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Fertilizer Situation and Outlook

CPM Short Course and MCPR Trade Show
December 8, 2015
Minneapolis, MN

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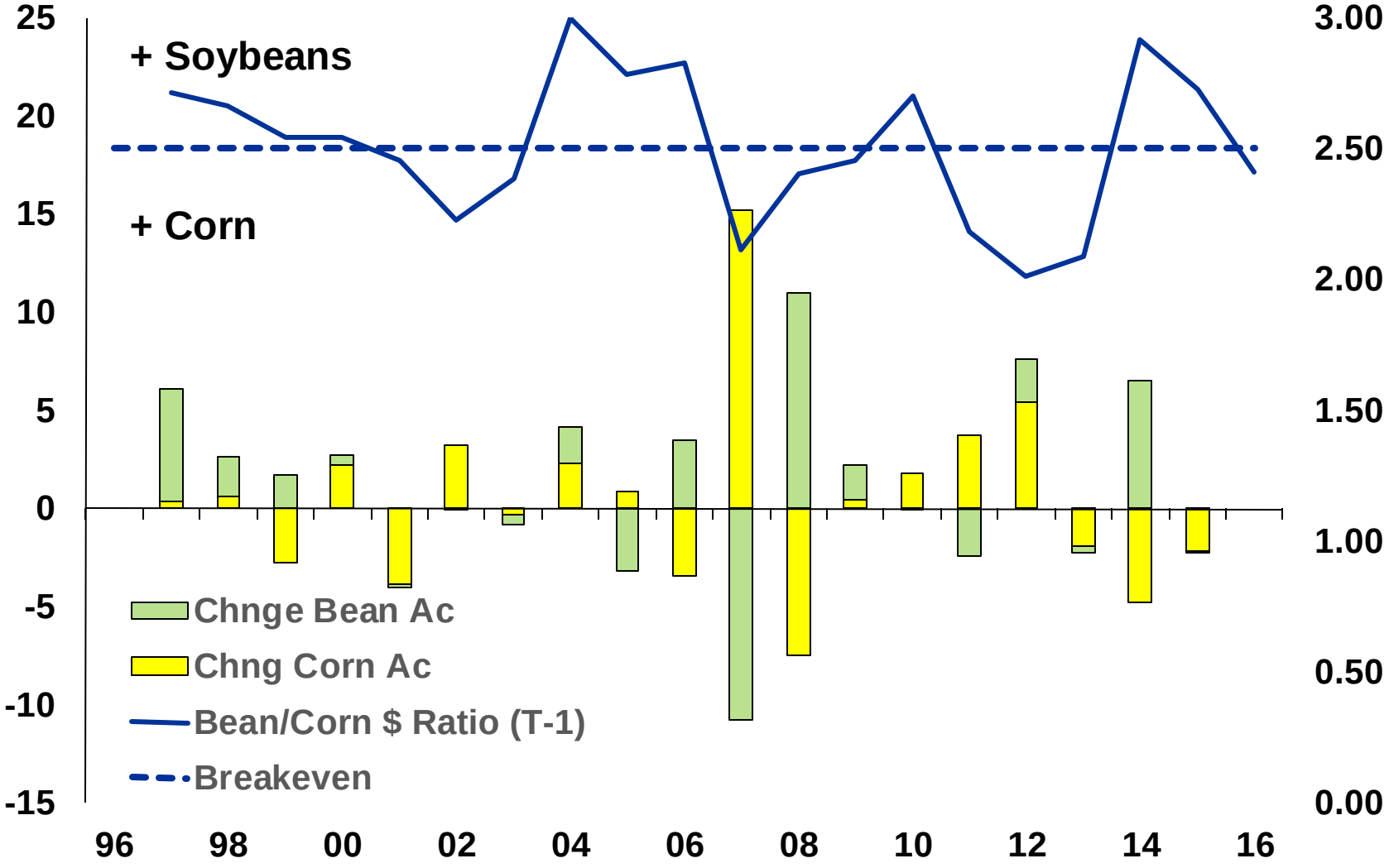
2016 Corn Budget
($/Acre)

	2013	2014	2015	2016
Revenue				
Yield	158.1	171.0	169.3	168.0
Avg Season Price	4.46	3.70	3.65	3.50
Gross Revenue	705	633	618	588
Operating costs:				
Seed	98	101	102	103
Fertilizer	153	149	136	128
Chemicals	29	29	28	27
Custom operations	18	18	19	19
Fuel, lube, and electricity	32	33	24	26
Other	26	26	27	28
Total operating costs	356	357	335	330
Returns over op costs	350	276	283	258
Rental Value	168	176	179	181
Full Cash Cost	652	665	649	650
Returns over full costs	53	-32	-31	-62

What to cut?

Source: USDA, NPKFAS

2016 Acreage Outlook – Bean/Corn Ratio



Source: USDA, NPKFAS

Corn Acreage in 2016 Expected to Move Back to 90 Million

USDA Estimates/NPKFAS Forecasts				
	2013/14	2014/15*	2015/16*	2016/17*
ACREAGE				
Planted Acreage (mmac)	95.4	90.6	88.4	90.5
Harvested Acreage (mmac)	87.5	83.1	80.7	83.5
Yield (bu/ac)	158.1	171.0	169.3	168.0
SUPPLY				
Beginning Stocks, Sept. 1	821	1,232	1,731	1,760
Production	13,829	14,216	13,654	14,028
Total Supply	14,686	15,479	15,415	15,803
USE				
Feed/Residual	5,040	5,315	5,300	5,350
Food/Seed/Industrial	6,493	6,568	6,555	6,650
Ethanol *	5,124	5,209	5,175	5,225
Total Domestic	11,534	11,884	11,855	12,000
Exports	1,920	1,864	1,800	1,850
Total Use	13,454	13,748	13,655	13,850
Ending Stocks	1,232	1,731	1,760	1,953
Stocks-to-Use Ratio	9.2%	12.6%	12.9%	14.1%
Price ($/bu)	$4.46	$3.70	$3.65	$3.50

Source: USD

U.S. Crop Acreage
(MM Acres)

Crop Year:	2012	2013	2014	2015	2016	Change
Planted Acres						
Corn	97.3	95.4	90.6	88.4	90.5	2.1
Soybeans	77.2	76.8	83.3	83.2	80.0	-3.2
Wheat	55.7	56.2	56.8	54.6	55.0	0.4
Cotton	12.3	10.4	11.0	8.6	9.8	1.2
4 Major Crops						
Other	83.8	86.0	88.8	86.0	85.0	-1.0
Total	326.3	324.8	330.5	320.8	320.3	-0.5

Source: USDA, NPKFAS

Fertilizer Demand Outlook

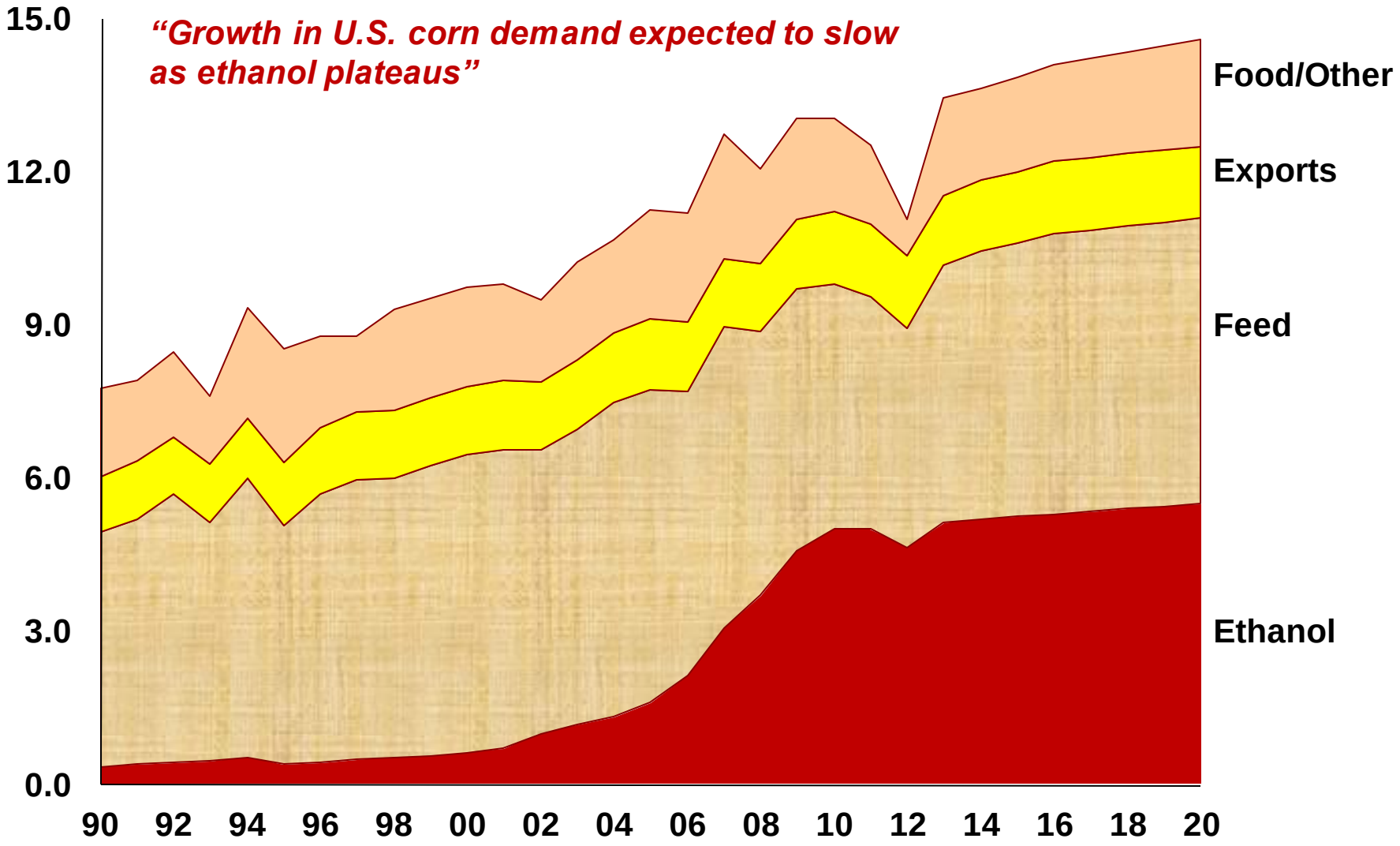
(mm Nutrient Tons)

"Forecast assumes return to average application rates, but rates could be lower for both P and K"

	N	P	K	Total
FY10	12,233	4,161	4,460	20,854
FY11	12,814	4,295	4,570	21,680
FY12	13,497	4,354	4,628	22,478
FY13	13,365	4,331	4,606	22,302
FY14	13,161	4,232	4,513	21,906
FY15	12,922	4,007	4,185	21,114
FY16	13,239	4,276	4,506	22,021
% Change	2.5%	6.7%	7.7%	4.3%

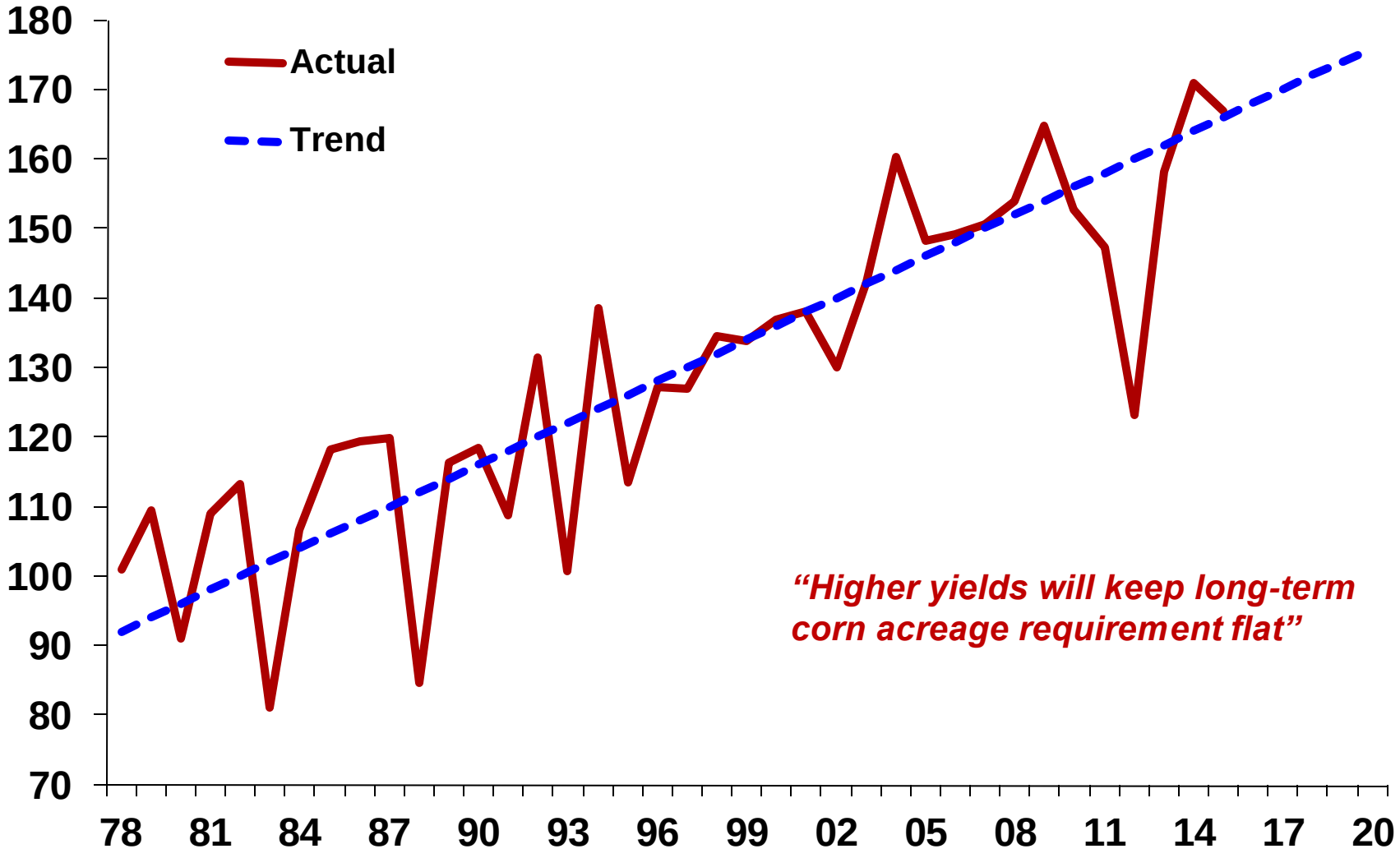
Source: AAPFCO, NPKFAS

Outlook for U.S. Corn Demand
(Billion Bushels)



Source: USDA, NPKFAS

Increasing Corn Yields Expected to Offset the Growth in Demand *(Bu/Acre)*



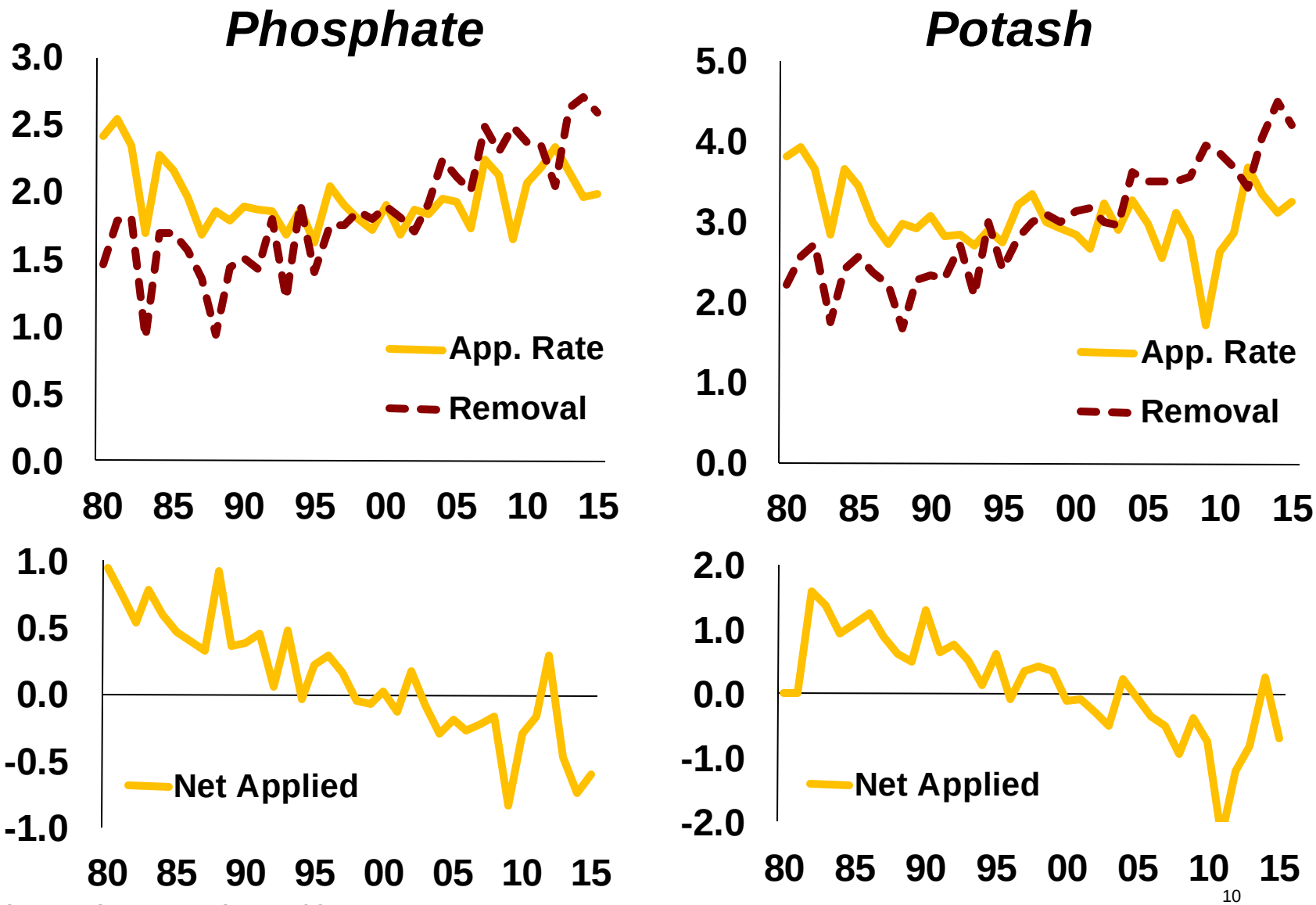
Source: USDA, NPKFAS

Longer-Term Acreage is Expected to Remain Relatively Flat

	U.S. Acreage (mmac)					
Crop Year:	**2012**	**2013**	**2014**	**2015**	**2016**	**2020**
Planted Acres						
Corn	**97.3**	**95.4**	**90.6**	**88.4**	**90.5**	**91.0**
Soybeans	**77.2**	**76.8**	**83.3**	**83.2**	**80.0**	**81.0**
Wheat	**55.7**	**56.2**	**56.8**	**54.6**	**55.0**	**53.0**
Cotton	**12.3**	**10.4**	**11.0**	**8.6**	**9.8**	**9.8**
4 Major Crops	**242.5**	**238.8**	**241.7**	**234.8**	**235.3**	**234.8**
Other	**83.8**	**86.0**	**88.8**	**86.0**	**85.0**	**85.0**
Total	**326.3**	**324.8**	**330.5**	**320.8**	**320.3**	**319.8**

