

Macro-Industrial Working Group 1: Preliminary macroeconomic results



For

Macro-Industrial Working Group

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By

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Macro Team's AEO2016 Briefing Plans

- Review incorporation of completed AEO macroeconomic initiatives
 - Revised commercial floorspace model using indices rather than levels so that EIA customers won't have to incur extra data costs to compensate Dodge
 - Enhancements of the industrial output model to incorporate additional detail of chemical, glass, and paper industries.
 - The extension of the supply matrices allowing for changing patterns of industries meeting final demands throughout the projection period.
- Highlight upcoming initiatives
 - This year's forecast on industry linkages through network analysis will inform future work on analyzing supply matrices
 - We plan on incorporating detailed industrial price movements which will come from the industrial model into the macro model's incorporation of industrial wholesale prices.
- Short Description of Proposed Reference Case

Headline macro results

AEO2016's GDP growth lower than last year's projection, due to trade and productivity differences

- Real GDP growth is 2.3% from 2014 to 2040, lower than AEO2015's 2.4% growth as productivity and export growth is 0.2% lower and 0.6%, respectively compared to AEO2015.
 - Foreign GDP growth of major trading partners and emerging countries is lower with emerging countries showing the largest downward revision in growth. The U.S. dollar appreciates early and then depreciates removing most of the dollar's impact on trade.
 - Interest rates are lower as aggregate demand and supply shifted downwards with lower productivity gains. Commodity prices are also lower, contributing to lower emerging country growth prospects. Motor vehicle consumption and exports still show stronger growth compared to AEO2015, with capital goods (both investment and exports) shifting to lower expected growth. Consumption and income growth mirror the GDP growth, showing 0.1% lower growth in the upcoming projection.
 - Growth in consumer prices are slightly higher
- The next 30 years will probably not be similar to the last 30 years. We expect slower GDP, disposable income and labor force growth, and higher export growth compared to the last 30 years. Projected productivity growth is 1.7 percent, about 0.3 percentage points lower than the previous 2.0% 30-year growth.
- Growth in productivity, population, and labor force explains most of long-run GDP growth.

Preliminary AEO2016 macroeconomic Reference Case shows slower growth compared to history

	Previous 30 Year Growth	Forecasted 26 Year Growth
Real GDP	2.6%	2.3%
Consumption	2.9%	2.4%
Investment	2.9%	2.9%
Government	1.6%	0.9%
Exports	5.9%	4.4%
Imports	5.4%	3.9%

Source: AEO2016 preliminary runs

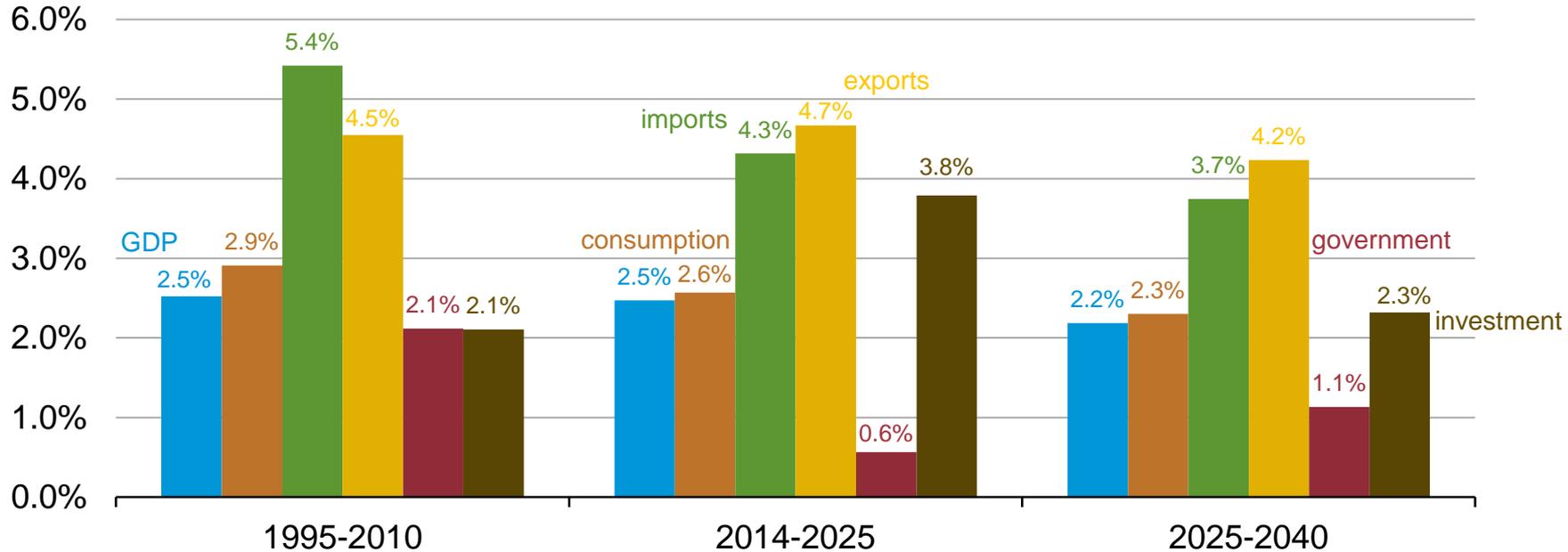
AEO2016 projects slower growth due to trade and productivity

	AEO2015	AEO2016
Real GDP	2.4%	2.3%
Consumption	2.4%	2.3%
Investment	2.9%	2.9%
Government	0.9%	0.9%
Exports	5.1%	4.4%
Imports	4.8%	3.9%
Real GDP: major trading partners	1.9%	1.8%
Real GDP: other trading partners	3.8%	3.5%
Output per hour in nonfarm business	2.0%	1.7%

Source: AEO2016 preliminary runs

GDP* led by trade and investment early, more even in the later half of the projection

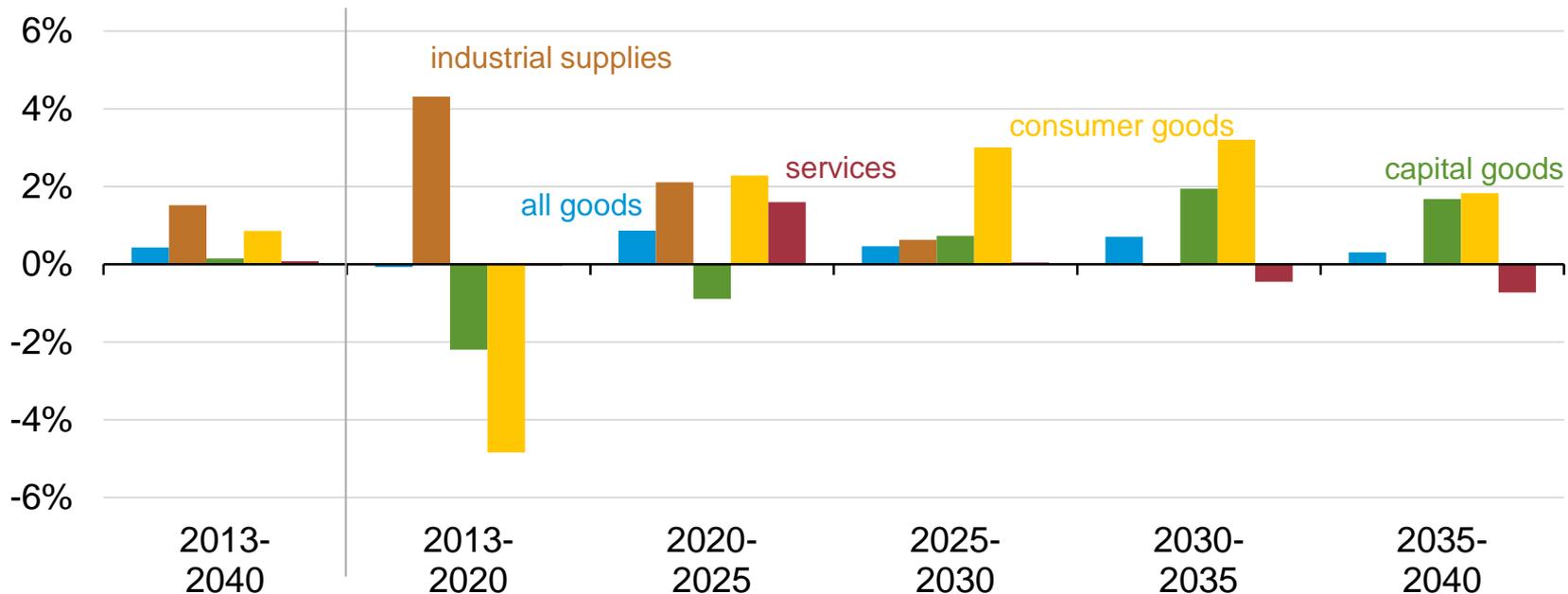
average annual growth rate within period



