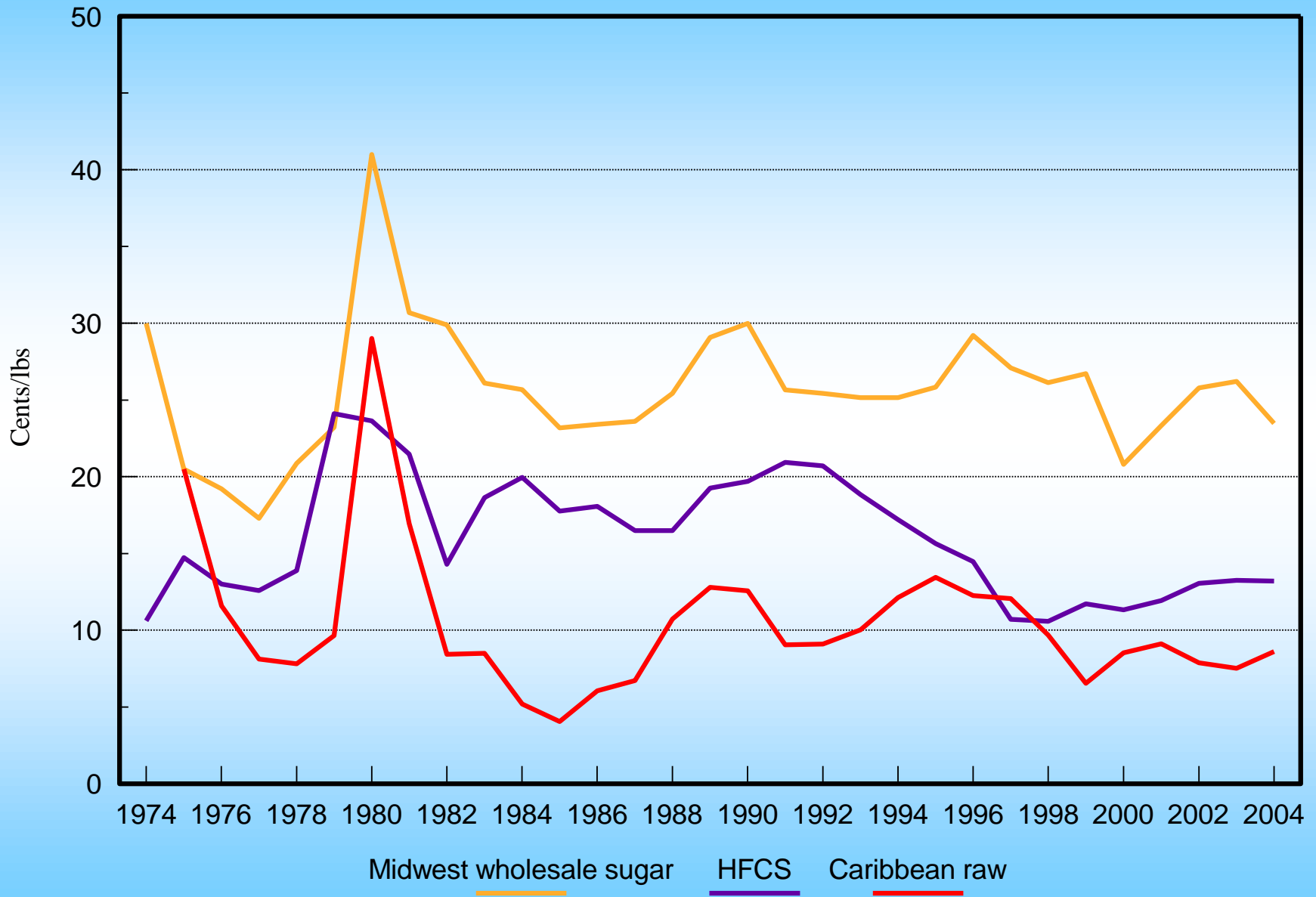


Source: USDA-ERS Sugar and Sweetener Situation and Outlook, various issues

# Market Shares for Sweeteners in the United States



# Caribbean and U.S. Sugar and HFCS Prices



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# WTO Framework Agreement for Agricultural Goods

- Market Access
  - Domestic support
  - Export Competition
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# Market Access

- Substantial improvement in market access
- Cut in tariffs and harmonization
- Exception for sensitive products in tariff quota expansion and tariff reduction
- Lesser tariff reduction commitments for developing countries

# Domestic Support

- Substantial cut in trade distorting domestic support (amber box)
- Harmonization of countries' domestic support levels
- 20 percent cut on overall support in the first year of implementation
- Green box will be reviewed and clarified
- Blue box for U.S. counter-cyclical payments is allowed



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# Export Competition

- Export subsidies to be eliminated
  - Export credits with repayment periods of more than 180 days to be eliminated
  - Trade-distorting practices of export STEs to be eliminated
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# European Union's Reform in Sugar Policy

- Current policy and trade statistics
  - Domestic wholesale price of refined sugar (2000-2002 average): 30cents/lb > world market price.
  - Import tariff: 164%
  - Production quota: 17.4 mmt/year
  - Export subsidy: 1.3 mmt/year

## **2004 Statistics (mmt)**

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Production	16.5
Consumption	14.4
Exports	4.6
Imports	2.1

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- Expected reform:

- price cut in refined sugar from 632 euros to 421 euros (\$758 to \$505).
  - Reduction in sugarbeet price from 32.8 euros to 27.4 euros per ton (\$39.4 to \$32.9)
  - Quota reduced from 17.4 mmt to 14.6 mmt
  - New member countries are compensated as old members in terms of sugar support programs
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- Introduction of decoupled payments to sugar farmers in the form of Single Farm Payments (SFP) to compensate 60% of lost revenue due to price and quota reduction
  - ACP and India sugar import remain at 1.3 mmt, but price reduced from 421 euros to 329 euros (\$505 to \$395) per metric ton
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# Model Structure and Development

- Harvested area equation:

$$a_{i,t}^s = f\left(a_{i,t-1}^s, p_{i,t-1}^s, p_{i,t-1}^c, g_t\right)$$

- Total quantity of sugar production:

$$qp_{i,t}^s = a_{i,t}^s \cdot y_{i,t}^s$$

- Per capita sugar consumption:

$$fd_t^s = f(p_t^s, cy_t, t)$$

- Total consumption of sugar:

$$qd_t^s = fd_t^s \cdot pop_t$$

- Carry-out stocks equation:

$$qs_t^s = f(qs_{t-1}^s, qp_t^s, p_t^s)$$

- Net export equation:

$$qx_t^s = qs_{t-1}^s + qp_t^s - qd_t^s - qs_t^s$$



- A market equilibrium condition:

$$\sum_{n=1} qx_t^{s,n} = 0$$

- Price equations:

$$pm_t^{s,n} = pm_t^{s,w} \cdot er_t^n$$

$$pd_t^{s,n} = pm_t^{s,n} (1 + t_t^n) + TC_t^n$$

# EU and DOHA Scenarios

- Limited liberalization in the EU
- Limited liberalization under DOHA proposal in selected countries (China, the EU, Japan, and the United States)
  - 20% cut in tariffs
  - 20% increase in import quota

**Sugar Price, Production, Consumption, and Imports under the Base and Alternative Scenarios in the United States (1,000 tons)**

		2013		
	2004 Actual	Base	EU	DOHA
<b>Production</b>				
Beet sugar	4,358	4,683	4,685	4,636
Cane Sugar	4,120	4,367	4,369	4,333
<b>Consumption</b>	9,905	10,703	10,716	10,803
<b>Imports</b>	1,429	1,670	1,670	1,926

**Sugar Price, Production, Consumption, and Imports under the Base and Alternative Scenarios in the United States (continued)**

		2004 Actual	2013		
			Base	EU	DOHA
<b>Prices</b>					
Sugarbeet	(\$/ton)	40.00	40.34	40.15	38.96
Sugar cane	(\$/ton)	27.00	27.73	27.56	26.43
Caribbean	(cents/lbs)	8.40	8.55	9.96	12.10
U.S. Import	(cents/lbs)	17.50	16.30	16.16	15.25
Wholesale	(cents/lbs)	26.50	24.84	24.74	23.79
Retail	(cents/lbs)	42.40	40.69	40.49	39.20

## Production, Consumption, and Trade in Selected Countries under the Base and WTO Scenarios

	Base	WTO-DOHA
<b>Production</b>	-----1,000 mt-----	
Australia	5,391	5,530
Brazil	33,039	37,689
Thailand	8,237	8,510
China	10,706	10,865
European Union	18,834	15,096
India	21,044	21,165
Japan	892	795
Mexico	6,239	6,289
United States	8,211	8,137

## Production, Consumption, and Trade in Selected Countries under the Base and WTO Scenarios

	Base	WTO-DOHA
<b>Consumption</b>	-----1,000 mt-----	
Australia	1,337	1,336
Brazil	11,582	11,582
Thailand	2,332	2,330
China	14,371	15,628
European Union	17,526	17,526
India	21,693	25,047
Japan	2,397	2,518
Mexico	5,824	5,821
United States	9,710	9,800

## Production, Consumption, and Trade in Selected Countries under the Base and WTO Scenarios

	Base	WTO-DOHA
<b>Trade</b>	-----1,000 mt-----	
Australia	4,054	4,293
Brazil	21,458	26,109
Thailand	5,888	6,163
China	-3,685	-4,761
European Union	1,293	-2,444
India	-684	-3,939
Japan	-1,503	-1,721
Mexico	405	460
United States	-1,515	-1,926

## Consumer and Producer Surpluses under the Base and Alternative Scenarios (\$1,000)

	Base	EU	DOHA
<b>Total Value</b>			
Consumer surplus	1,181,453	1,185,519	1,212,369
Producer surplus	306,677	305,045	294,604
Beet producer	145,140	144,250	138,719
Cane producer	161,536	160,794	155,885
<b>Changes in Total Value</b>			
Consumer surplus	0	4,066	30,916
Producer surplus	0	(1,632)	(12,073)
Beet producer	0	(890)	(6,421)
Cane producer	0	(742)	(5,651)



# Summary and Conclusions

- DOHA negotiations may affect several players in the world sugar industry
  - Increase in Caribbean price of sugar from 8.4 cents/lb to 12.1 cents/lb
  - Brazil may substantially increase production and exports
  - Australia, Central America, and Thailand – increase their exports of sugar moderately
  - EU and India – increases in imports
  - China and Japan – substantial increase in imports

- EU reform on sugar policy will increase Caribbean sugar price, but not affect the U.S. sugar industry
    - Increase in the Caribbean price of sugar from 8.4 cents/lb to 9.96 cents/lb
    - Reduction in EU sugar production and exports
  - Under the current DOHA proposal, U.S. imports of sugar would be 1.9 million tons and wholesale price would decrease from 24.89 cents to 23.79 cents
  - Brazil may benefit the most under the DOHA scenario
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**Thank you!**

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