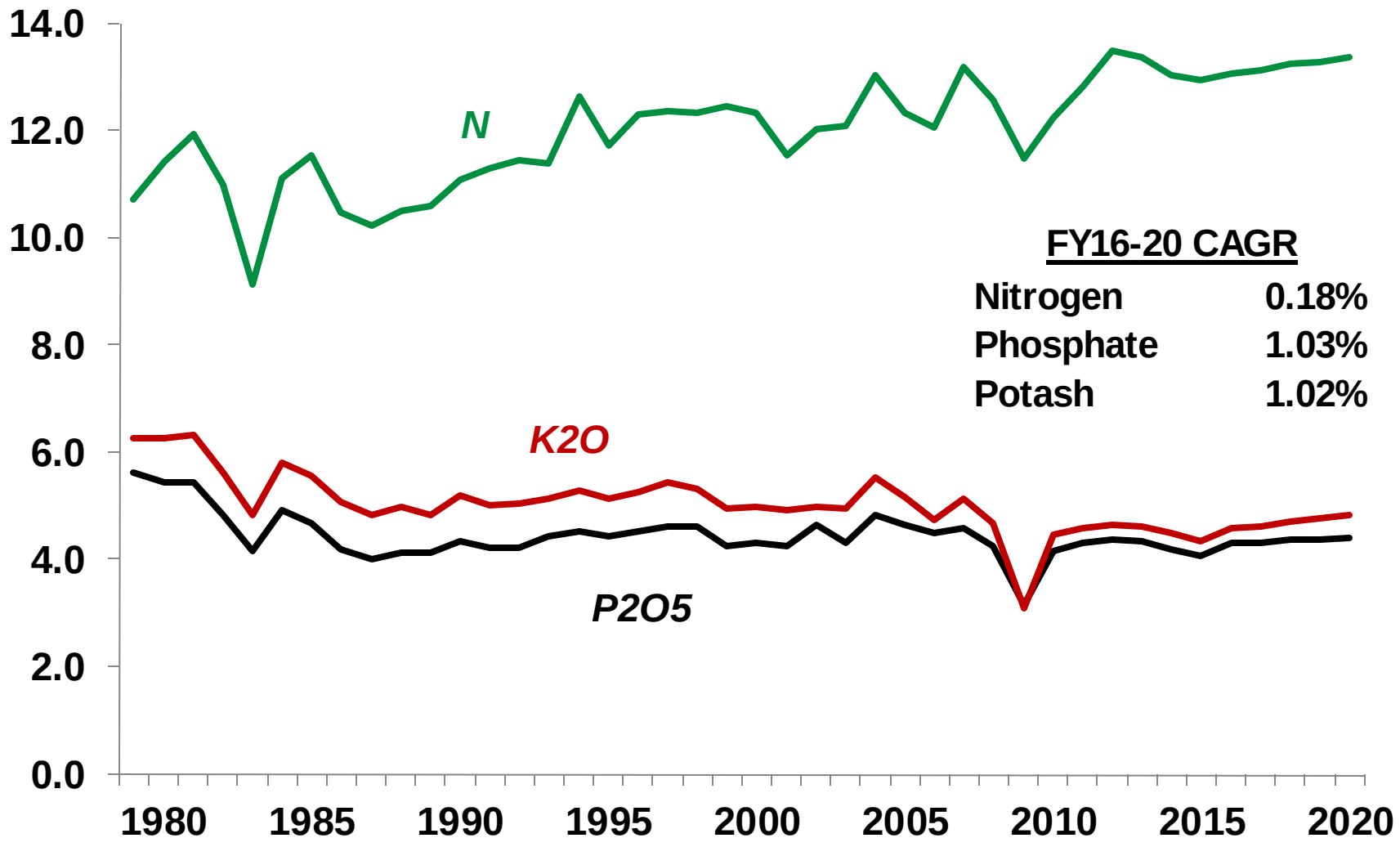
Source: USDA, NPKFAS

P&K Applied vs. Removed – Corn/Soybeans
(MM Tons of Nutrient)



Source: USDA, NPKFAS, AAPFCO, IPNI

U.S. Fertilizer Consumption
(MM Nutrient Tons)



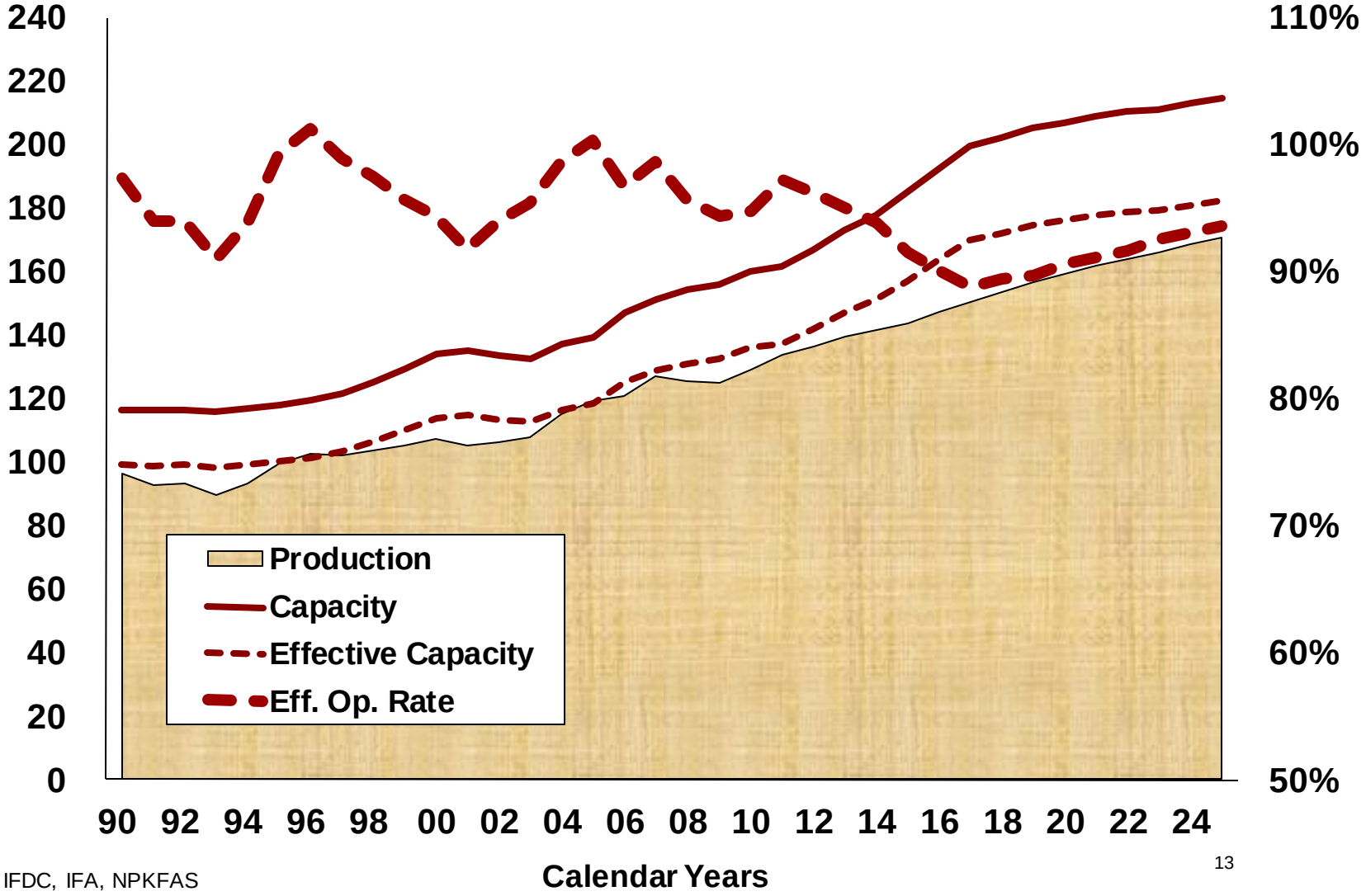
Source: USDA, NPKFAS

Nitrogen Outlook

World Nitrogen Supply/Demand

(Million Tonnes N)

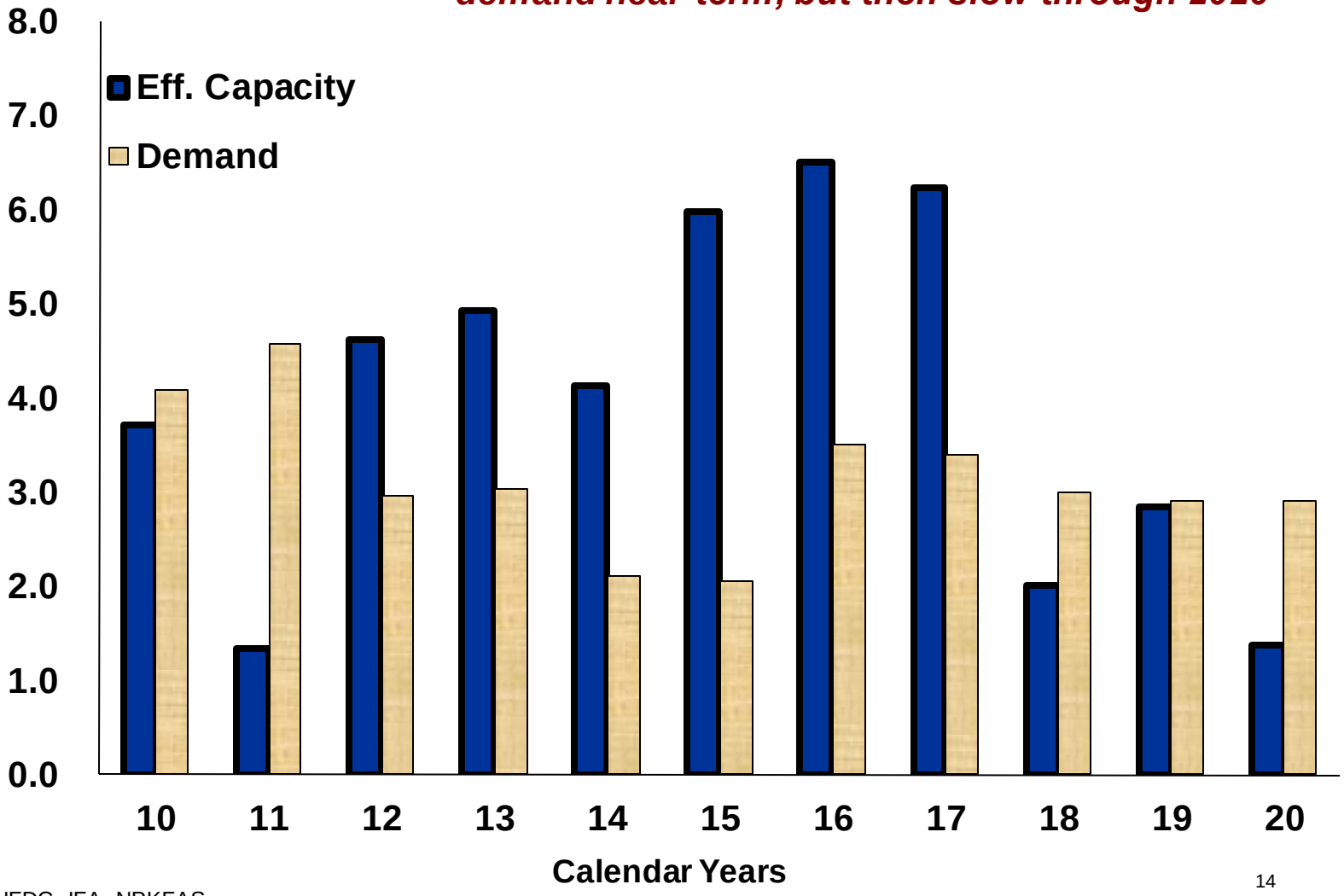
"World N balance is currently in a down cycle, but will begin to recover toward the end of the decade"



Source: IFDC, IFA, NPKFAS

Change in World Nitrogen Capacity vs. World Nitrogen Demand *(Million Tonnes N)*

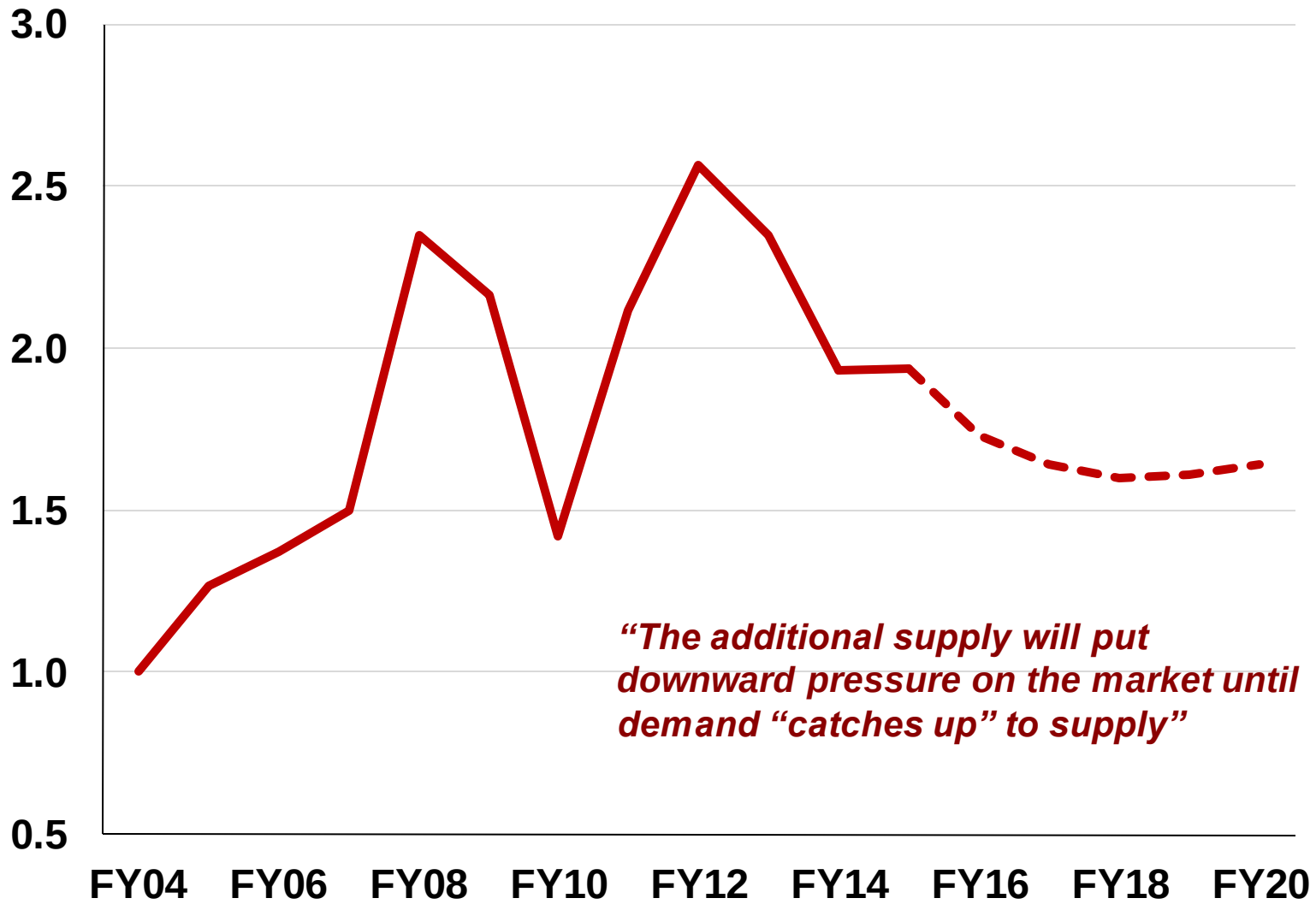
"Capacity is expected to continue to outpace demand near-term, but then slow through 2020"



Source: IFDC, IFA, NPKFAS

U.S. Nitrogen Price Index

Base = Avg. FY04 Prices



Source: NPKFAS

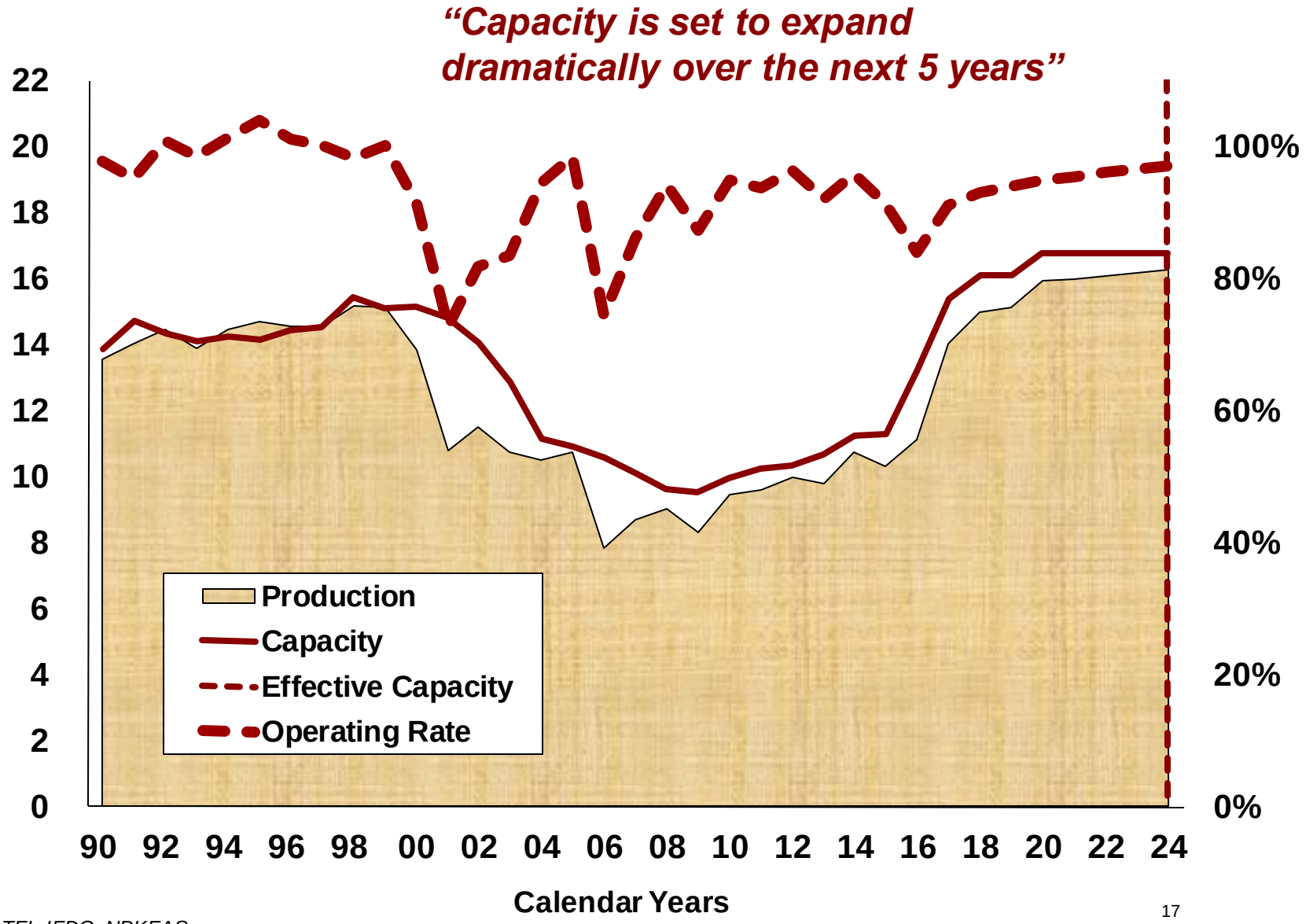
Expected U.S. Nitrogen Projects by 2020
(000 Product Tons/Year)