Source: AEO2016 preliminary runs; *all components given are real

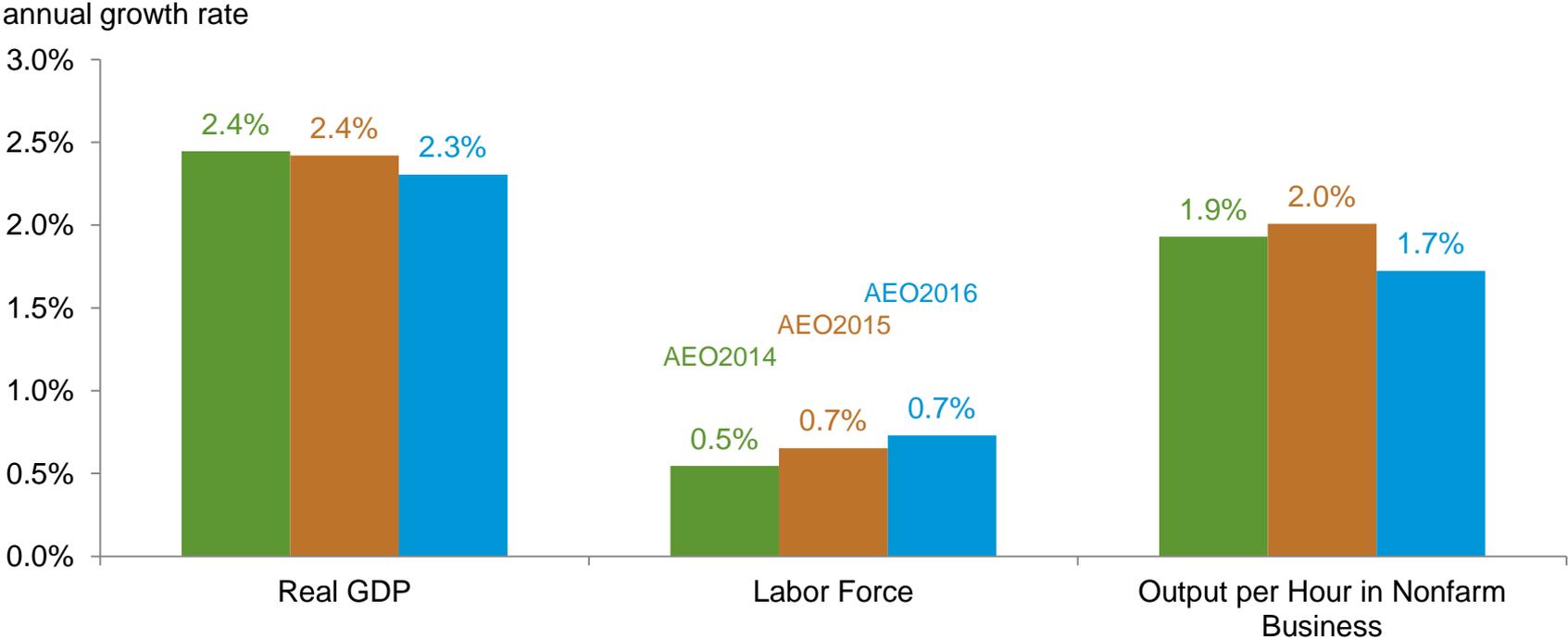
Net export growth led initially by industrial supplies, with later growth coming from capital and consumer goods

difference between real export and import
average annual growth rate within period



Source: AEO2016 preliminary runs

Long-run Growth has been declining slightly over past several AEO forecasts



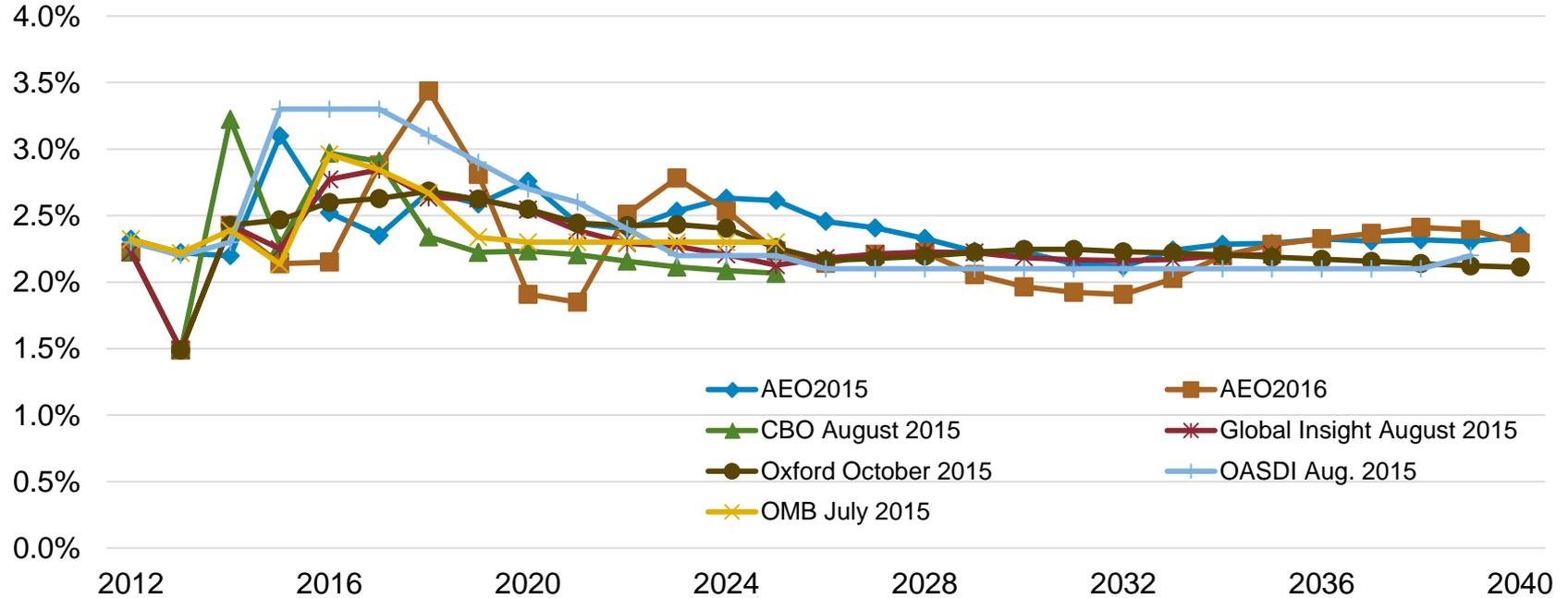
Source: AEO2016 preliminary runs

Comparisons with other Projections

- More similarity in long run growth across projections compared to short run forecasts
- Relatively fewer long-run growth comparisons available
- The administration and CBO forecasts are updated twice yearly, the OASDI forecast is updated annually, and other forecasts update their long run projections quarterly

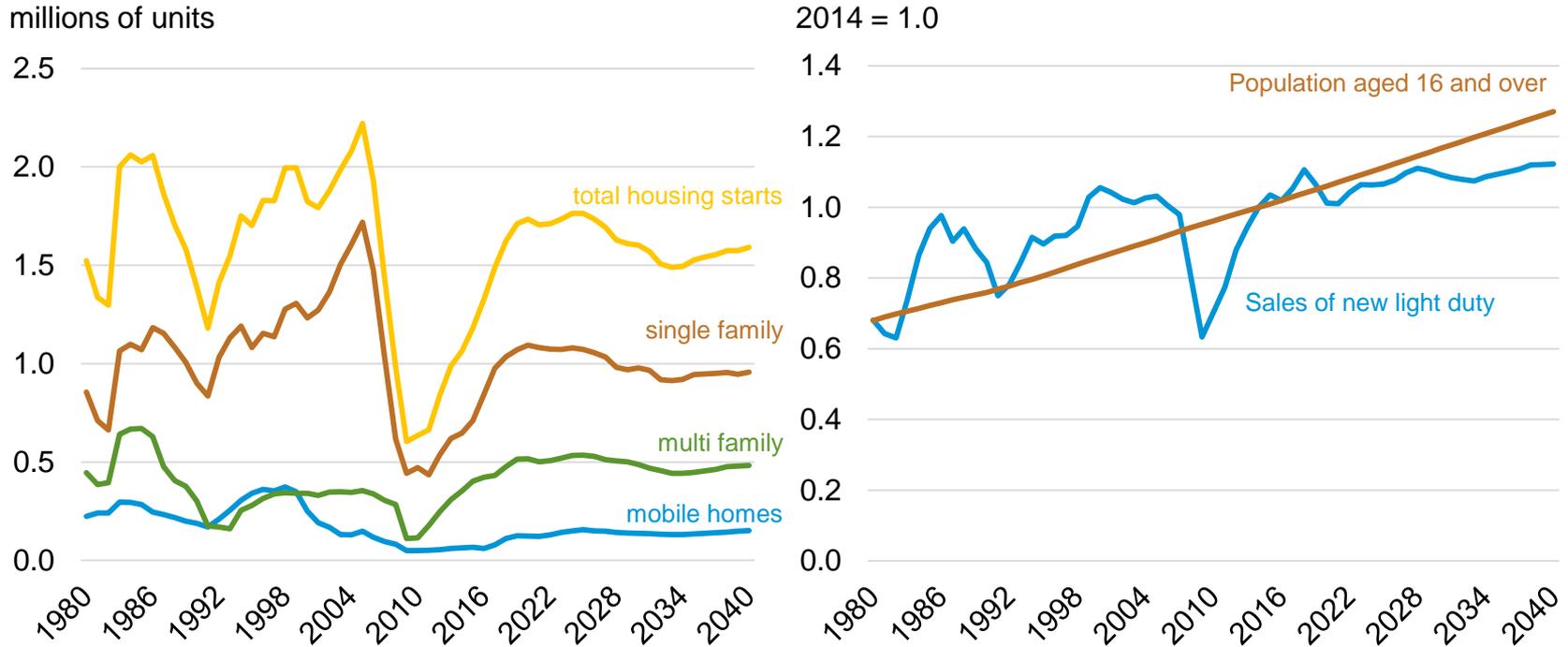
Real GDP forecasts

annual percent change



Source: AEO2016 preliminary runs, various listed

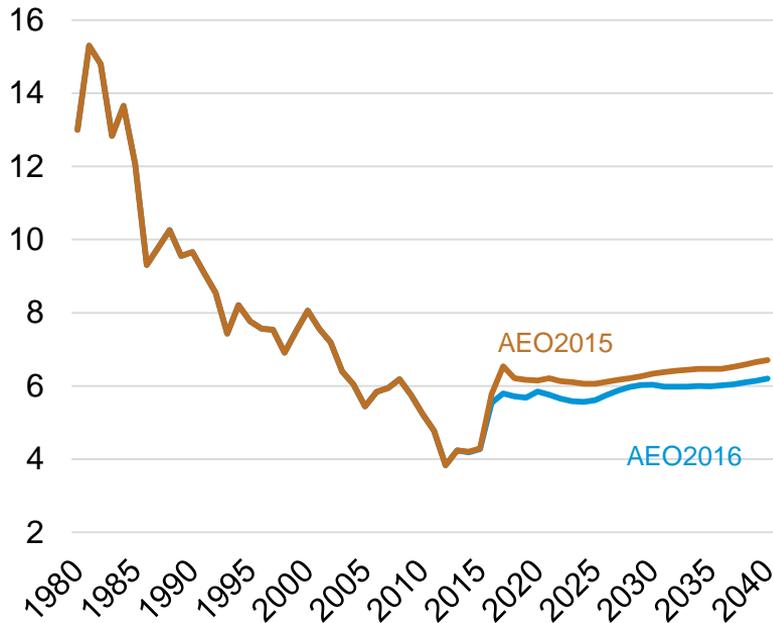
Proposed Reference Case projections that other NEMS models use