Company	Location		Capacity		
			Ammonia	Urea	UAN
New World Scale Capacity					
Definite/Under Construction					
CF	Donaldsonville	LA	1,274	1,348	1,768
CF	Port Neal	IA	849	1,348	0
OCI	Wever	IA	850	800	1,658
Dyno Nobel	Waggaman	LA	800	0	0
Simplot	Rock Springs	ID	210	0	0
Yara/BASF	Freeport	LA	840	0	0
LSB	El Dorado	AR	385	0	0
Under Construction			5,208	3,496	3,426
Exp/Conv./Debottlenecks					
BioNitrogen	Point Coupee	LA	106	182	0
BioNitrogen	Hardee	FL	106	182	0
Dakota Gas	Beulah	ND	0	400	0
Koch	Enid	OK	0	1,000	0
Koch	Beatrice	NE	46	0	0
Mosaic	Faustina	LA	100	0	0
OCI	Beaumont	LA	40	0	0
Agrium	Borger	TX	0	612	0
Rentech	E. Dubuque	IL	70	20	0
PCS Lima	Lima	OH	88	80	0
Total Exp/Conv./Deb.			556	2,476	0

Source: IFDC, IFA, Company Websites,

U.S. Nitrogen Supply/Demand

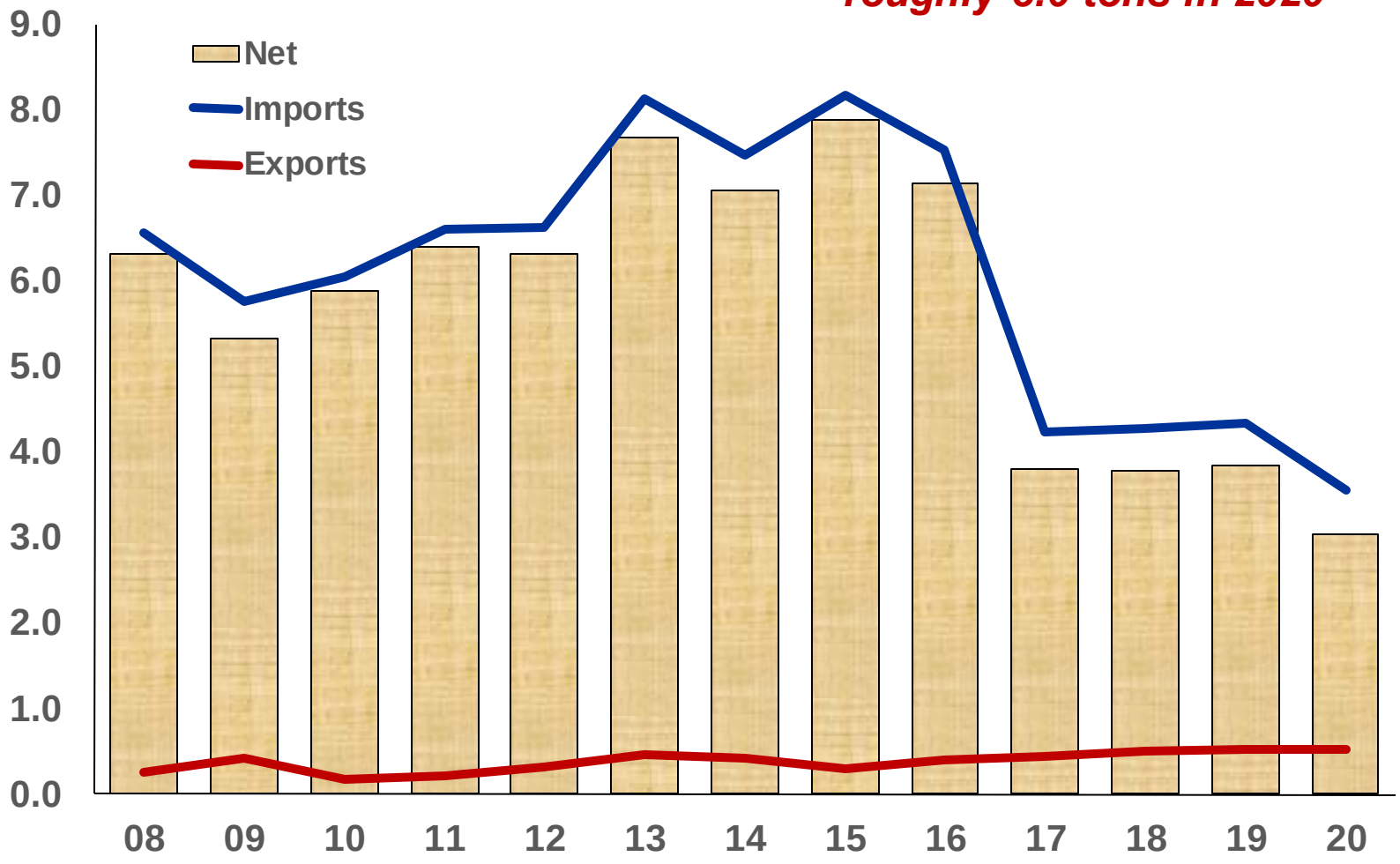
(Million Tonnes N)



Source: TFI, IFDC, NPKFAS

U.S. Urea Net Trade
(MM Product Tons)

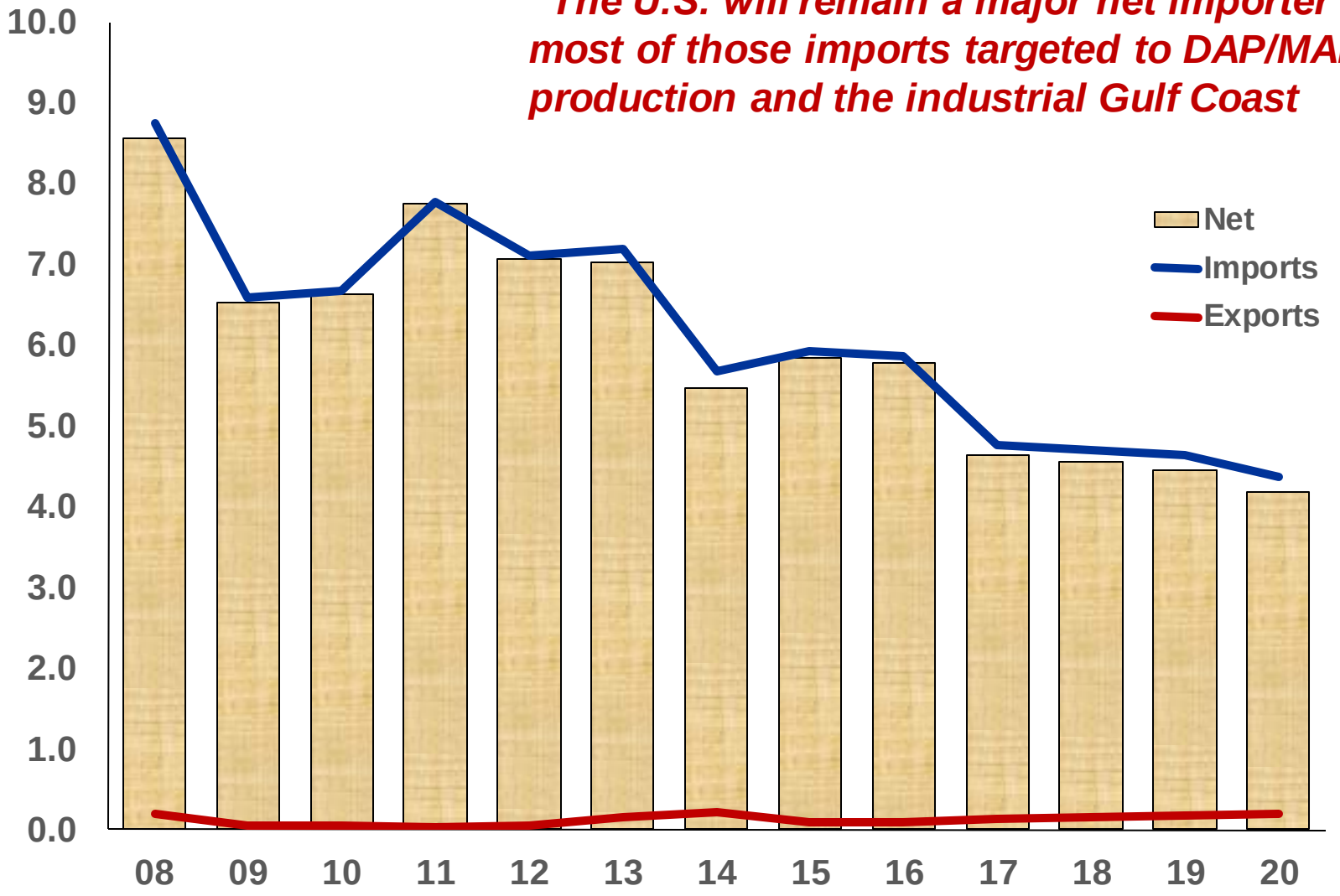
"New capacity will reduced U.S. import requirements from 7.5 to roughly 3.0 tons in 2020"



Source: USDOC, NPKFAS

U.S. Ammonia Net Trade
(MM Product Tons)

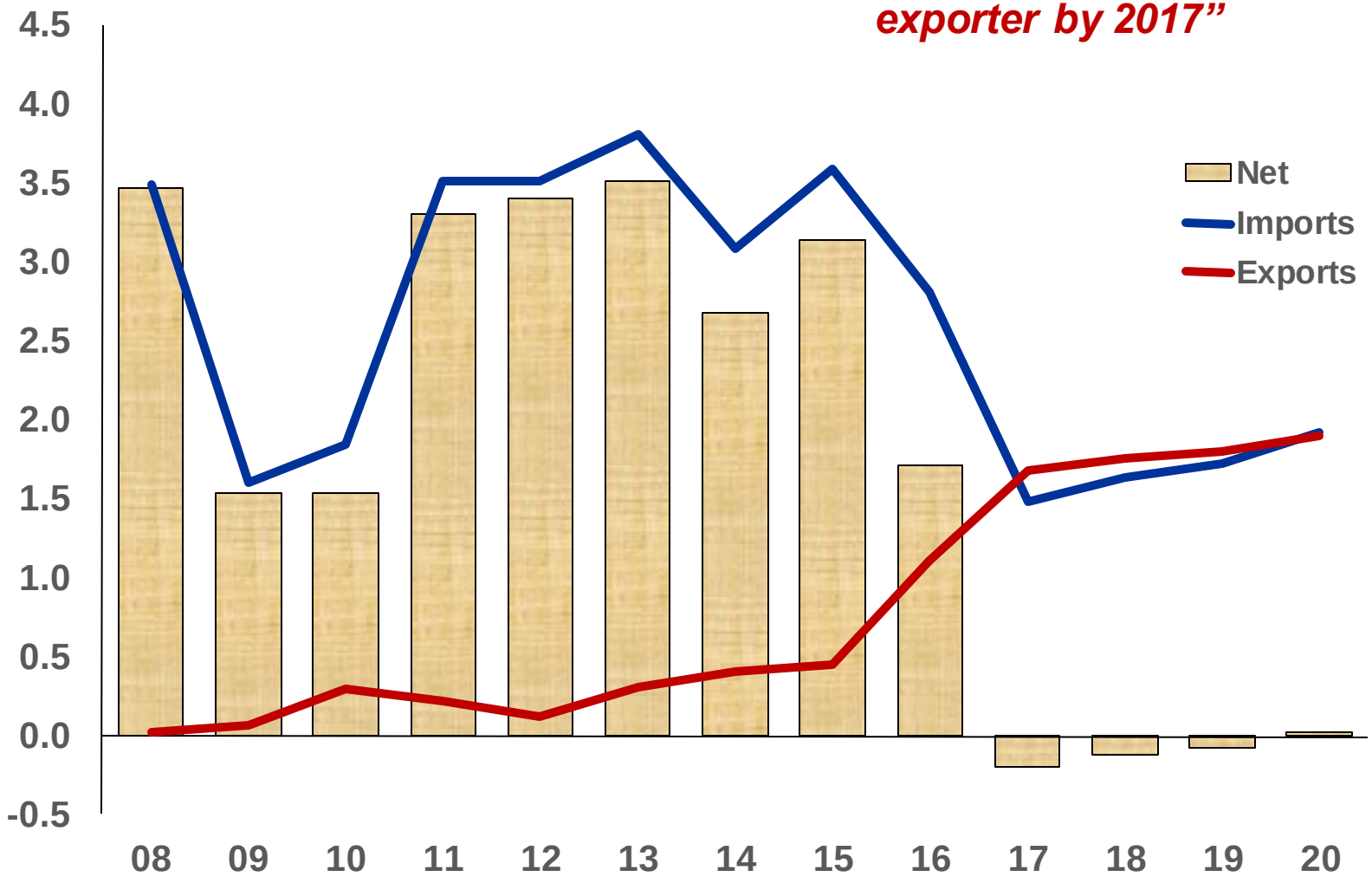
"The U.S. will remain a major net importer with most of those imports targeted to DAP/MAP production and the industrial Gulf Coast



Source: USDOC, NPKFAS

U.S. UAN Net Trade
(MM Product Tons)

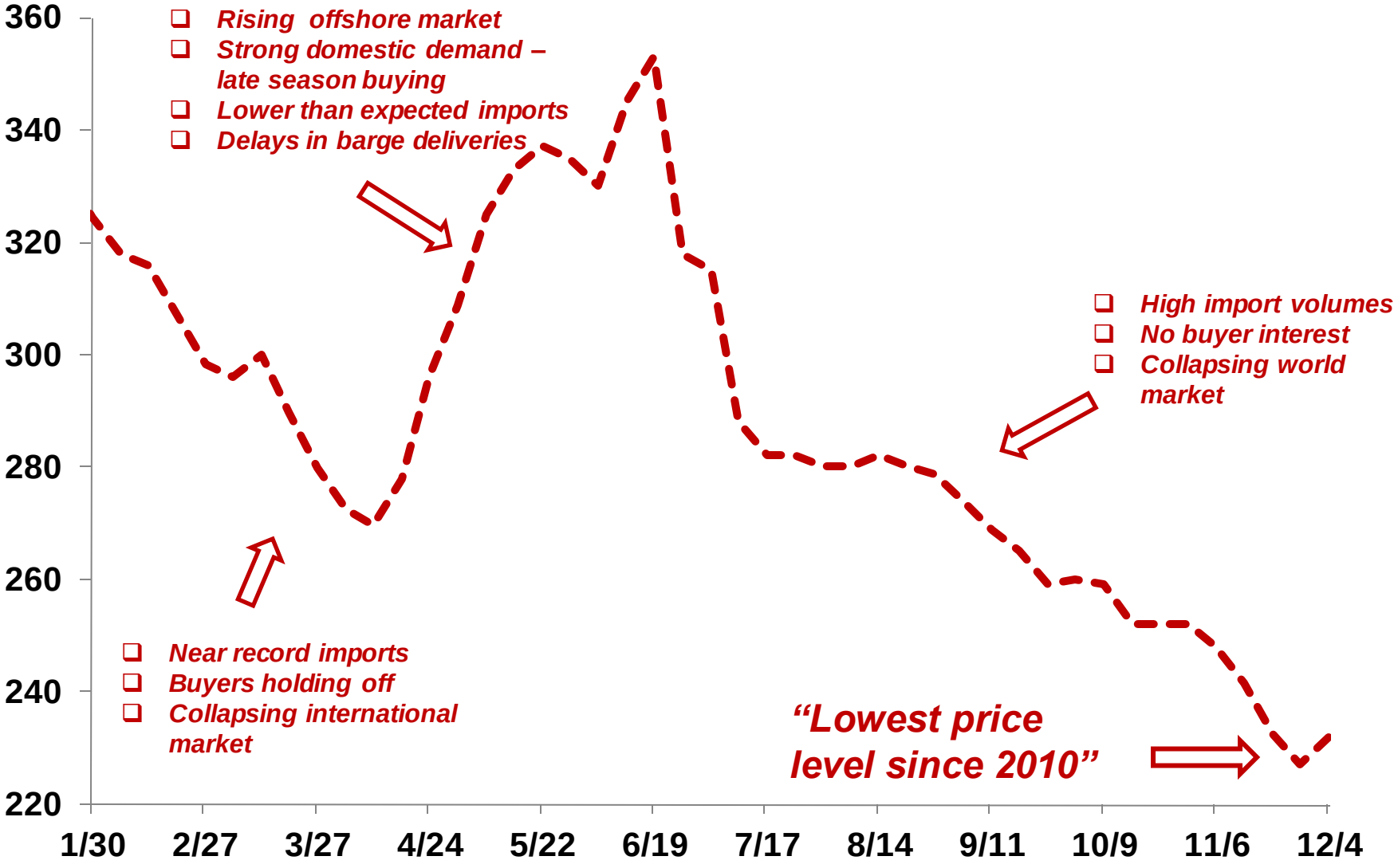
"U.S. is expected to move into a balanced to net exporter by 2017"



Source: USDOC, NPKFAS

U.S. Granular Urea Prices

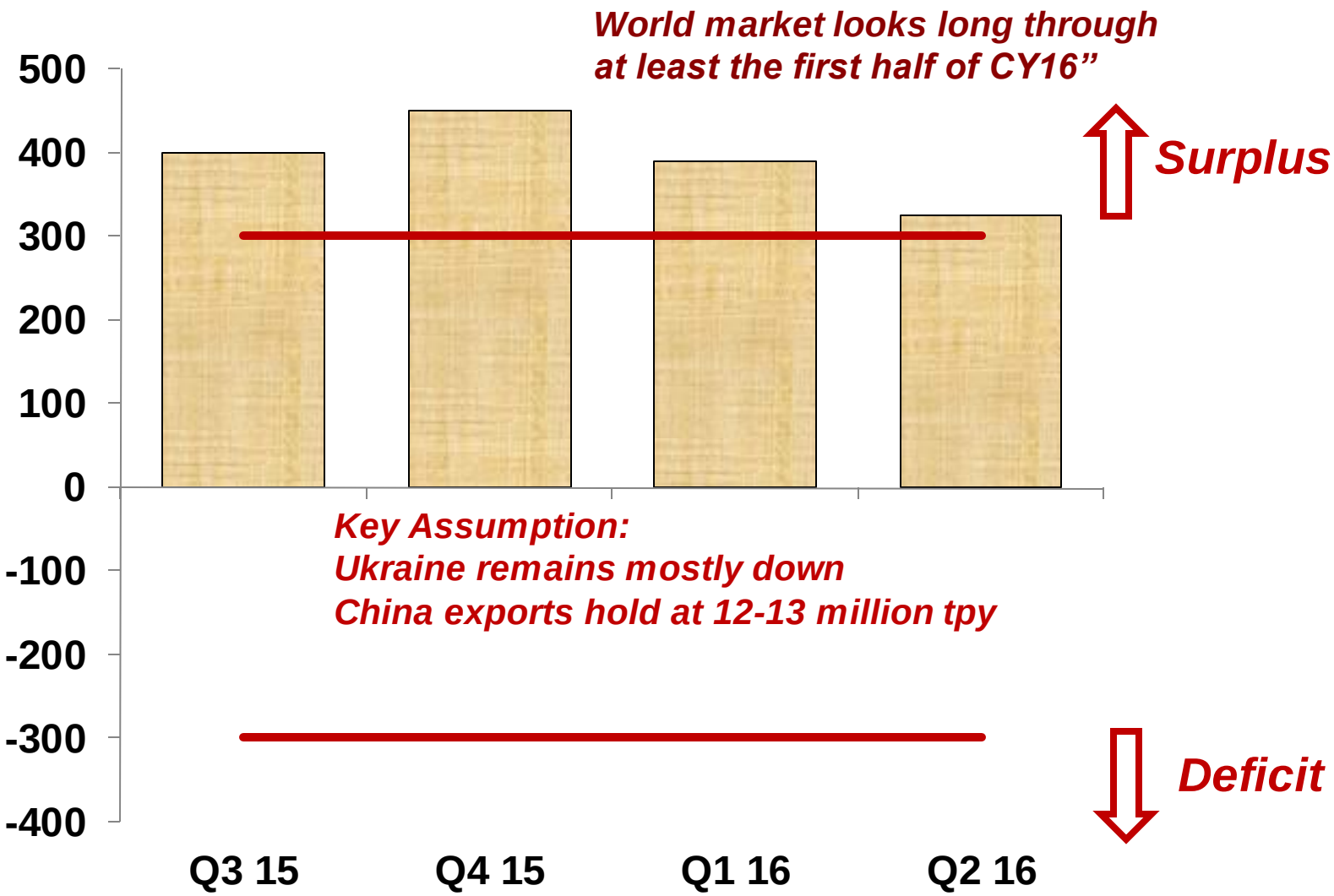
($/Ton)



Source: NPKFAS, Industry sources

World Urea Trade Balance

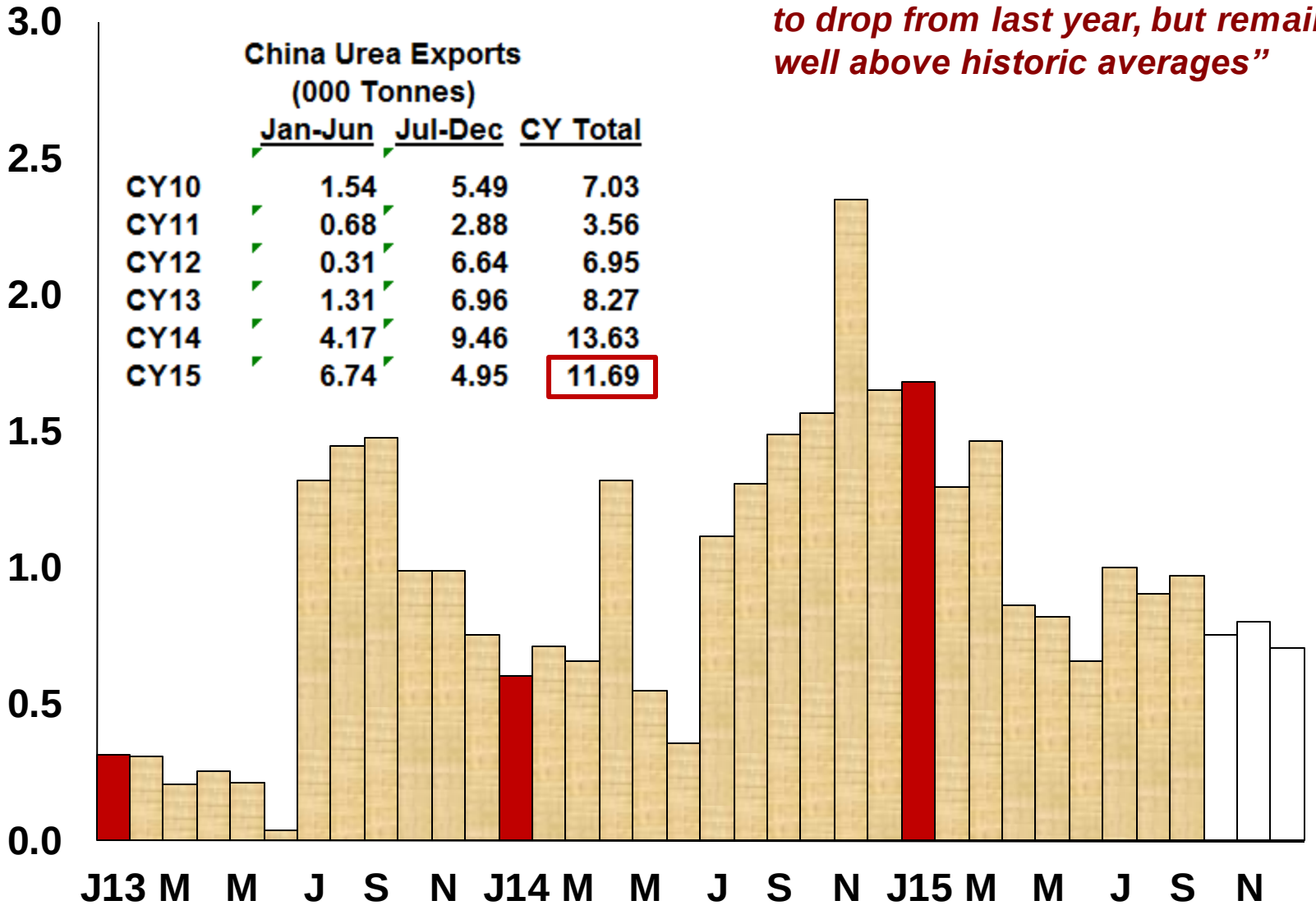
(Average Monthly Balance - 000 Tonnes)



Source: IFA, NPKFAS

China Urea Exports
(MM Product Tonnes)

Chinese exports in CY15 expected to drop from last year, but remain well above historic averages"



China Urea Exports
(000 Tonnes)

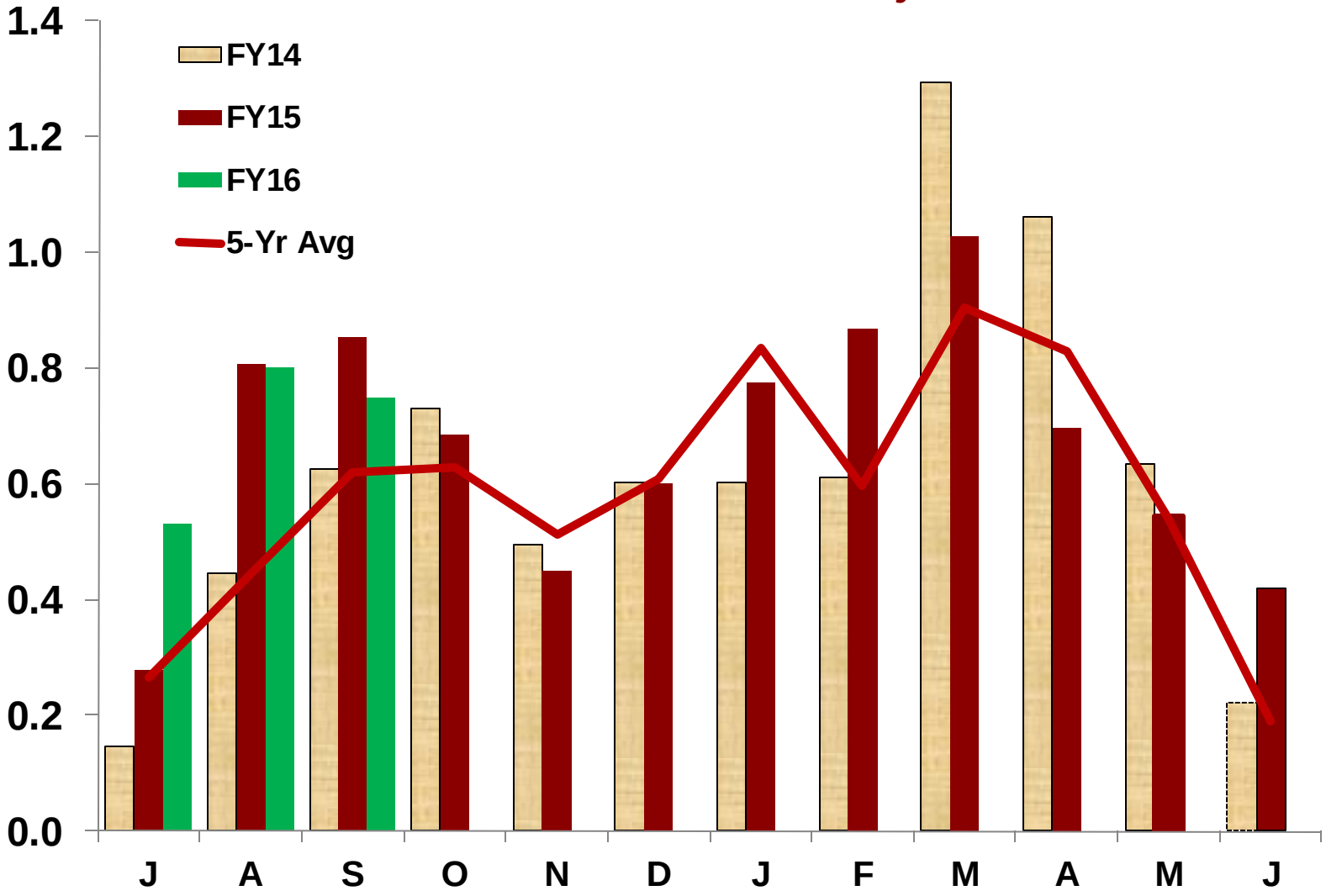
	Jan-Jun	Jul-Dec	CY Total
CY10	1.54	5.49	7.03
CY11	0.68	2.88	3.56
CY12	0.31	6.64	6.95
CY13	1.31	6.96	8.27
CY14	4.17	9.46	13.63
CY15	6.74	4.95	11.69

Source: Published Articles, Chinese sources, CNFIA

U.S. YTD Urea Imports

(July-January MM Tons)

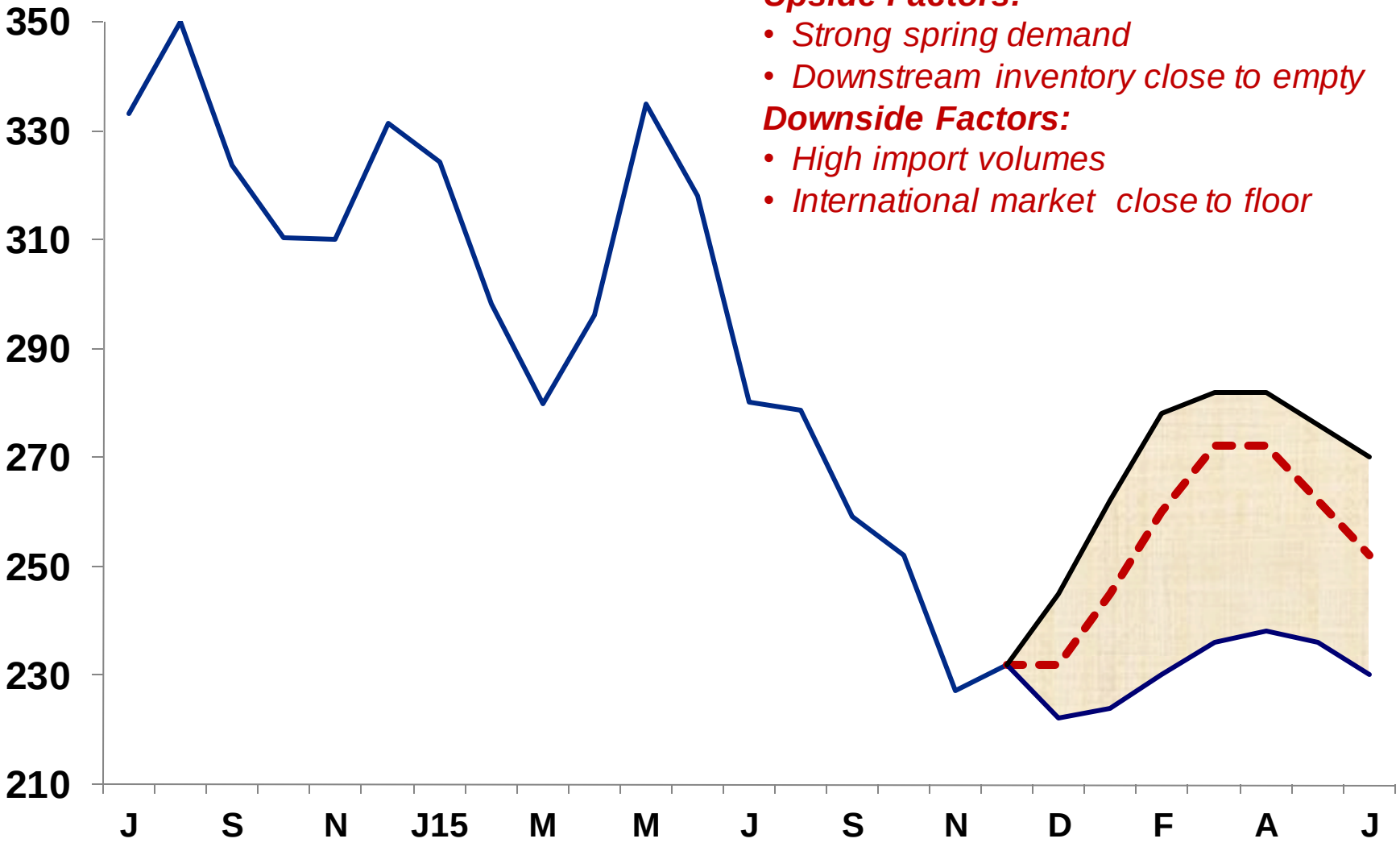
"Imports in FYQ1 above last year's record levels"



Source: TFI, USDOC, NPKFAS

Urea Price Forecast

Gulf Barge ($/Ton)



Upside Factors:

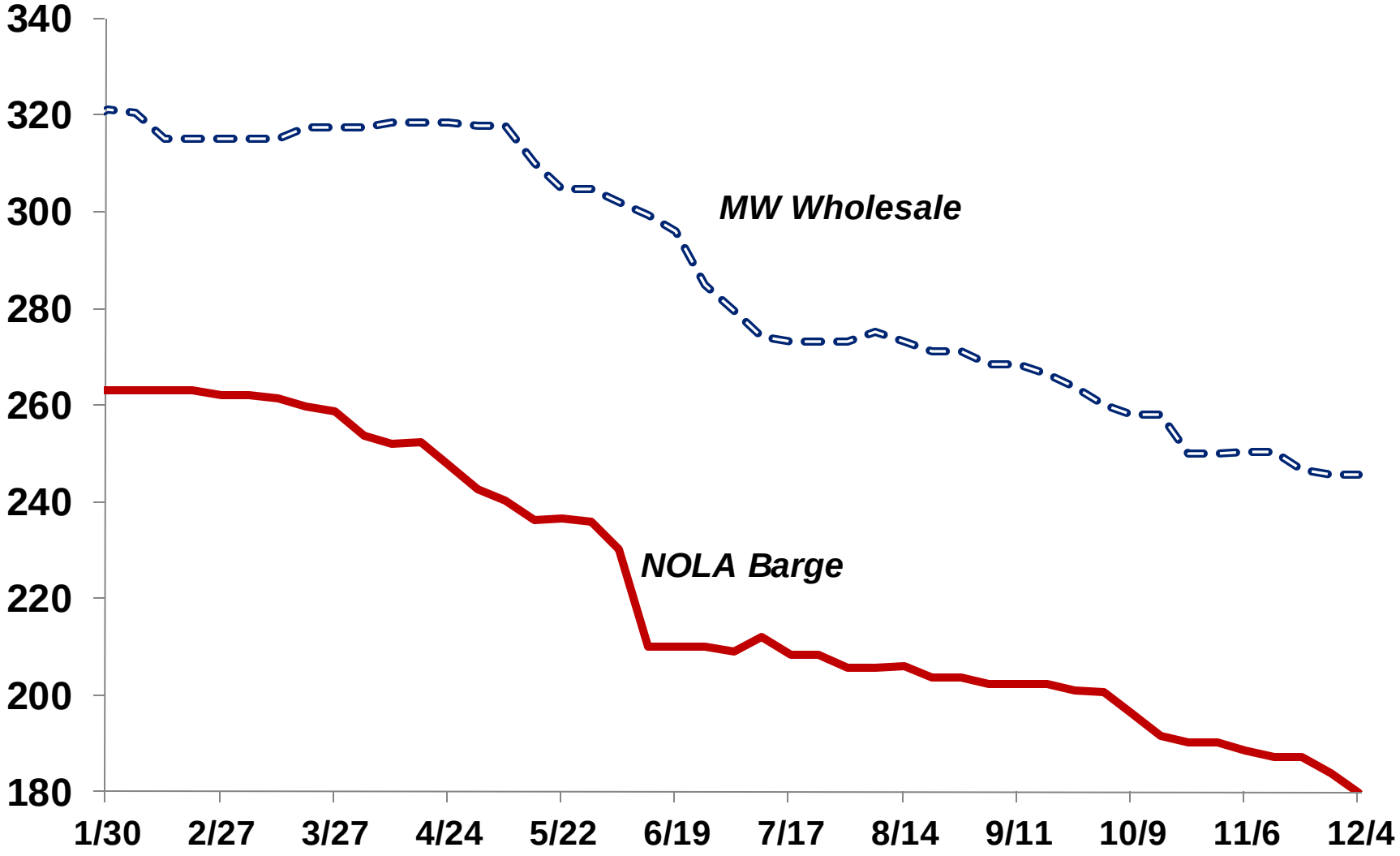
- *Strong spring demand*
- *Downstream inventory close to empty*

Downside Factors:

- *High import volumes*
- *International market close to floor*

Source: TFI, USDOC, NPKFAS

U.S. UAN Prices
($/Ton – 32% Equivalent)