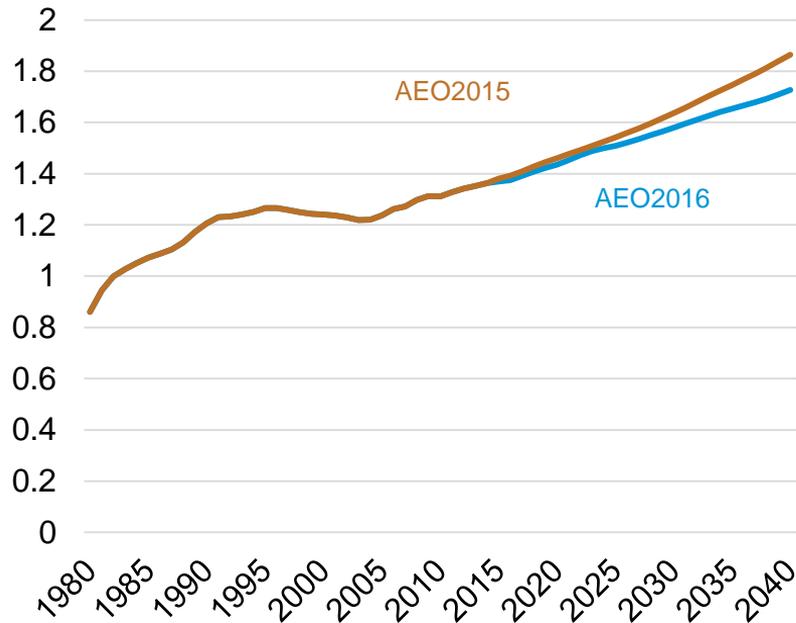
Source: AEO2016 preliminary runs

Most energy supply NEMS modules use interest rates, population and disposable income

utility bond interest rate
percent



wholesale machinery and equipment price index
1982 = 1.0



Source: AEO2016 preliminary runs

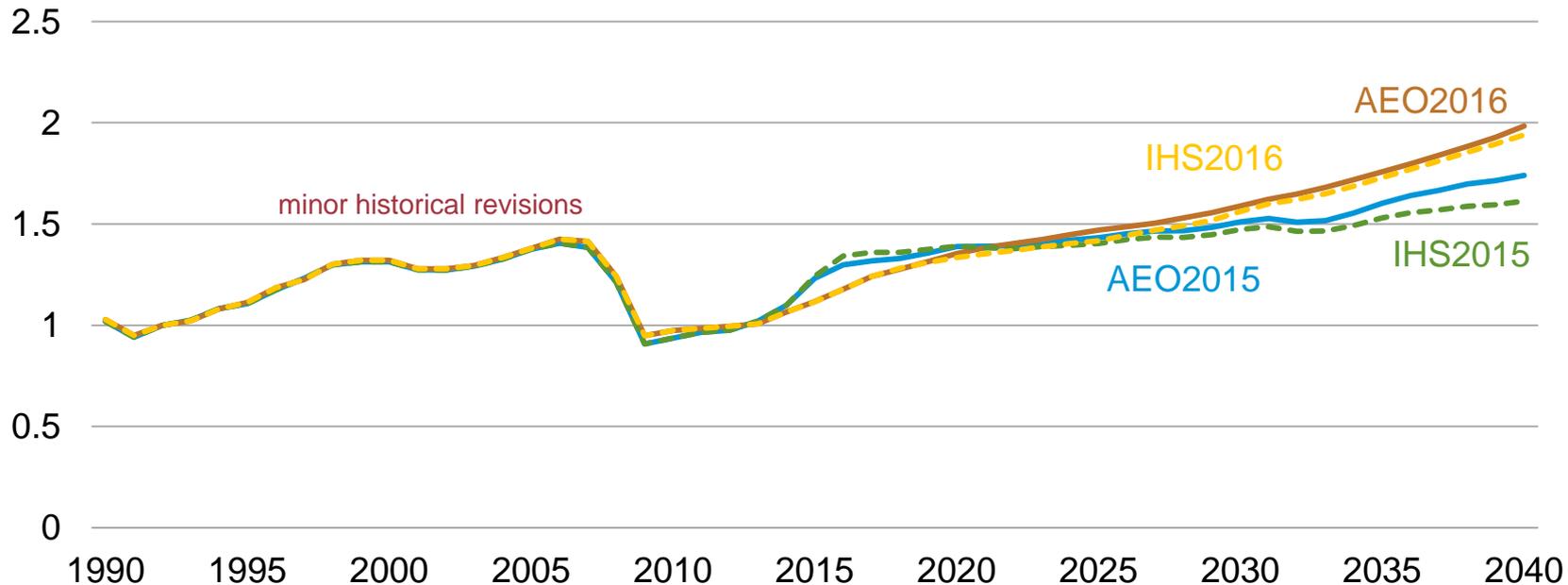
Detailed Industrial Output results

Further details of Industrial Output model changes for AEO2016

- Historical data updates
 - physical-to-dollar values
 - sources
- Dynamic IO extended through forecast
- Improved methodology from IHS in response to our request
- A new view of the economy (macro review already presented)

Nonmetallic minerals (NAICS 327) growth driven primarily by building material demand and consumption

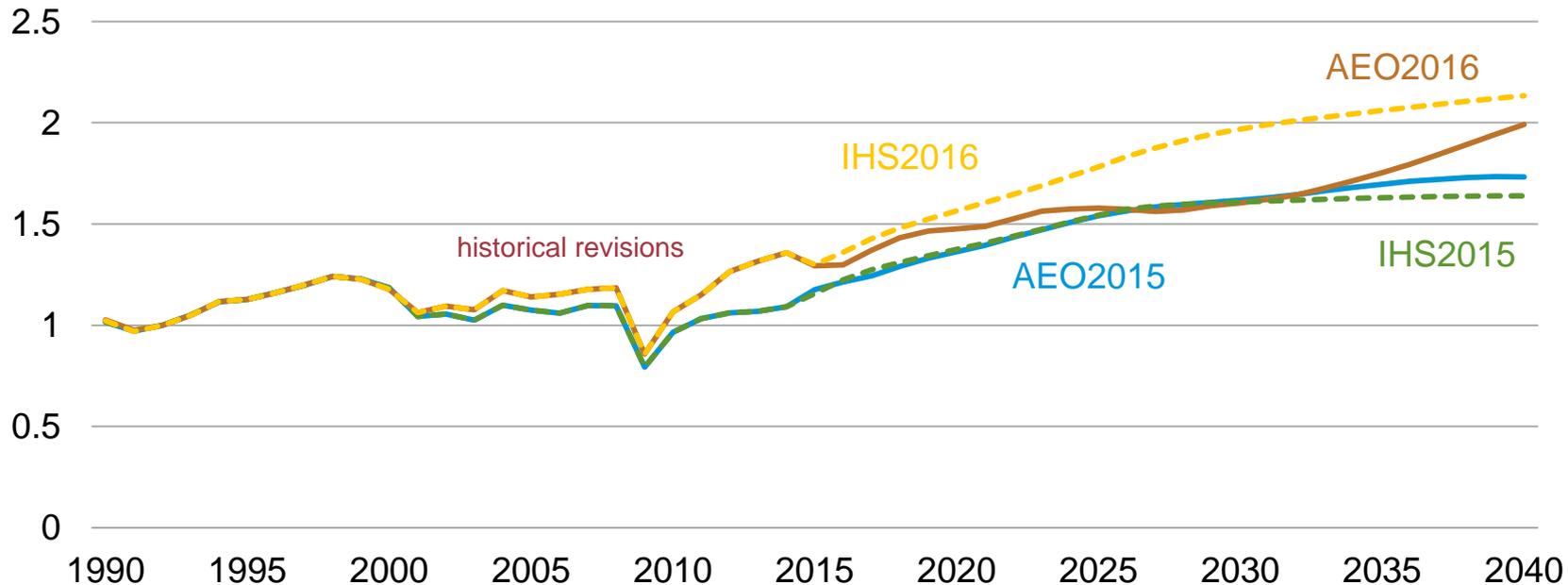
indexed nonmetallic minerals shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Primary metals (NAICS 331) grow slower in mid-term due to increasing prices, grow long-term because of durables demand