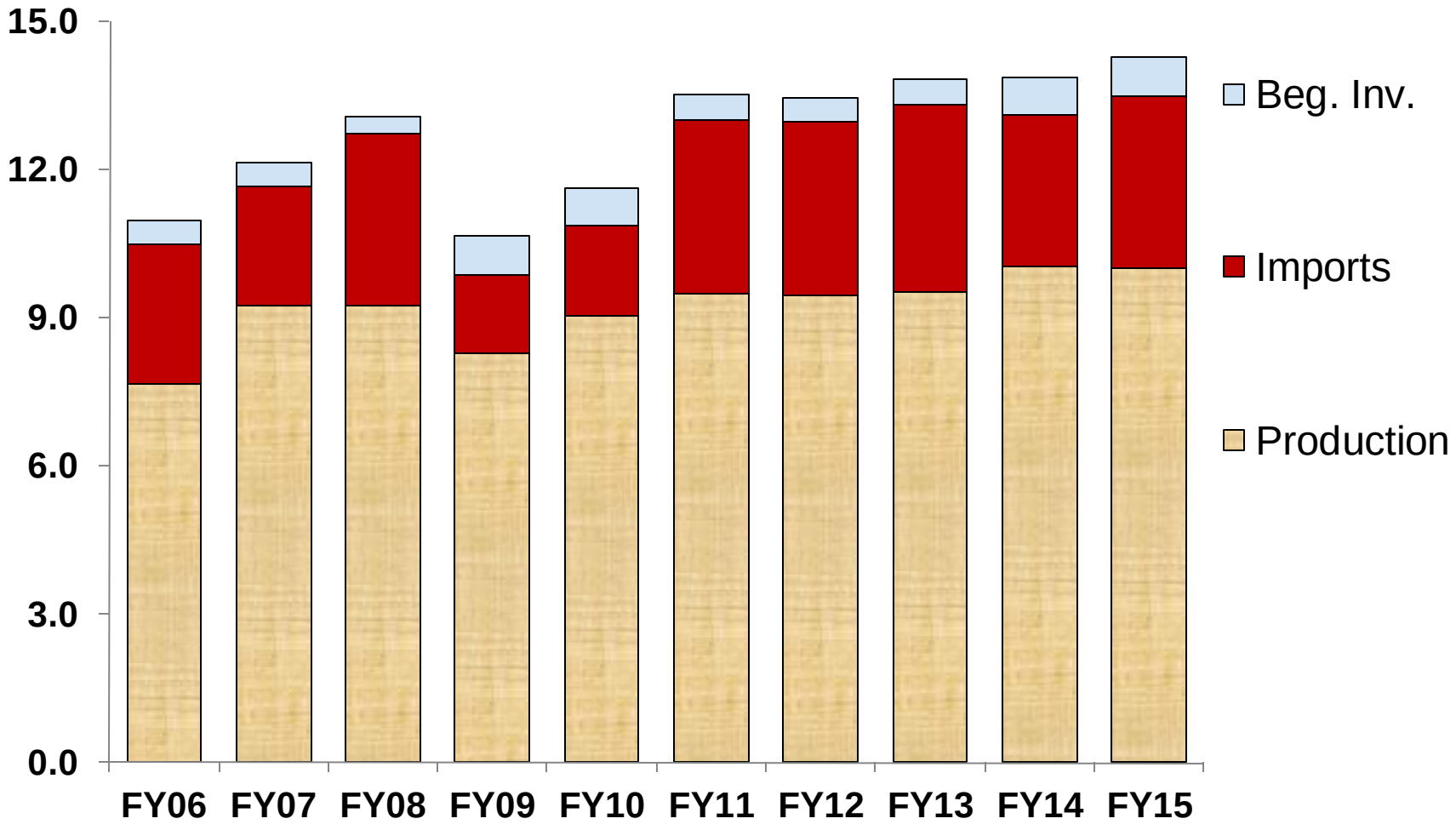


Source: Industry sources, NPKFAS

U.S. UAN Supply

(MM Tons – 32% Equivalent)

"In contrast to urea, U.S. production dominates supply balance"



Source: TFI, USDOC, NPKFAS

UAN Price Forecast

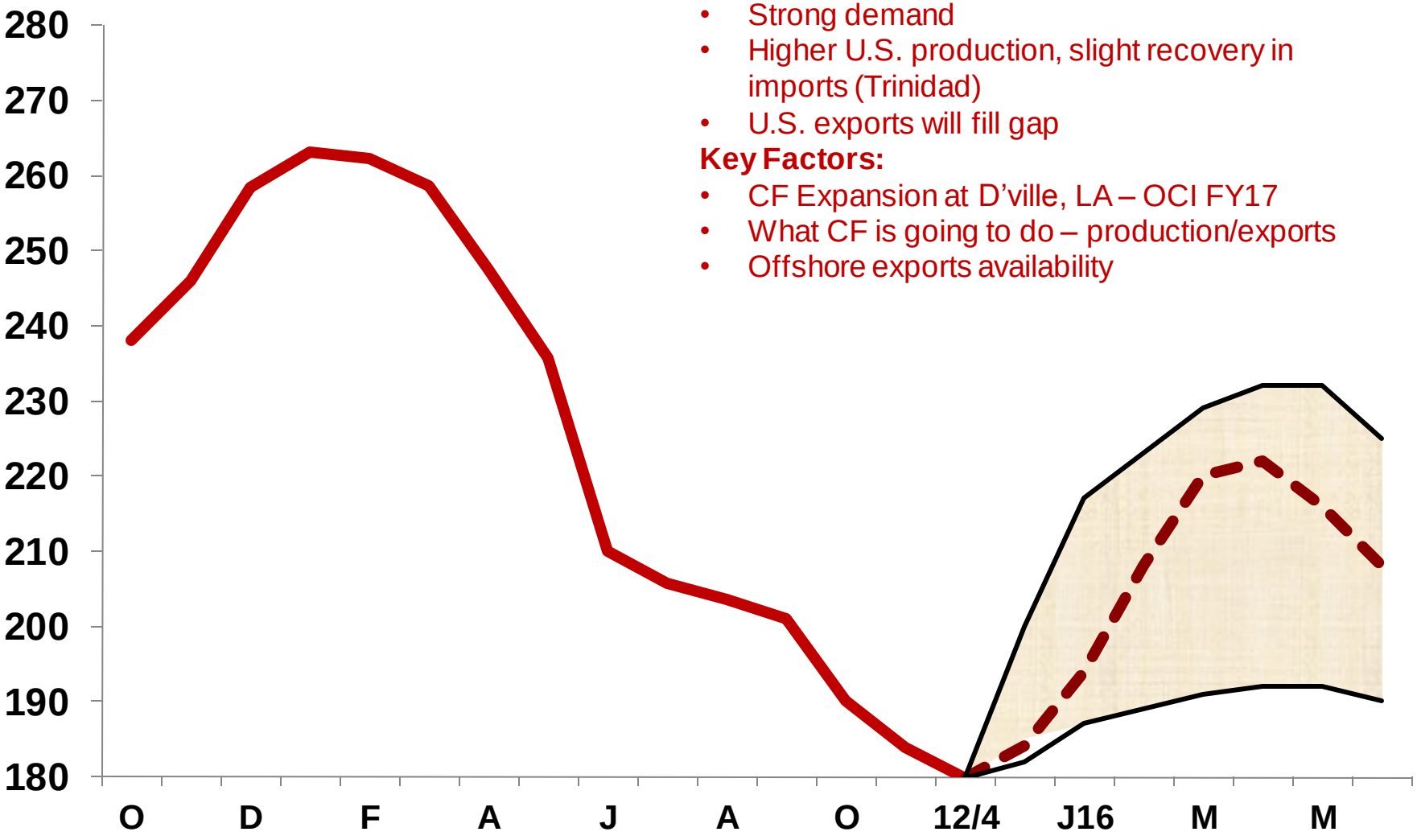
Gulf Barge ($/Ton)

S/D Factors:

- Strong demand
- Higher U.S. production, slight recovery in imports (Trinidad)
- U.S. exports will fill gap

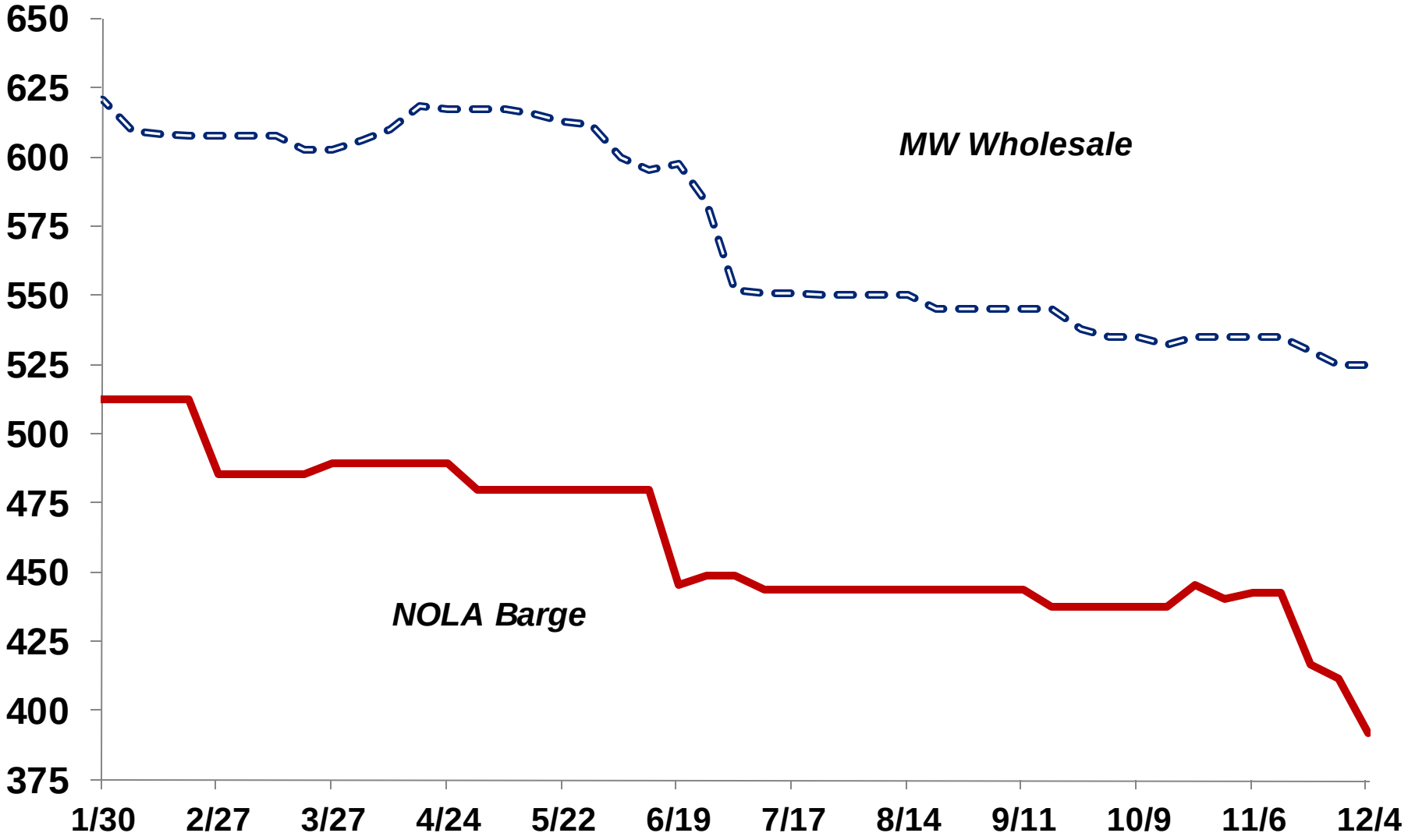
Key Factors:

- CF Expansion at D'ville, LA – OCI FY17
- What CF is going to do – production/exports
- Offshore exports availability



Source: NPKFAS

U.S. Ammonia Prices
($/Ton)



Source: NPKFAS, Industry sources

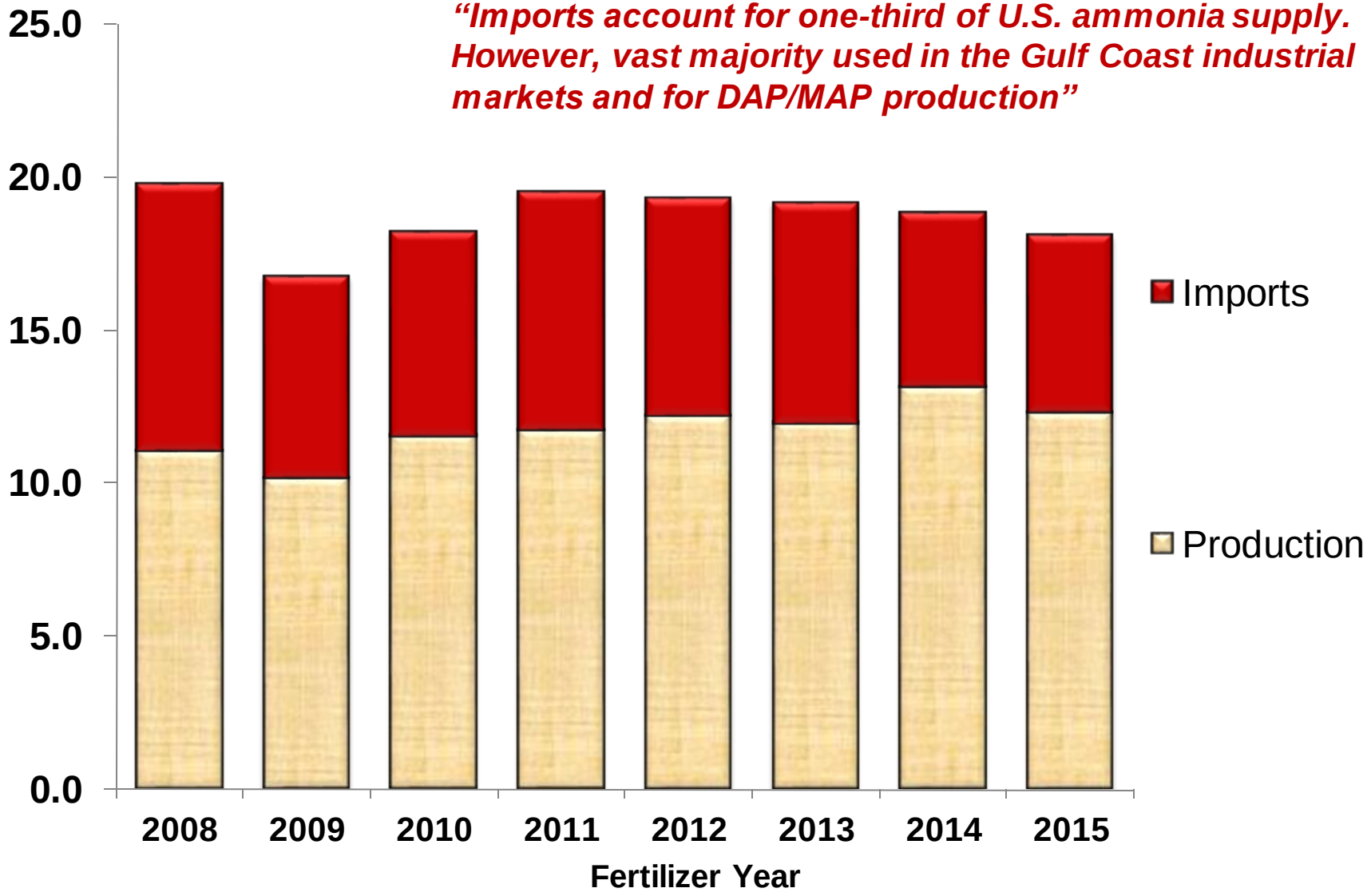
N.A. Ammonia Capacity is Dominated by Four Producers (000 tons)

FY Basis	2015	2016	2017	2015	2016	2017
CF	7,471	9,595	10,444	37%	42%	41%
Agrium	3,233	3,233	3,233	16%	14%	13%
Koch	2,567	2,703	2,703	13%	12%	11%
PCS	2,041	2,041	2,041	10%	9%	8%
Other	4,772	5,014	6,891	24%	22%	27%
Total N.A.	20,084	22,585	25,311	100%	100%	100%

Source: IFDC, IFA, NPKFAS

U.S. Ammonia Supply
(MM Tons)

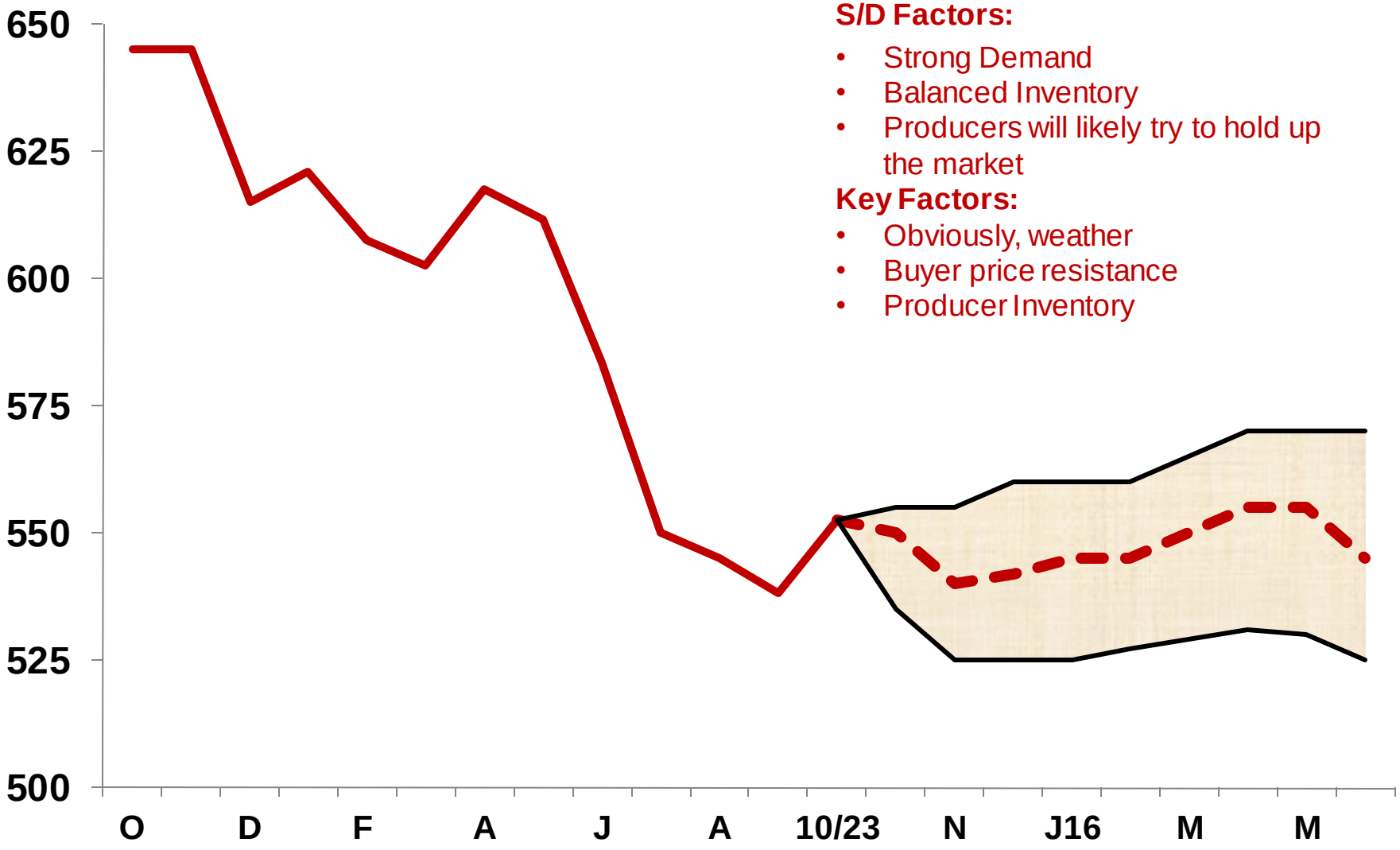
"Imports account for one-third of U.S. ammonia supply. However, vast majority used in the Gulf Coast industrial markets and for DAP/MAP production"



Source: TFI, USDOC, NPKFAS

Ammonia Price Forecast

End of Month - Midwest Wholesale ($/Ton)



S/D Factors:

- Strong Demand
- Balanced Inventory
- Producers will likely try to hold up the market

Key Factors:

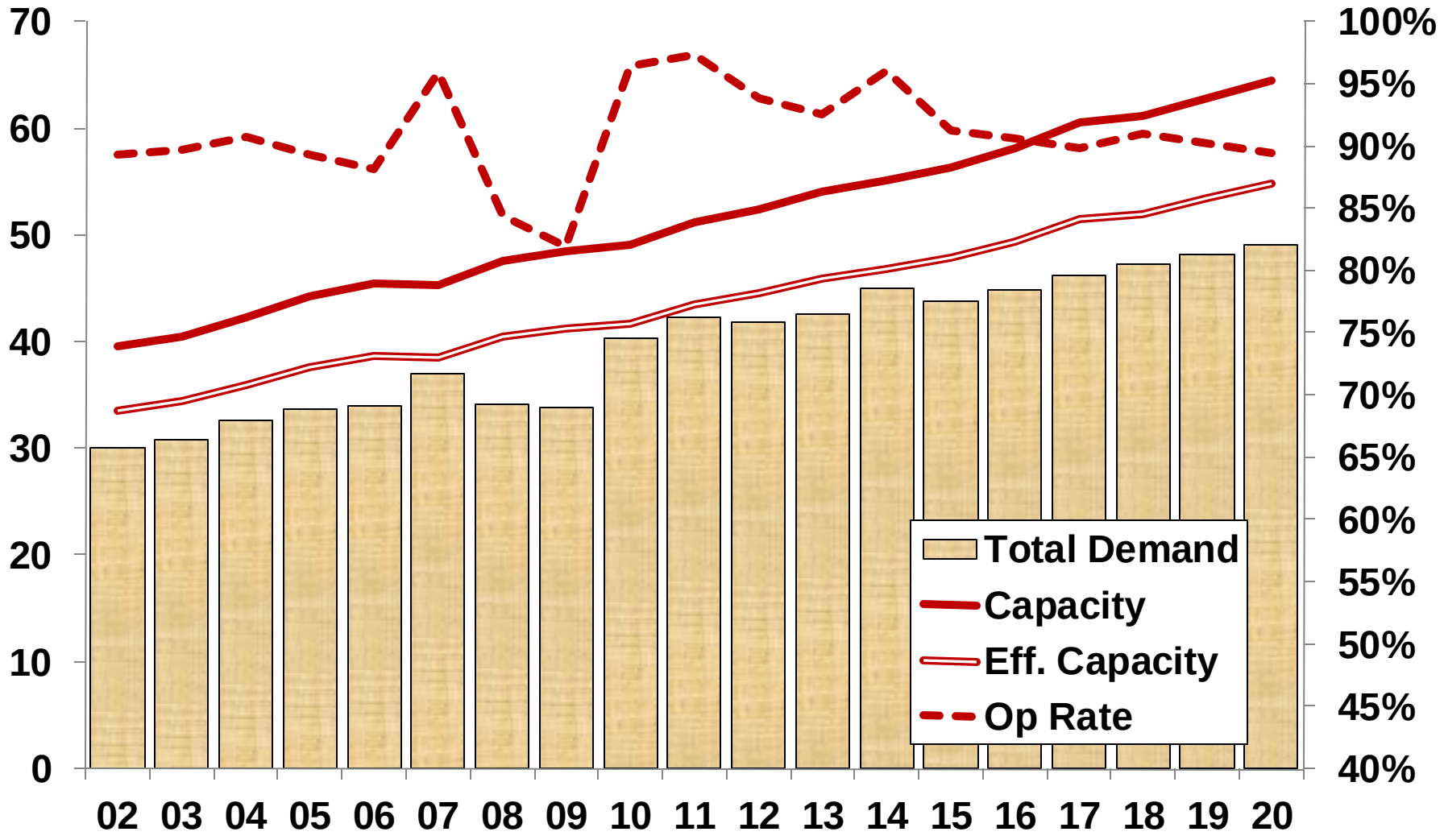
- Obviously, weather
- Buyer price resistance
- Producer Inventory

Source: NPKFAS

Phosphate Outlook

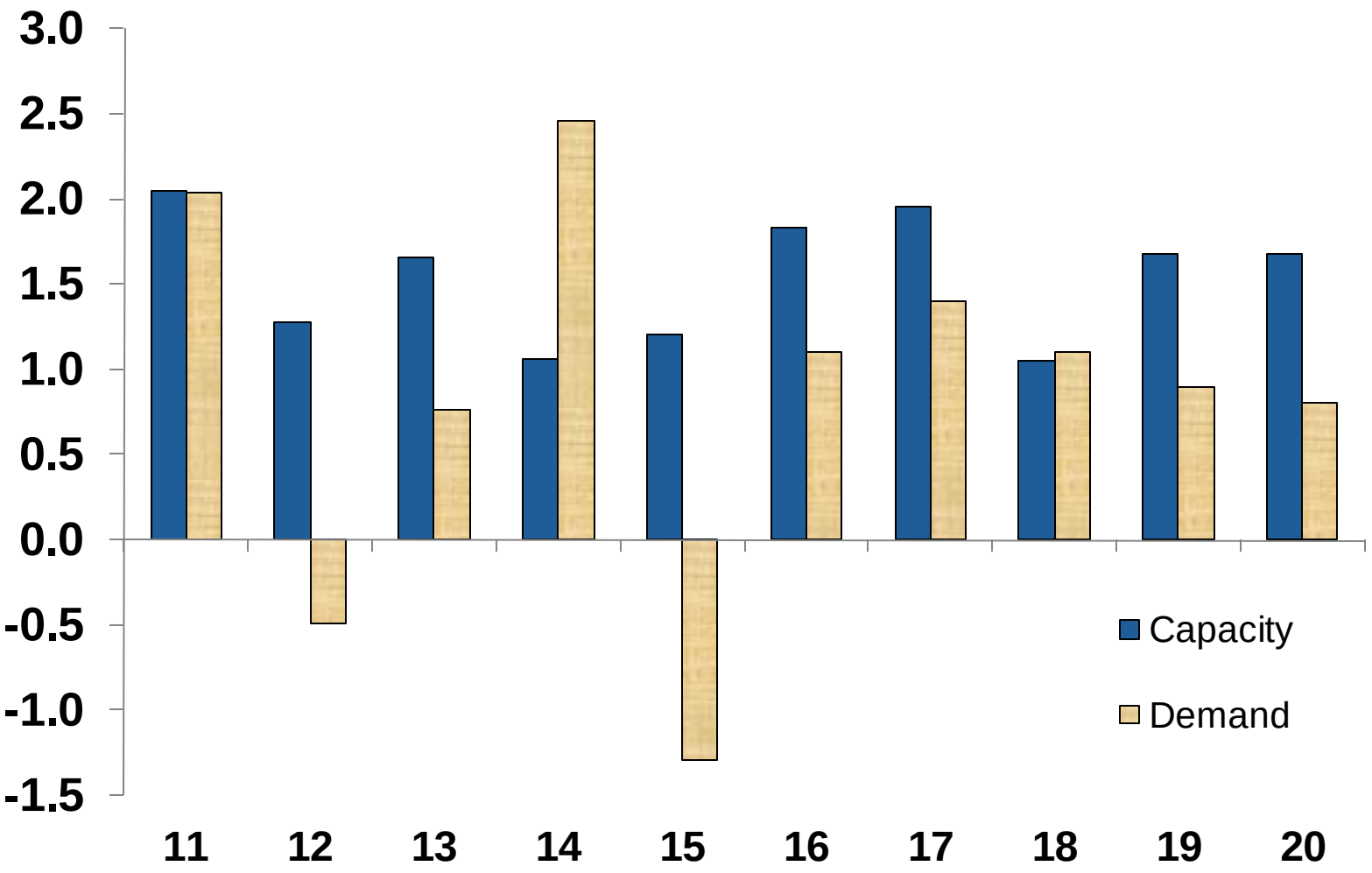
World Phos Acid Supply/Demand

(MM Tonnes P2O5)



Source: IFA, NPKFAS

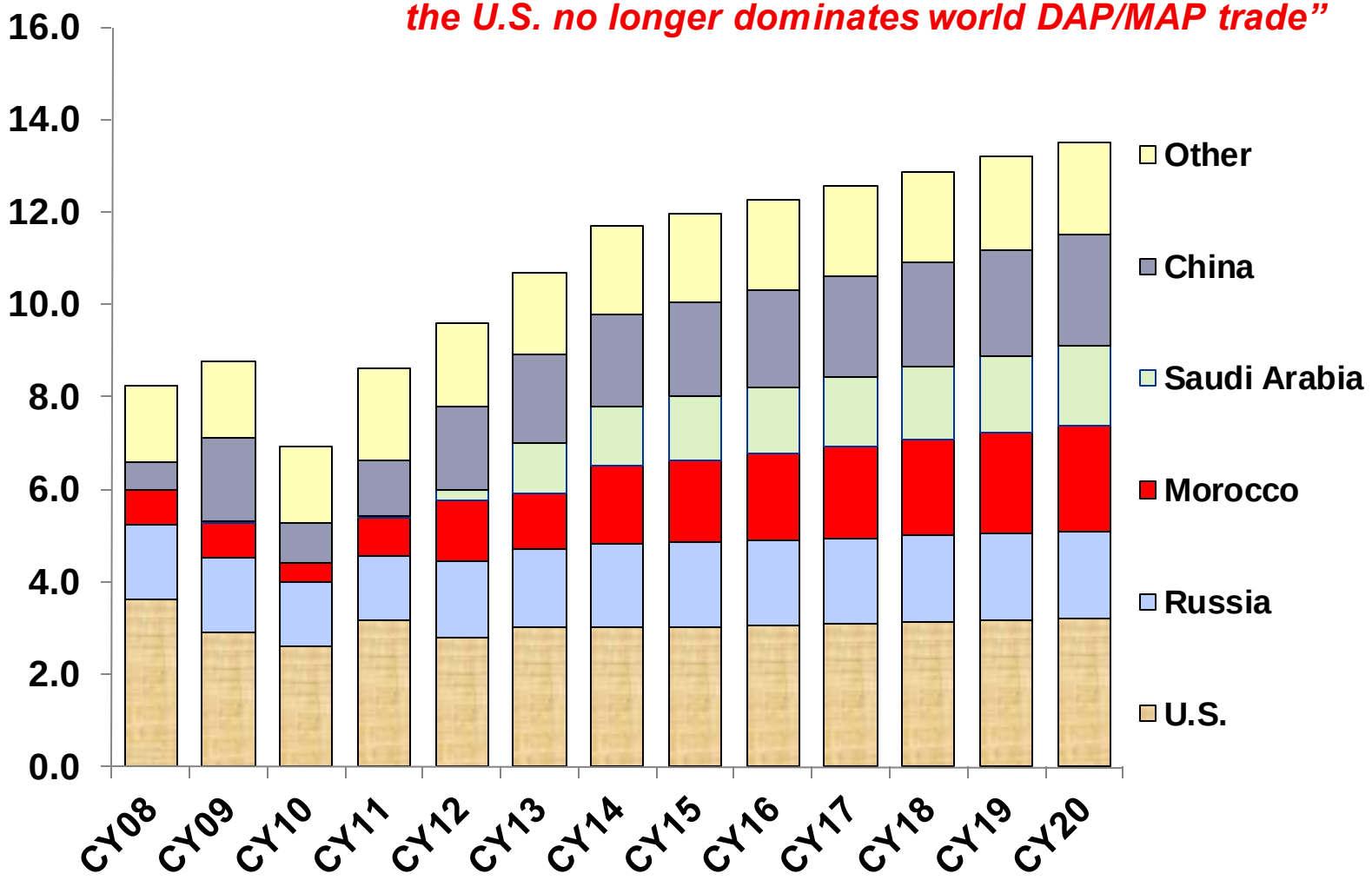
Change in World Phos Acid Capacity vs. Demand (MM Tonnes P2O5)



Source: IFA, NPKFAS

World DAP/MAP Exports
(MM Tonnes P2O5)

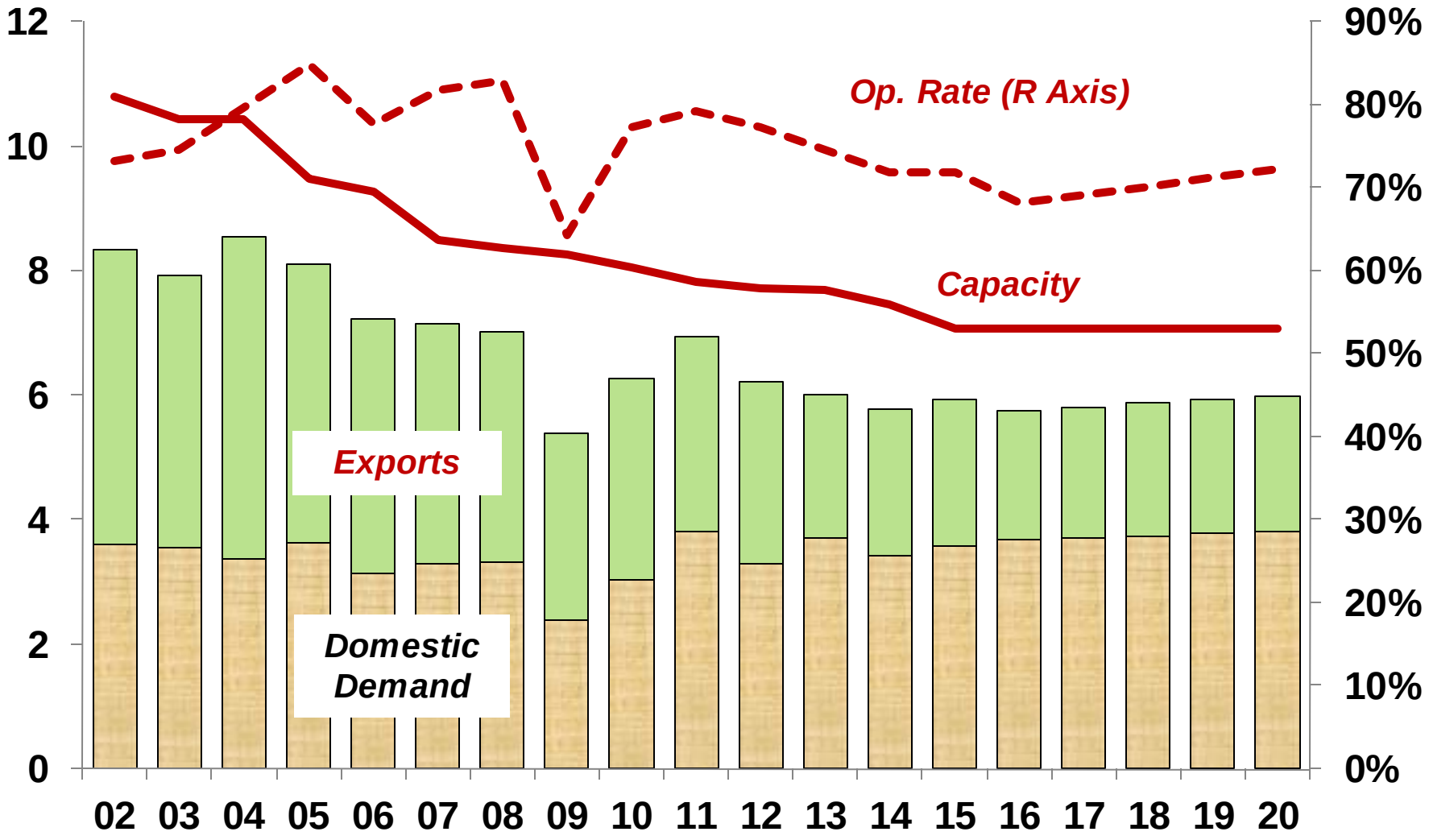
"Due to expansions in Morocco, Saudi Arabia and China, the U.S. no longer dominates world DAP/MAP trade"



Source: IFA, NPKFAS

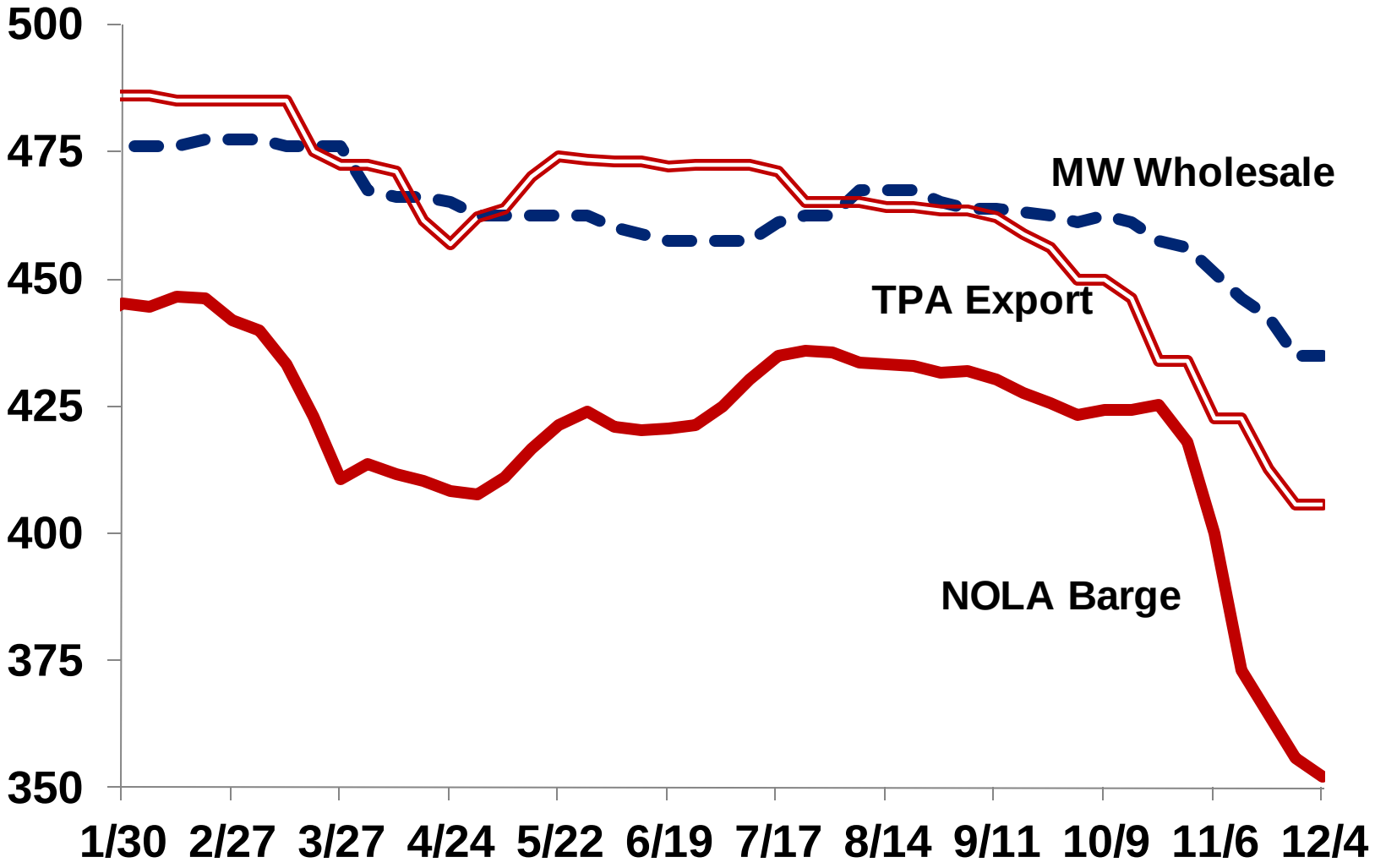
U.S. DAP/MAP Supply/Demand

(MM Tonnes P2O5)



Source: IFA, NPKFAS

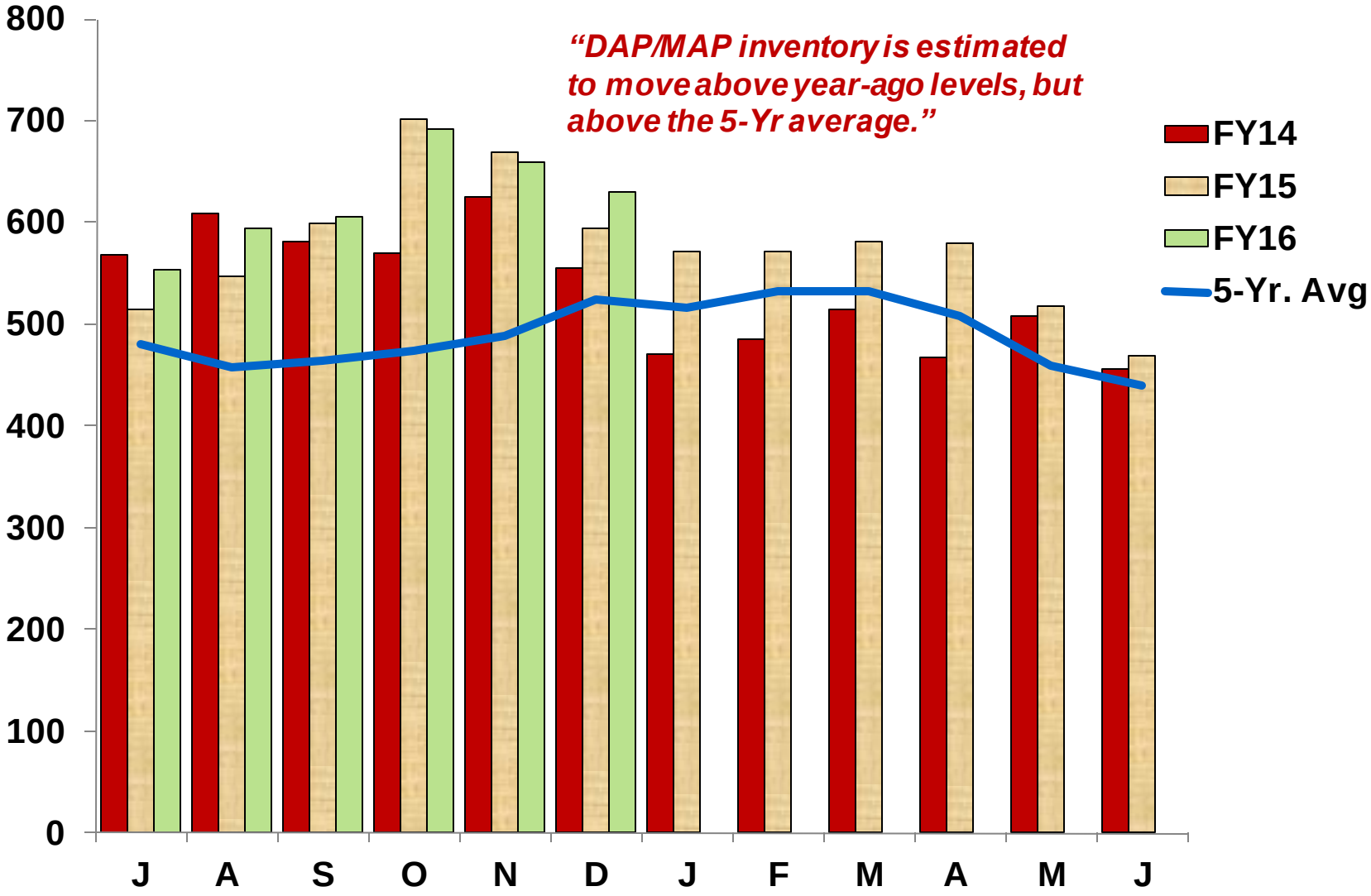
U.S. DAP Prices
($/Ton)



Source: NPKFAS, Industry sources

U.S. DAP/MAP Producer Inventory

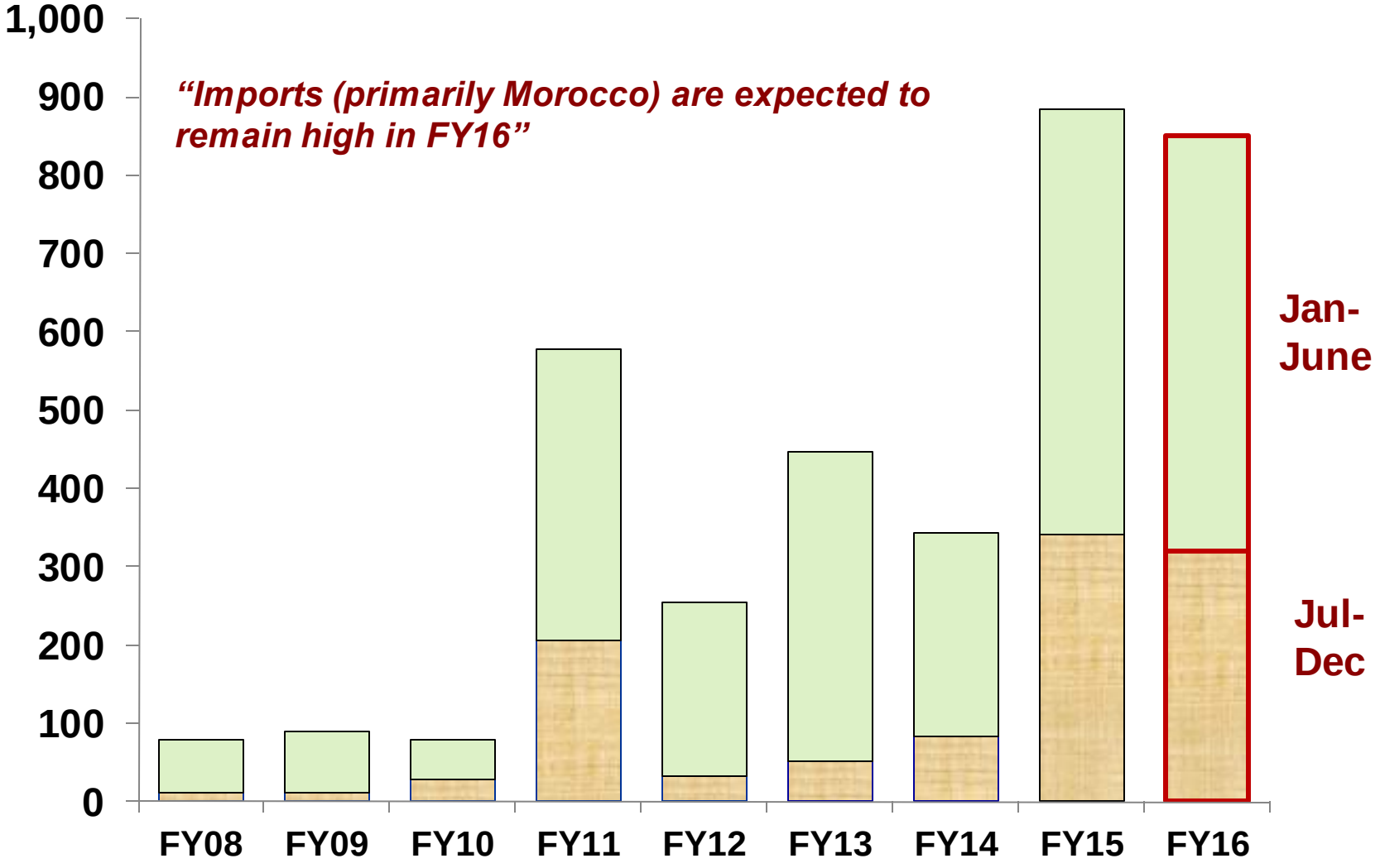
(000 Tons P2O5)



Source: TFI, NPKFAS

U.S. DAP/MAP Imports

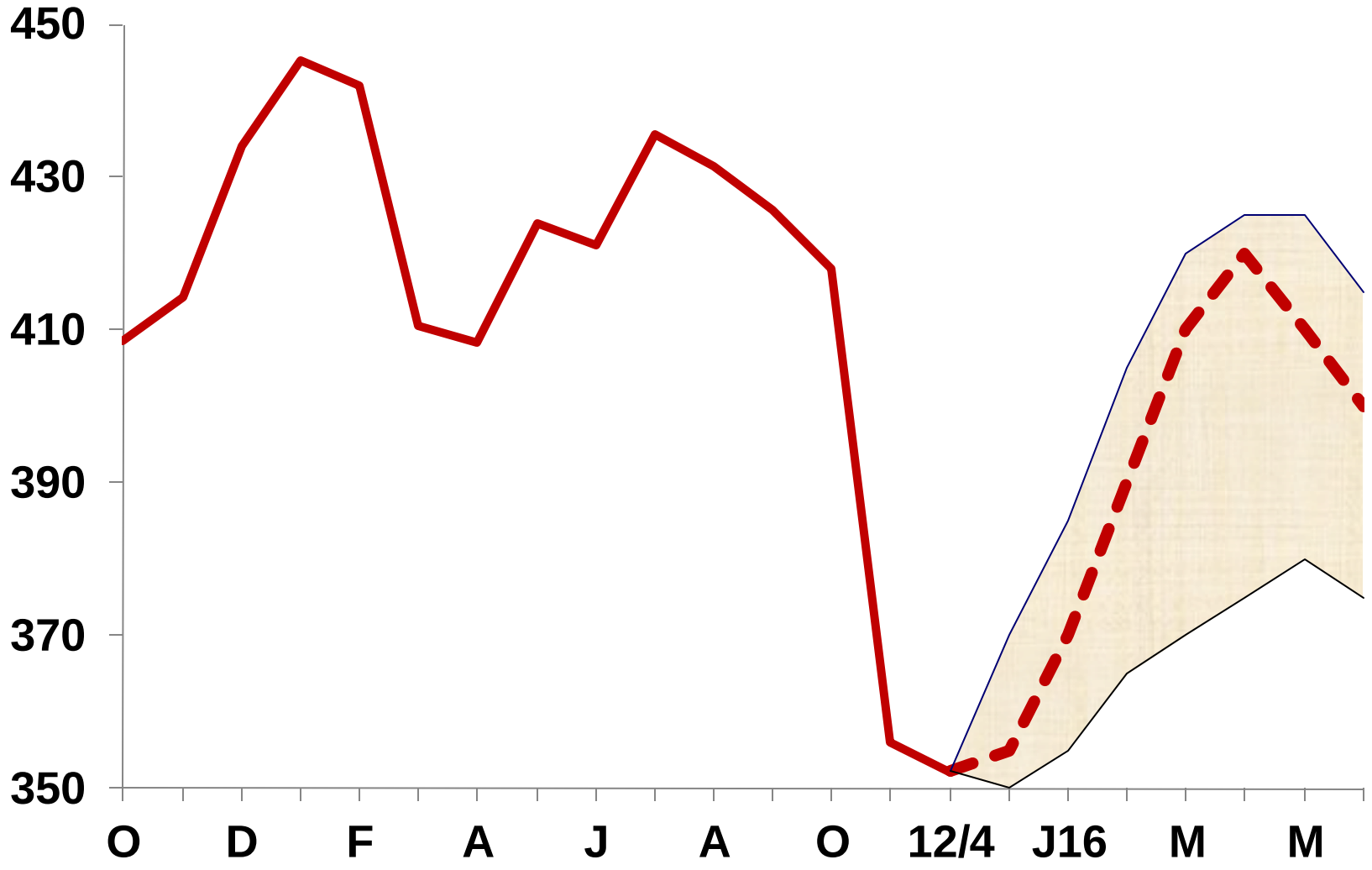
(000 Nutrient Tons)



Source: USDOC, NPKFAS

DAP NOLA Barge Price Forecast

End of Month $/Ton)

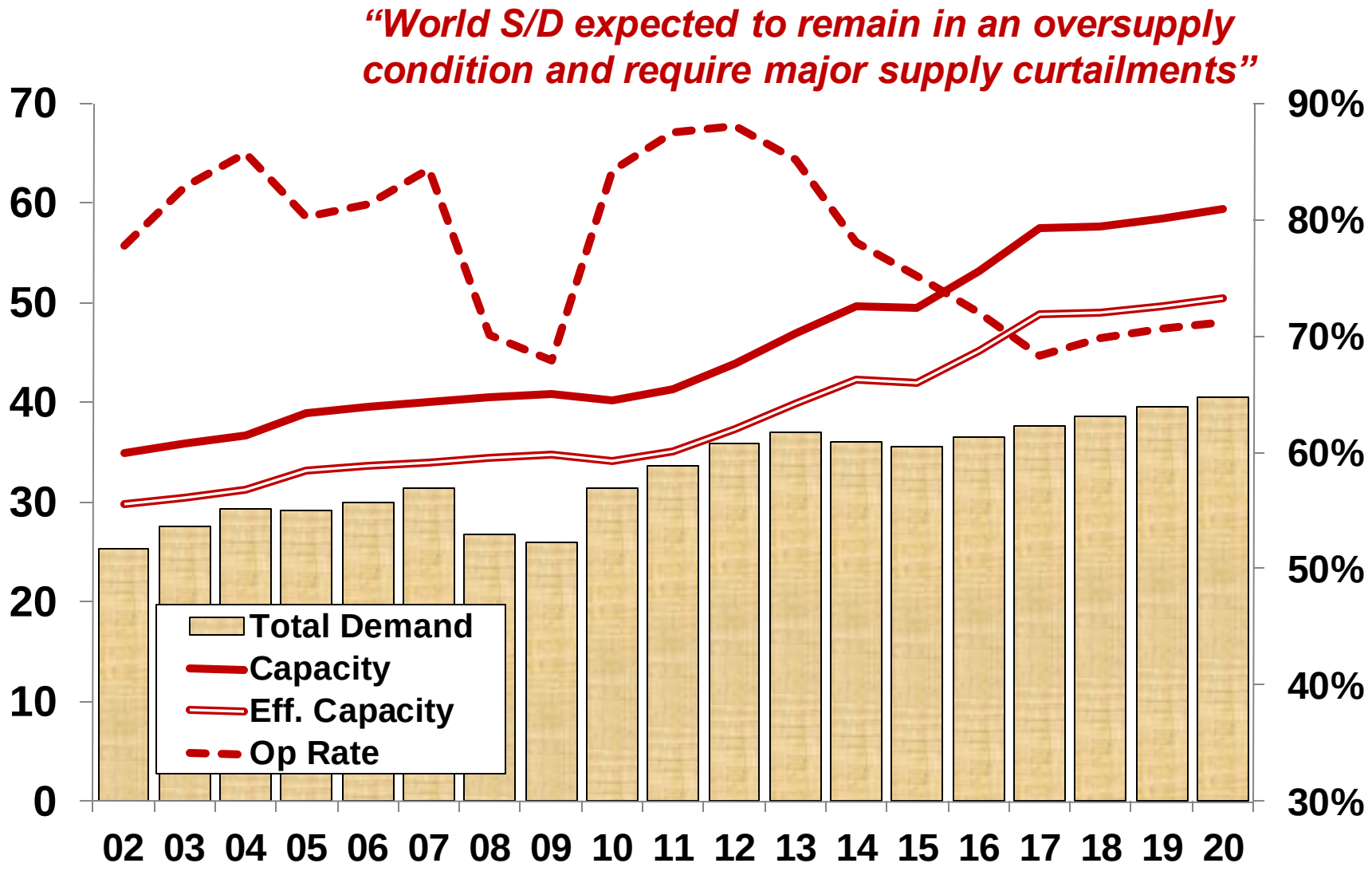


Source: NPKFAS

Potash Outlook

World Potash Supply/Demand

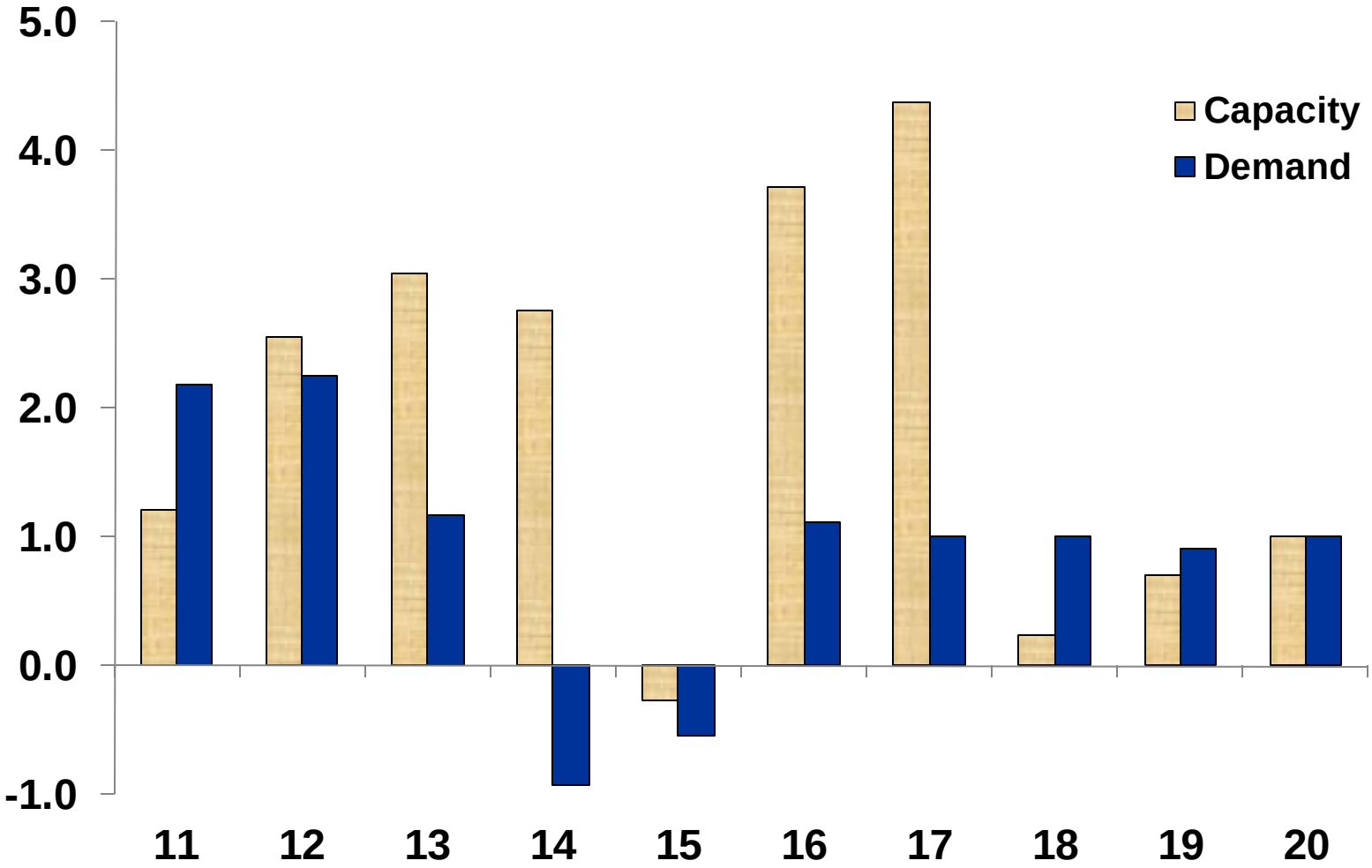
(MM Tonnes K2O)