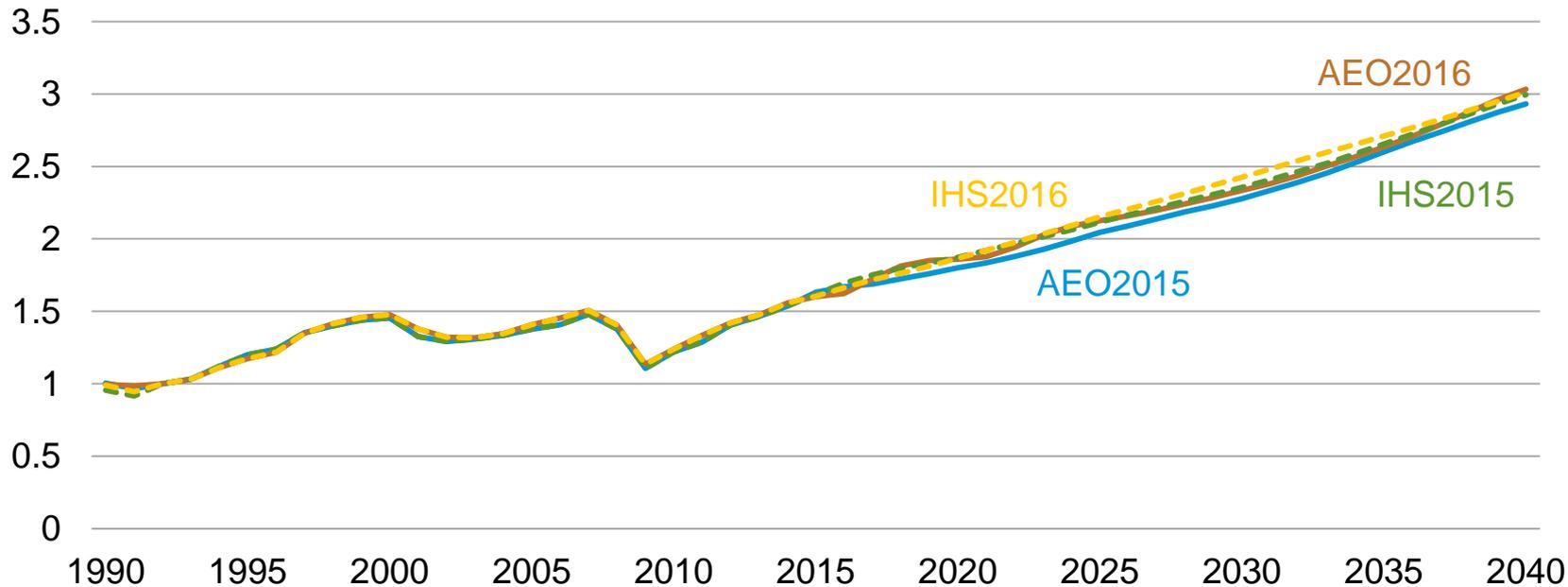
indexed primary metals shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Metal-based durables (NAICS 332-6) driven by U.S. consumers and exports but mildly affected by long-term price increases

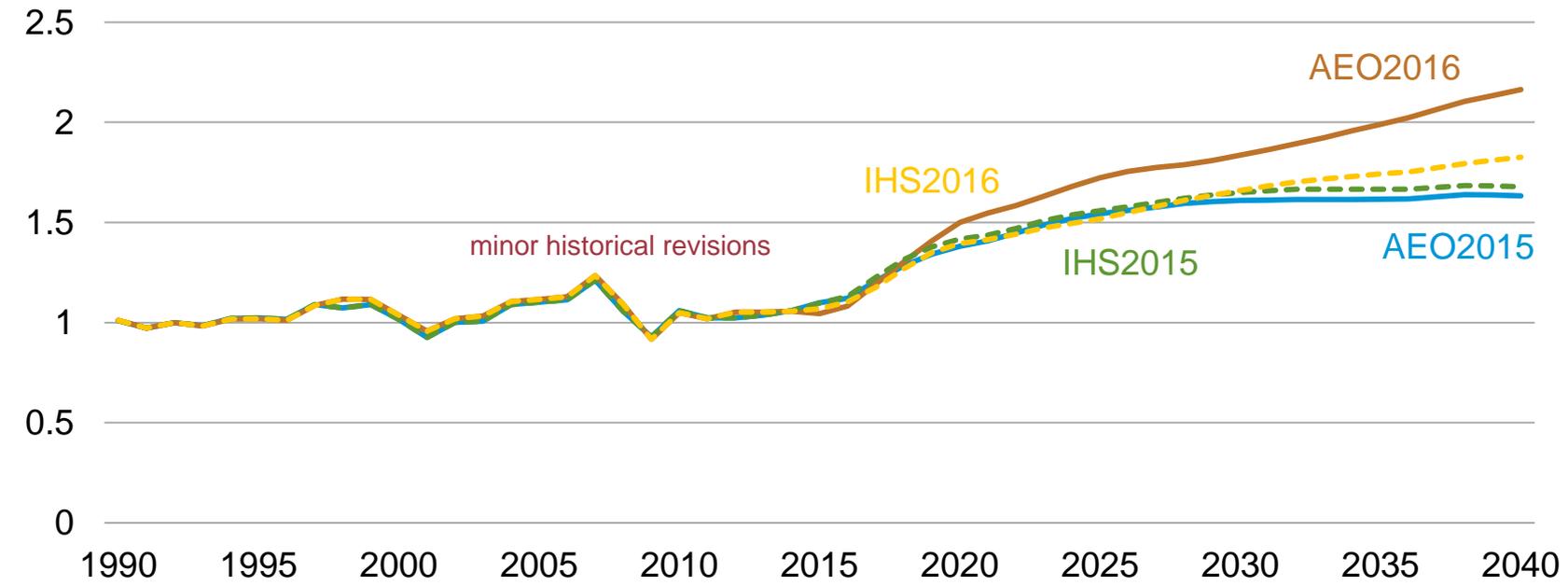
indexed metal-based durables shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Bulk chemicals (NAICS 3251-3) benefit from feedstock price spread and strong mid-term export growth

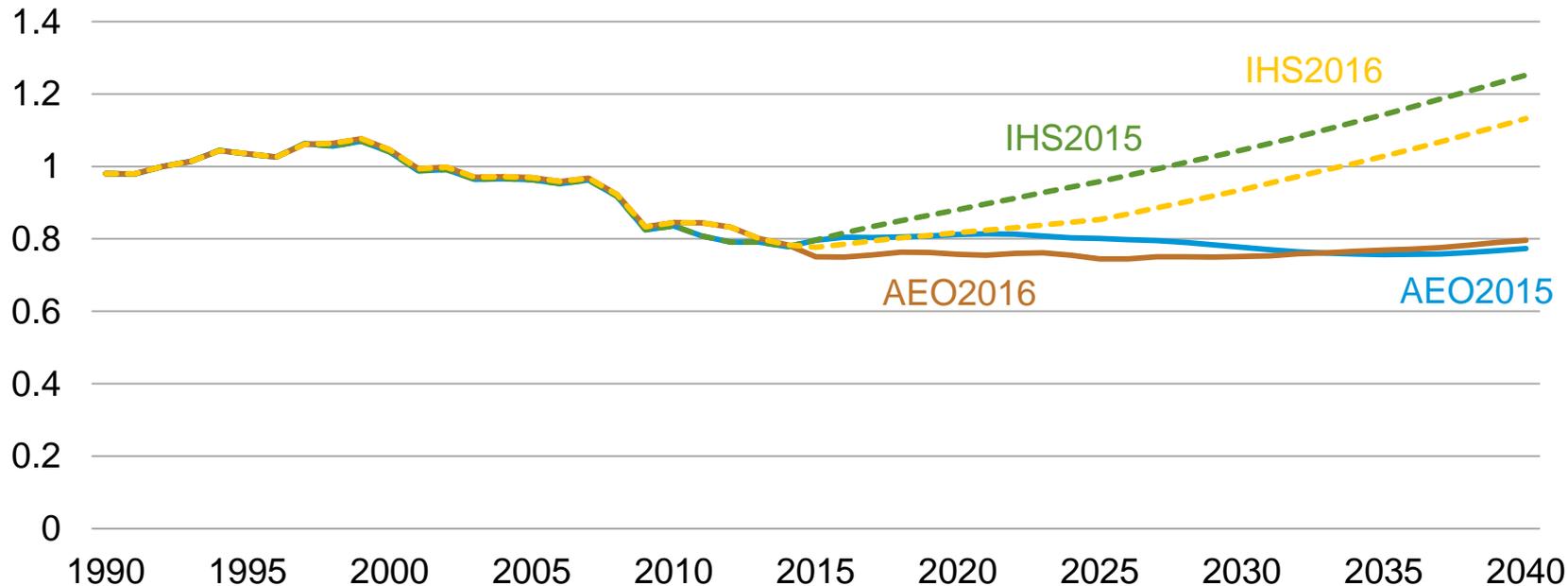
indexed bulk chemicals shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Pulp and paper* (NAICS 322) flat, growing demand for packaging and consumer products matched by strong competition

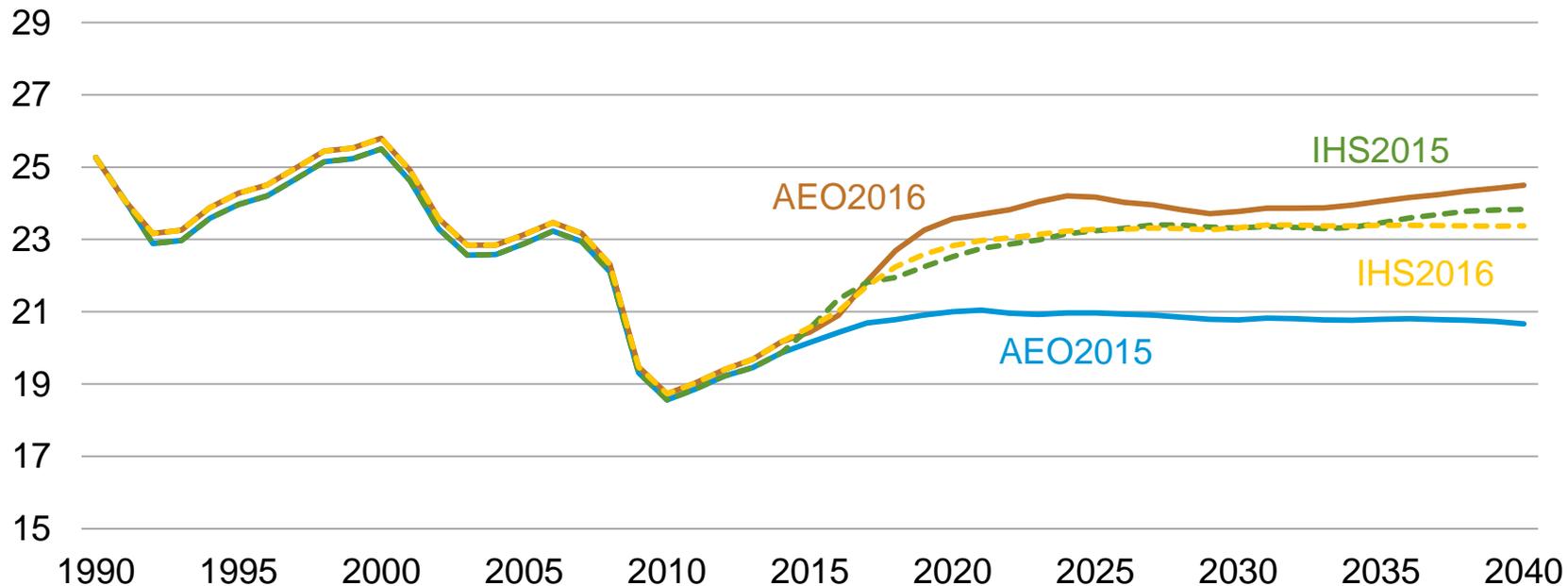
indexed pulp and paper shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs; *disaggregation was done so this is now the sum of 3 sub-industries

Total industrial employment is higher in AEO2016 driven primarily by reduced productivity path

million persons



Source: IHS, AEO2015, AEO2016 preliminary runs

For more information

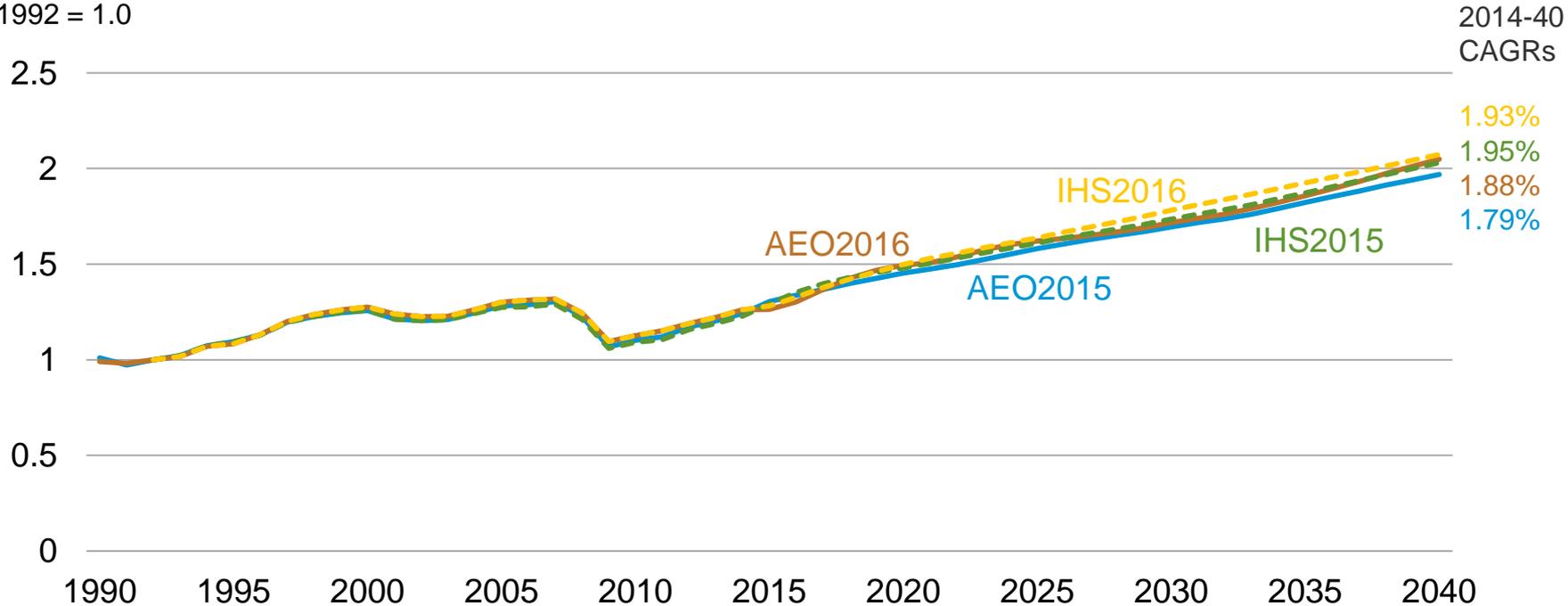
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Appendix

Total industrial output* is above the last AEO but below this year's IHS baseline

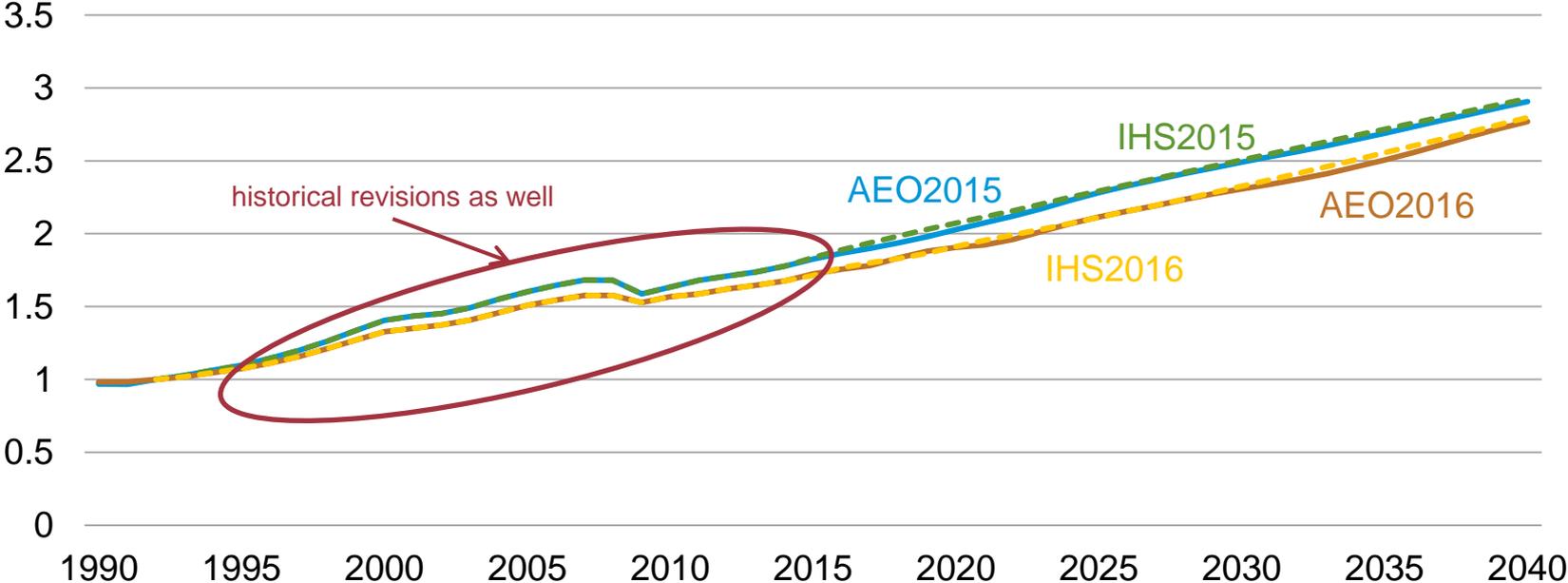
indexed shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs; *includes agriculture (NAICS 11), construction (NAICS 23), mining (NAICS 21), and manufacturing (NAICS 33-31)

Service sector (NAICS 42-92) is nearly 83% of the economy so reductions in output have a large effect on total output