Source: IFA, NPKFAS

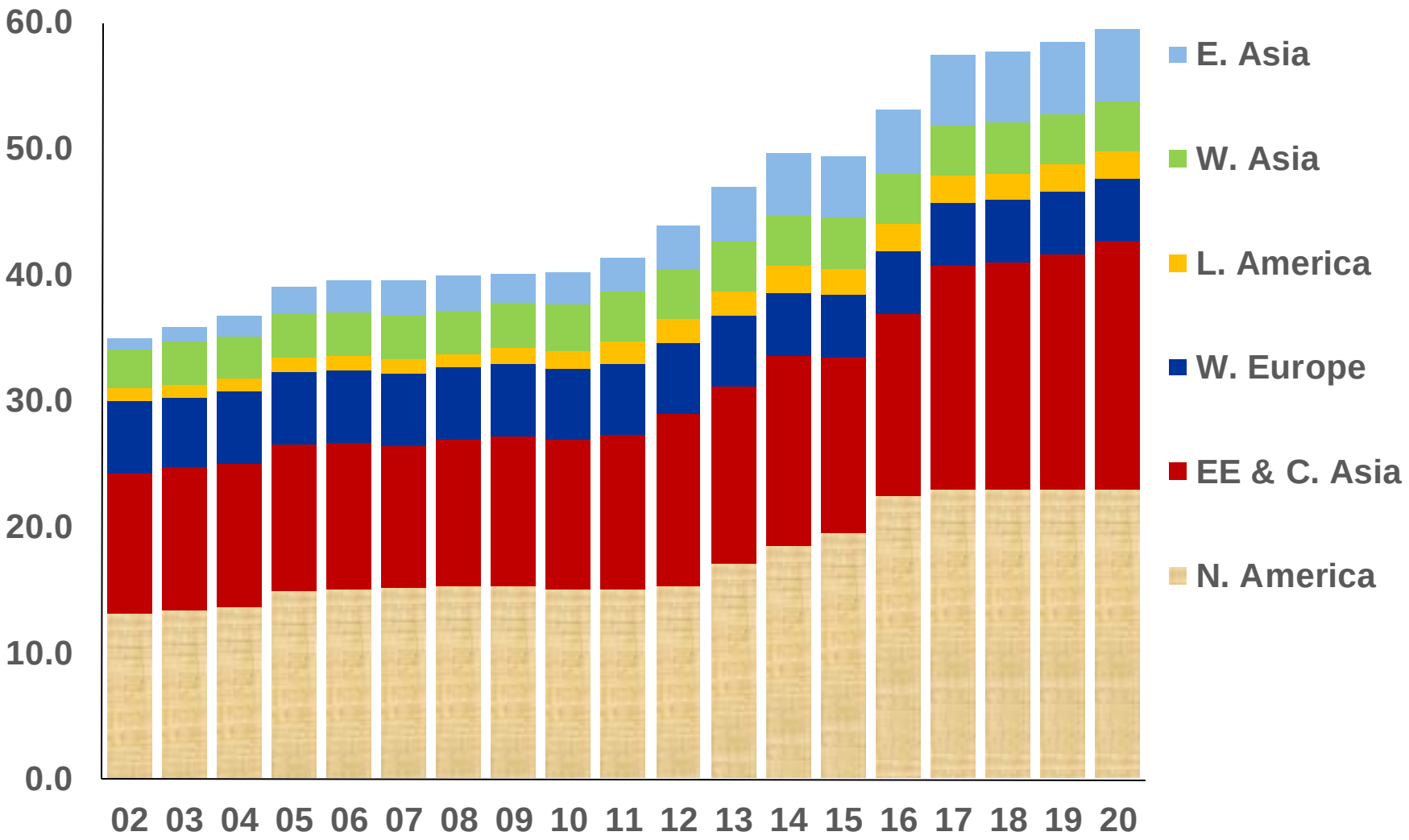
Change in World Potash Capacity vs. World Demand
(MM Tonnes K2O)

"World Potash capacity is expected to expand dramatically over the next five+ years"



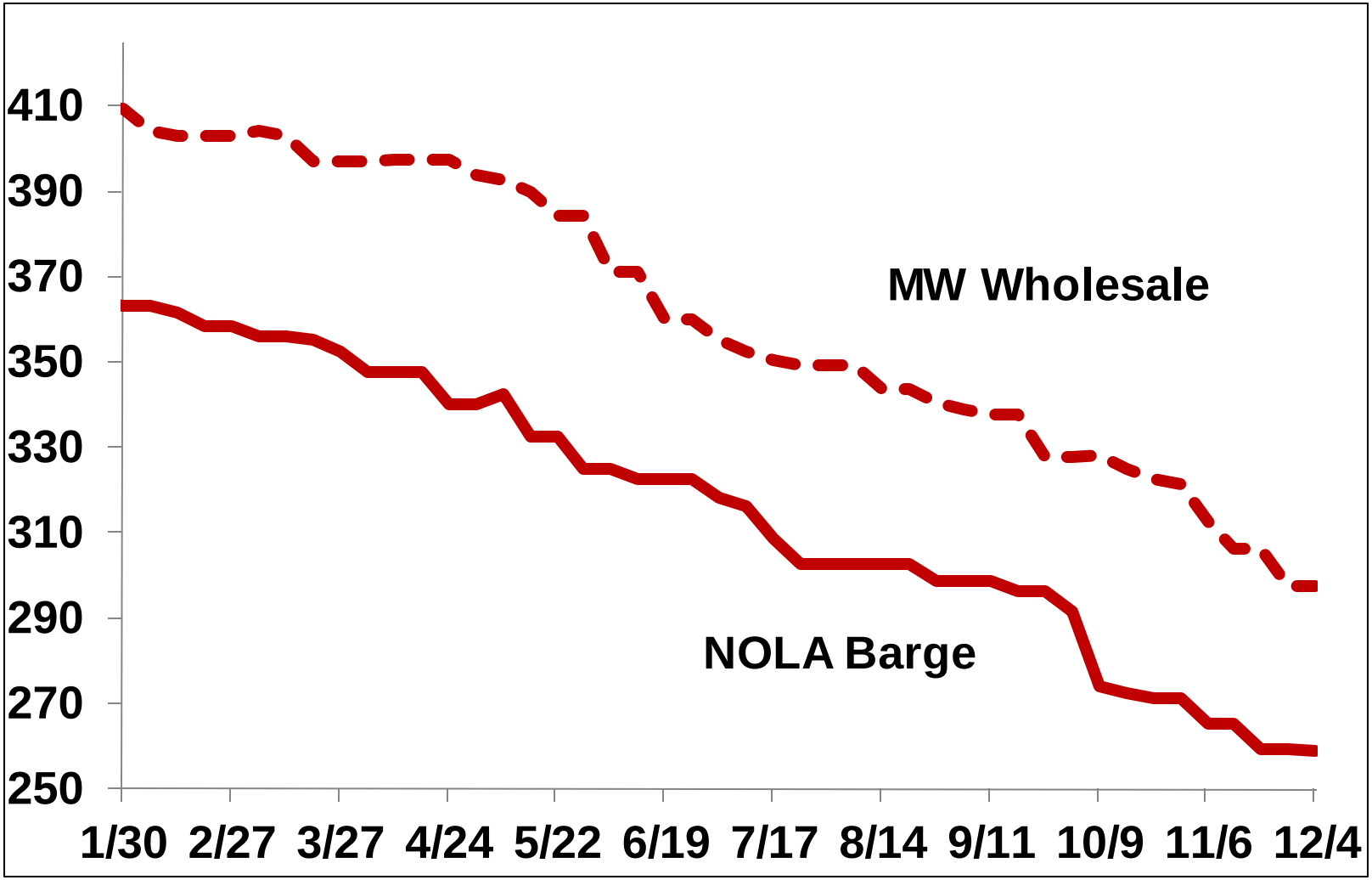
Source: IFA, NPKFAS

World Potash Mine Capacity
(MM Tonnes K2O)



Source: IFA, NPKFAS

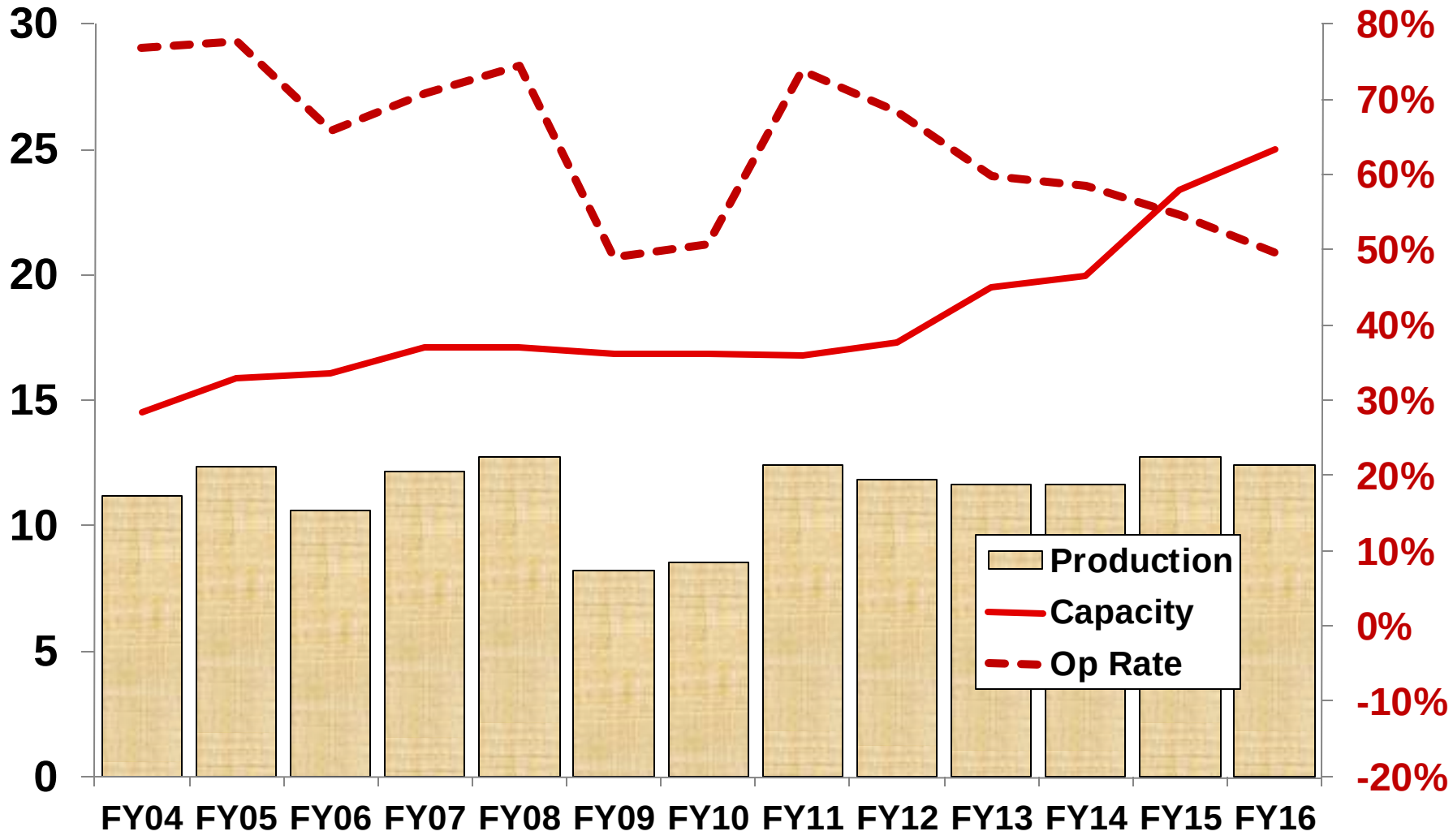
U.S. Potash Prices
($/Ton)



Source: NPKFAS, Industry sources

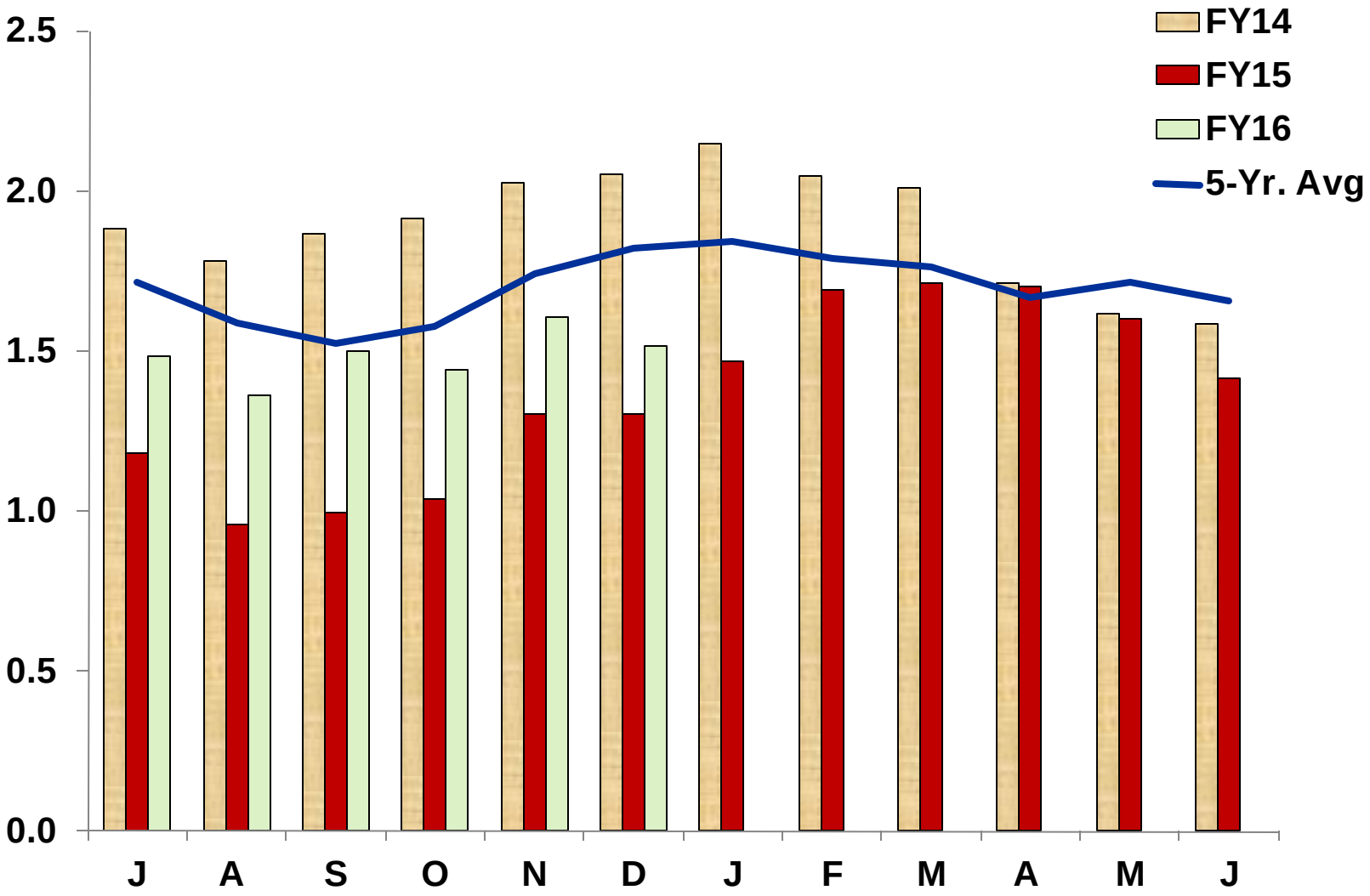
N.A. Potash Production & Capacity

(MM Tons K2O)



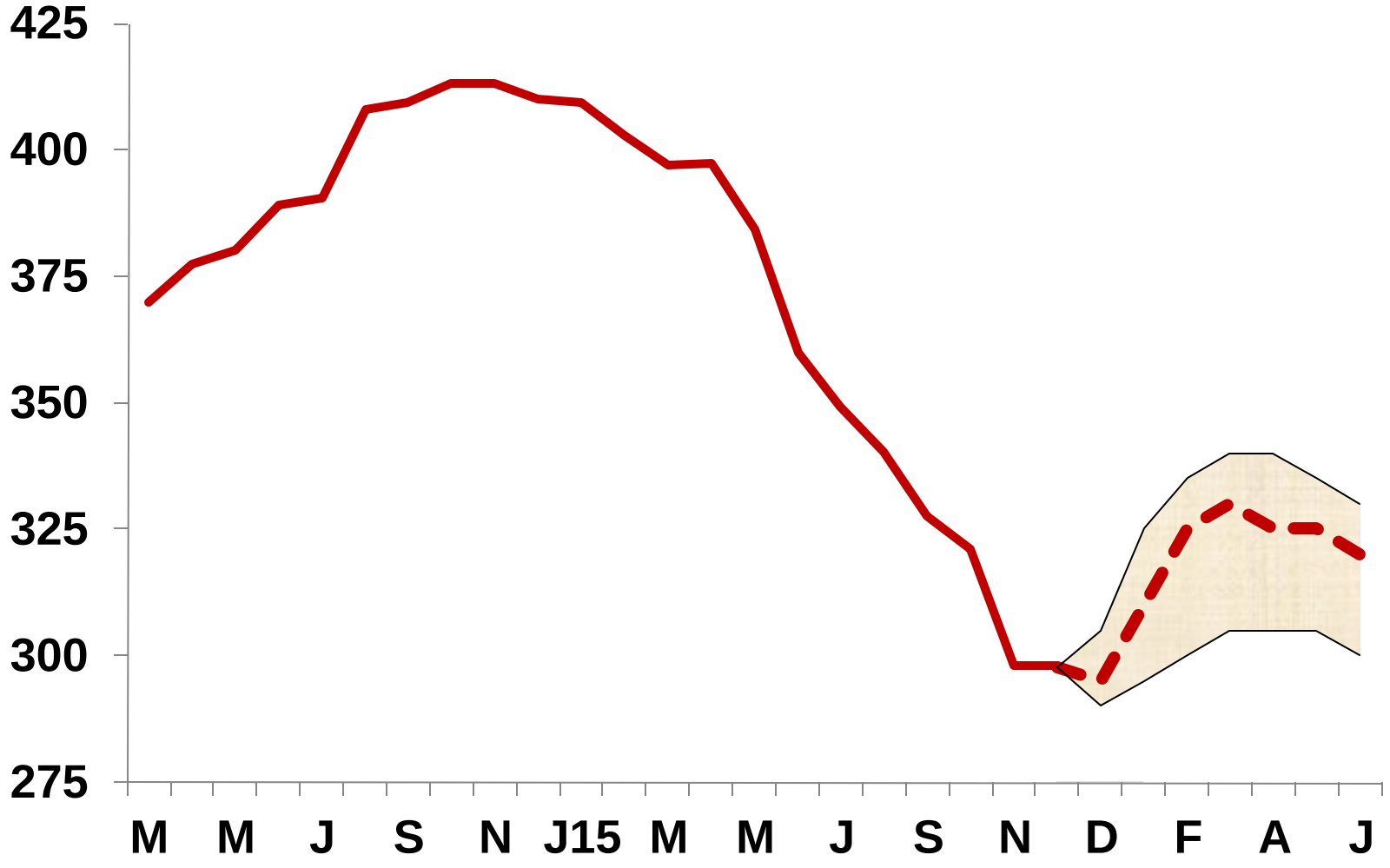
Source: TFI, NPKFAS

N.A. Potash Producer Inventory
(MM Tons K2O)



Source: TFI, NPKFAS

Midwest Wholesale Potash Price Forecast
($/Ton)



Source: NPKFAS

QUESTIONS?

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