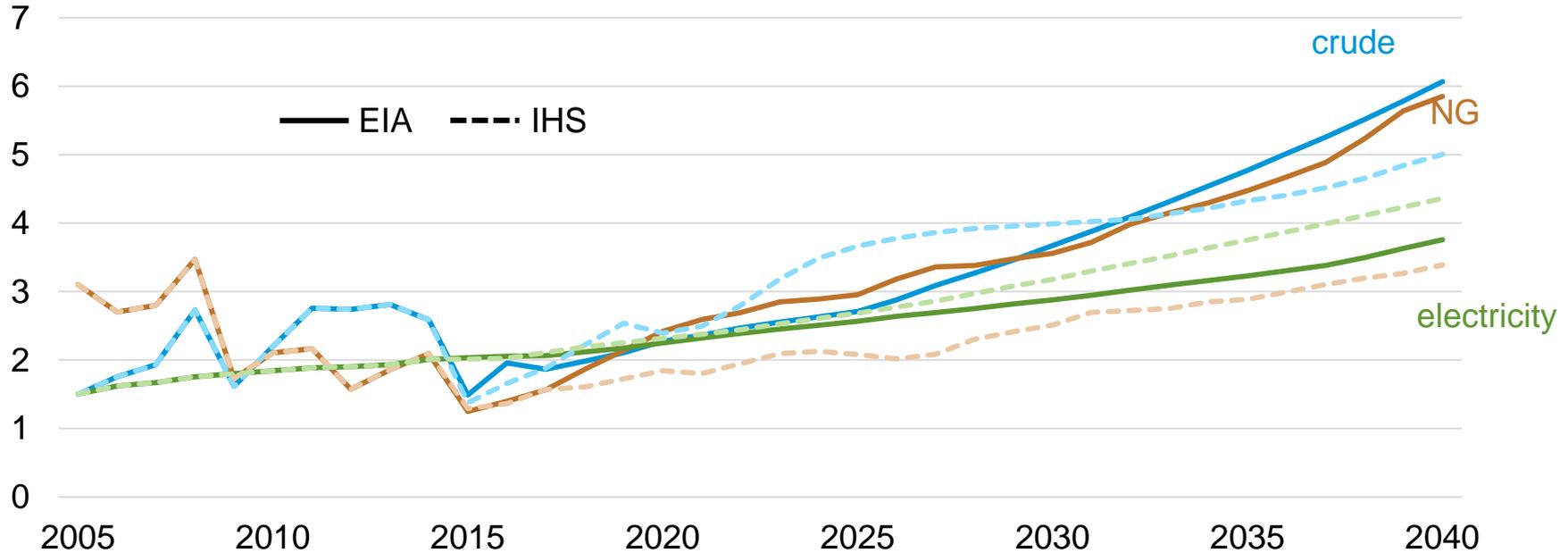
indexed shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

EIA energy prices differ from IHS

indexed price
1982 = 1.0

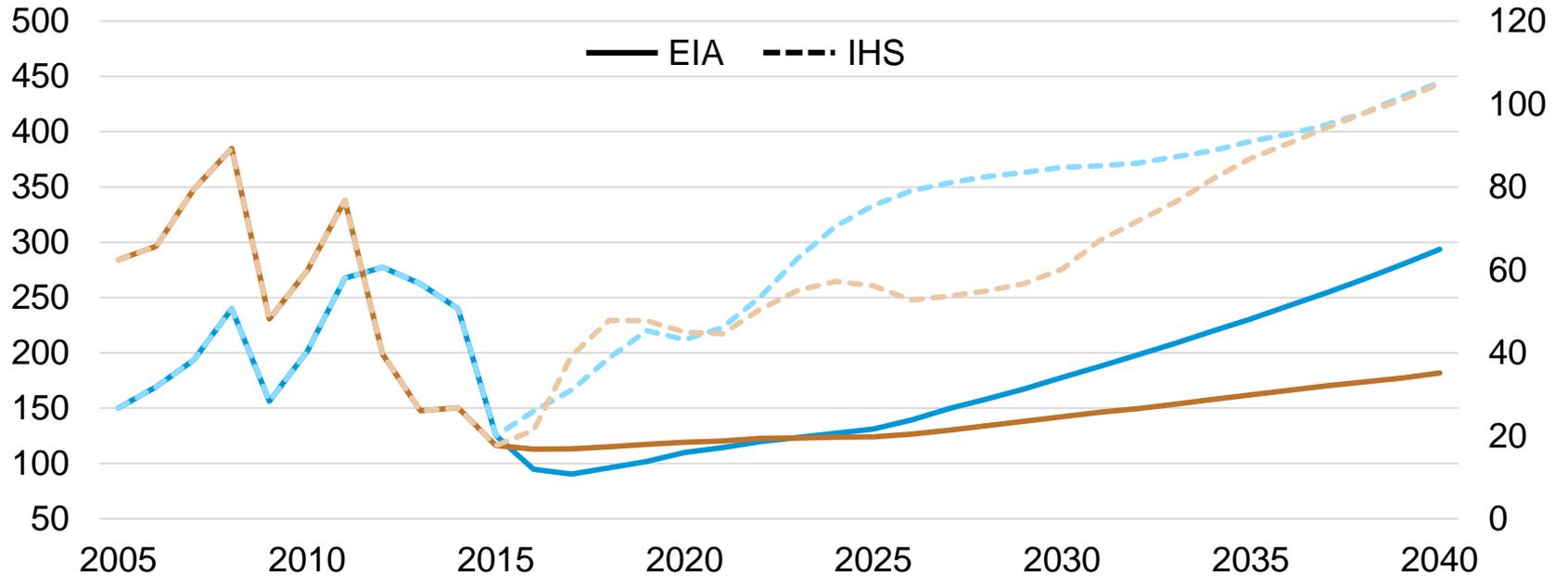


Source: IHS, AEO2015, AEO2016 preliminary runs

Energy feedstock prices diverge

naphtha price
cents/gallon

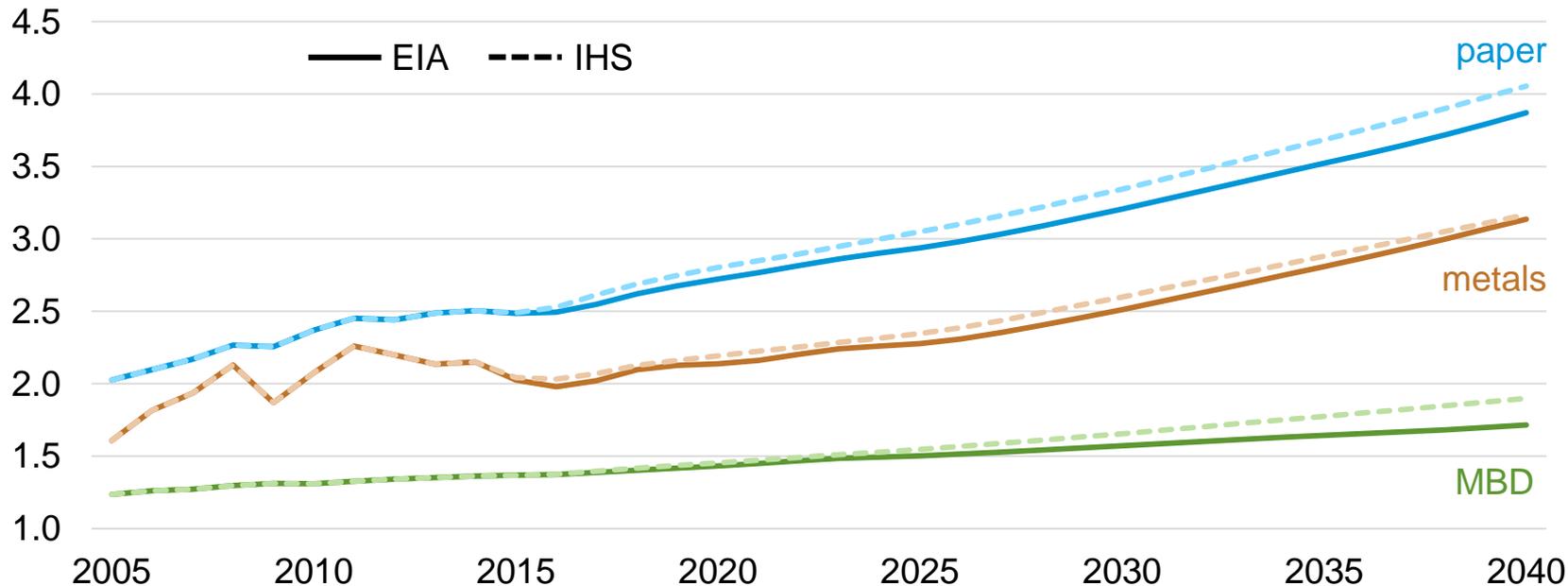
ethane price
cents/gallon



Source: IHS, AEO2015, AEO2016 preliminary runs

Commodity prices also important to industrial producers, as consumers and for competitiveness

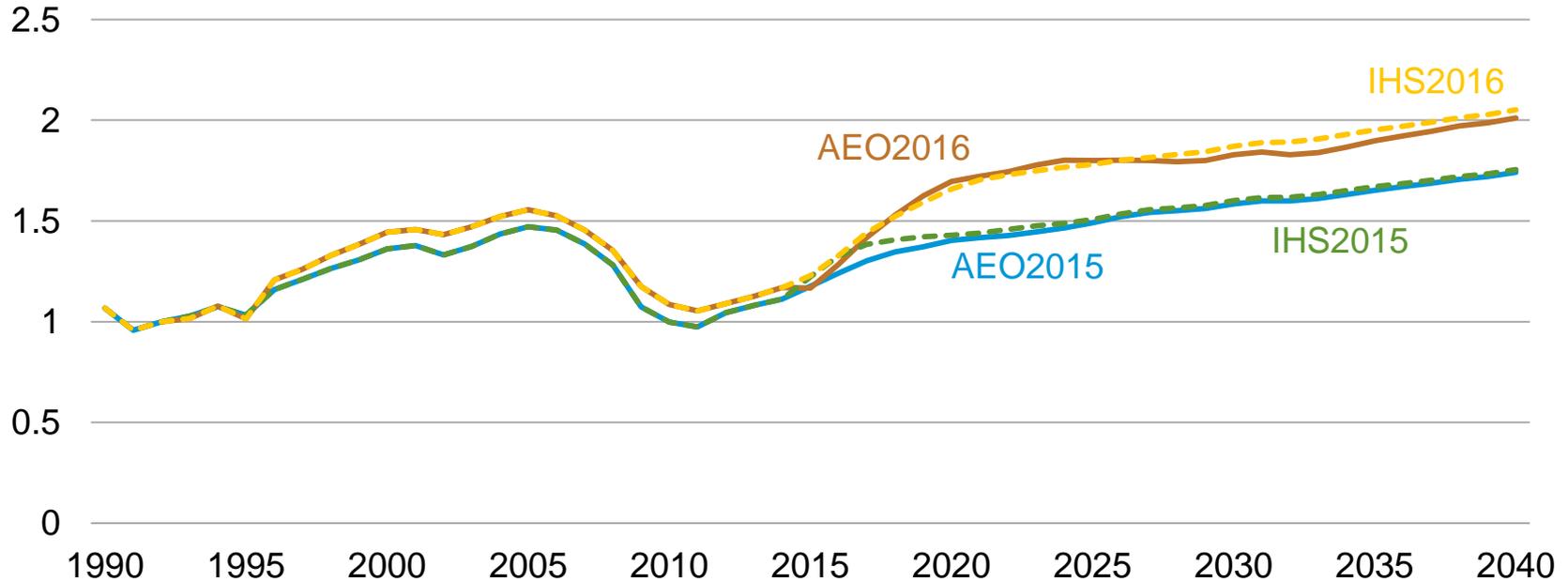
indexed price
1982 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Construction (NAICS 23) includes growth in infrastructure, commercial buildings, and homes

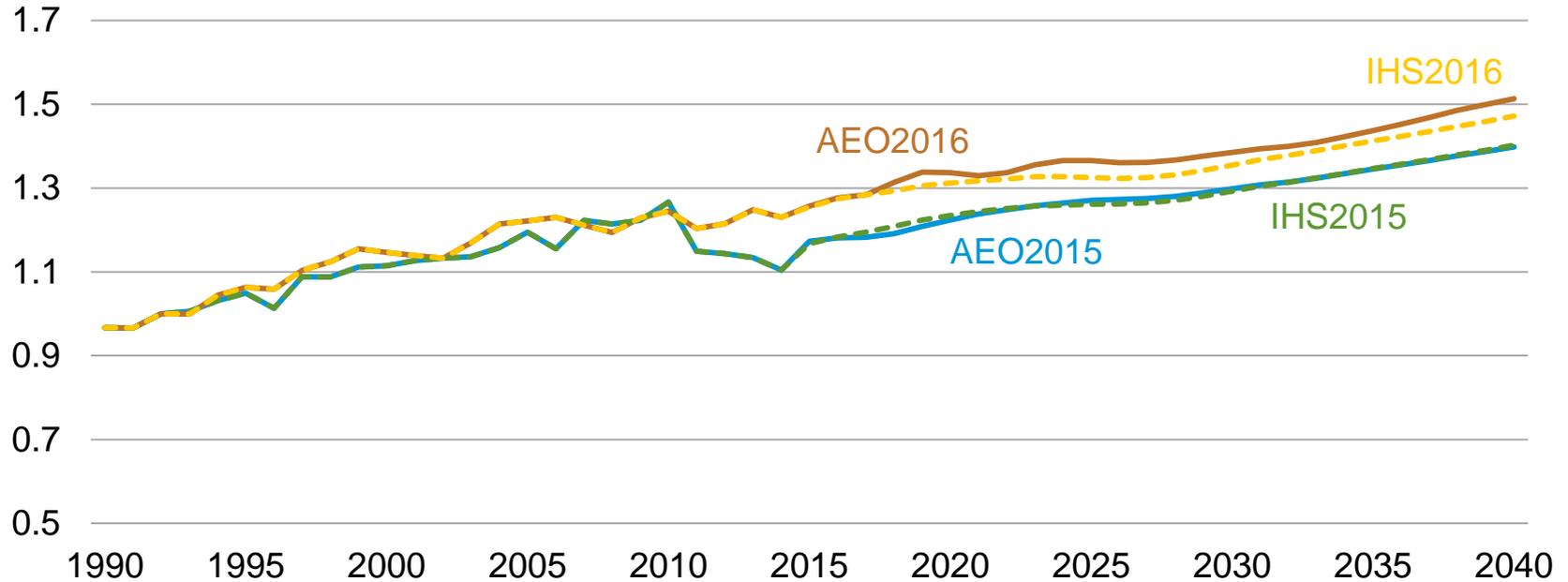
indexed construction output
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Agriculture (NAICS 11)

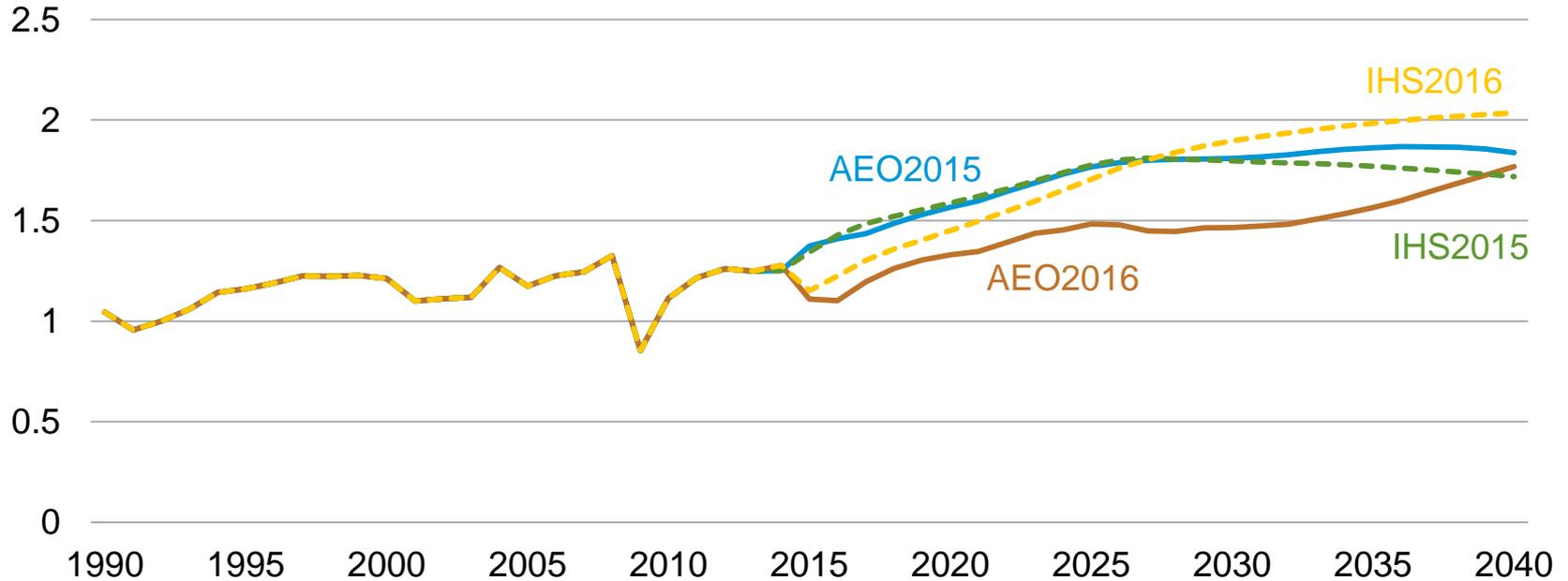
indexed agriculture shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Iron and steel (NAICS 3311-2)

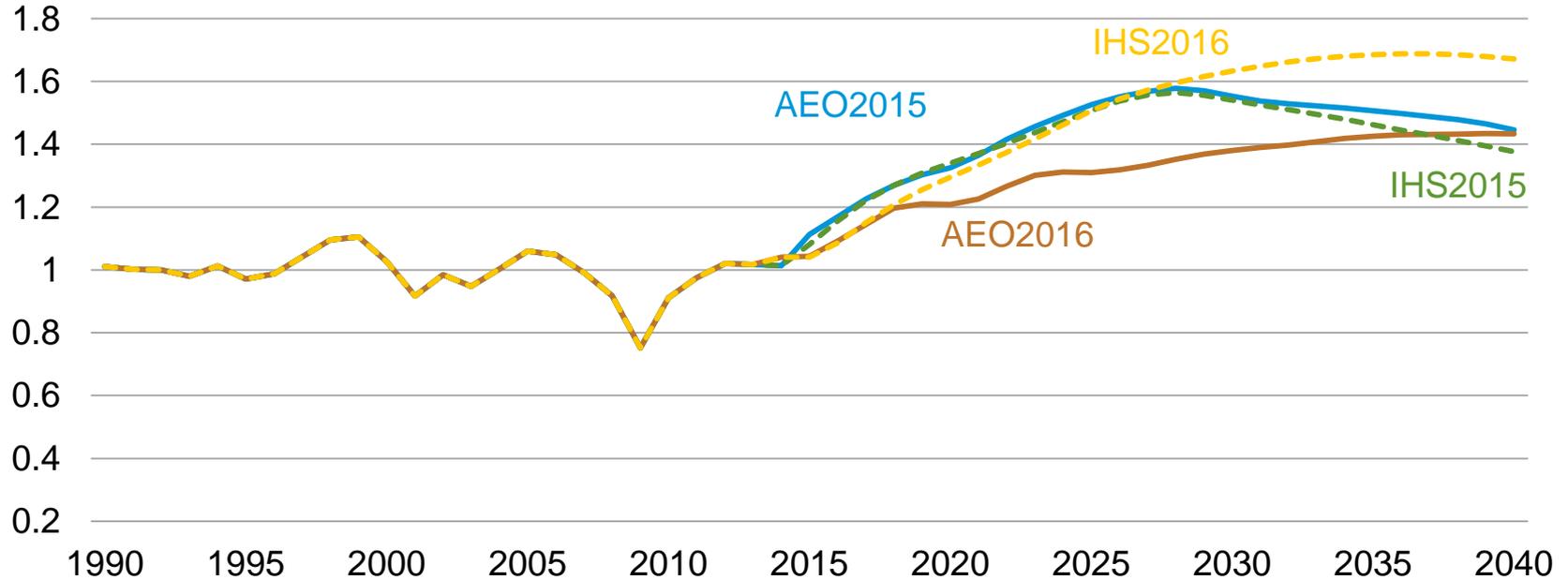
indexed iron and steel shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Aluminum (NAICS 3313)

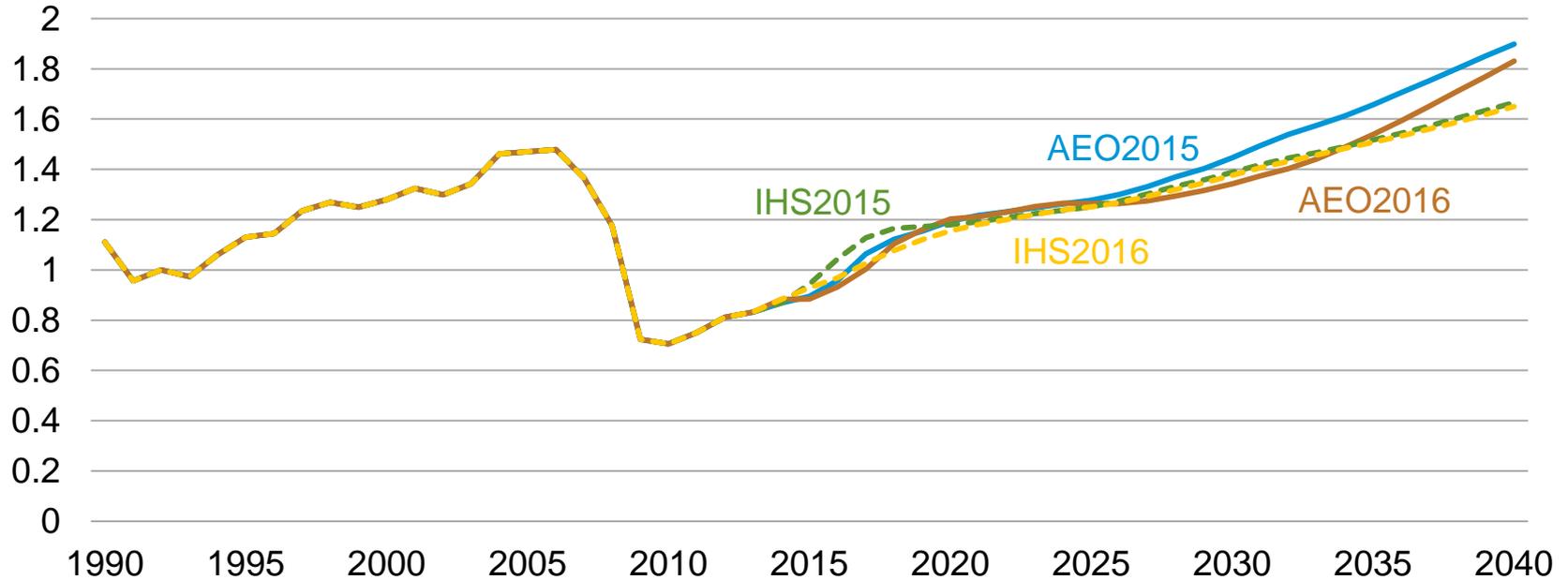
indexed aluminum shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Cement (NAICS 32731)

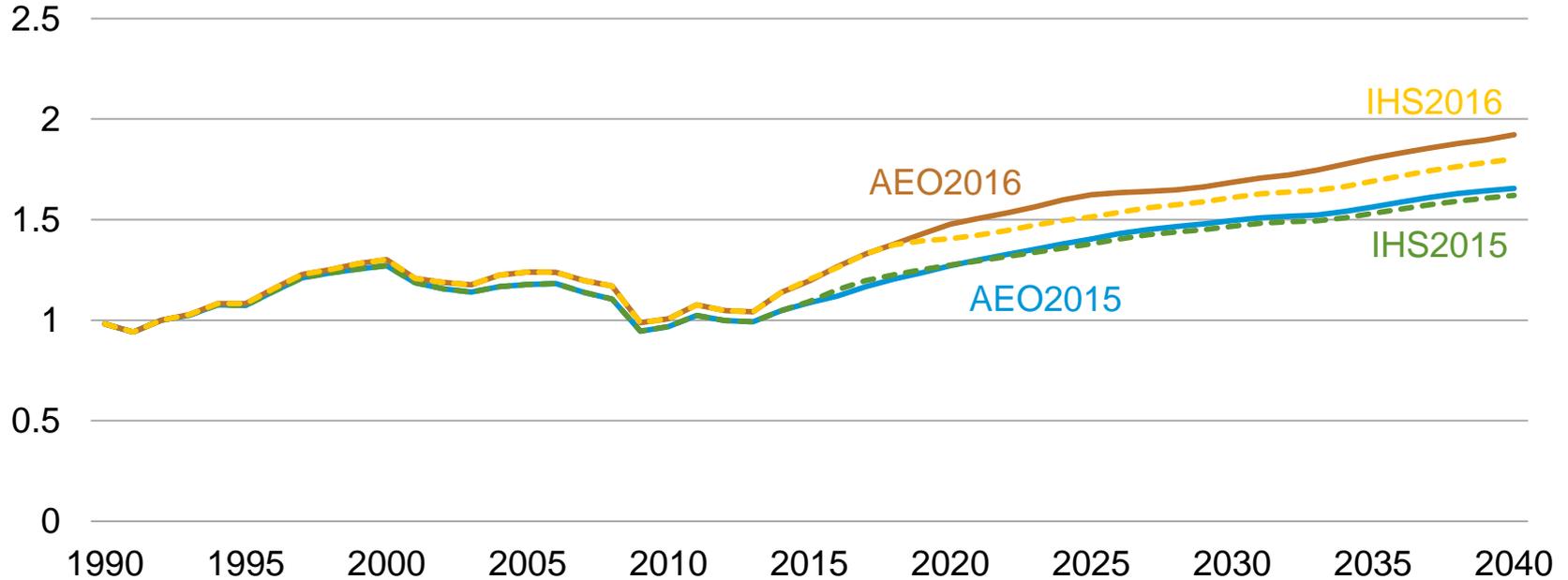
indexed cement shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Glass (NAICS 3272)

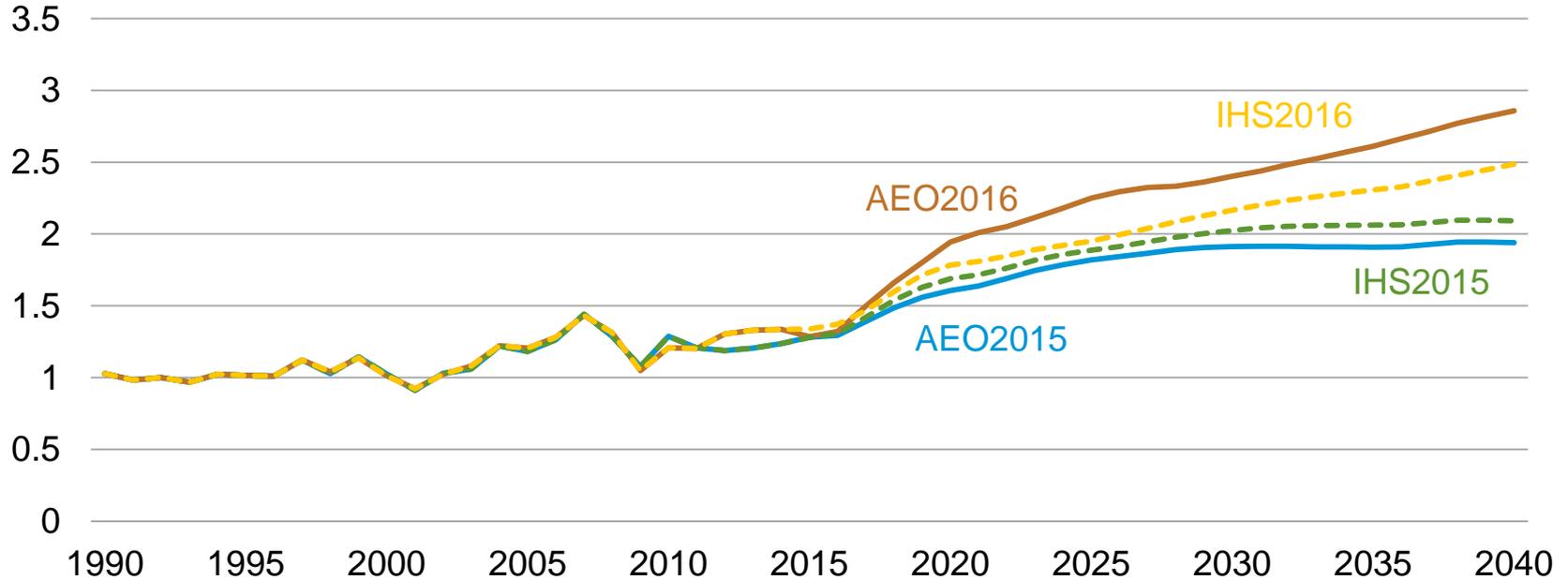
indexed glass shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Organic chemicals (NAICS 32511,9)

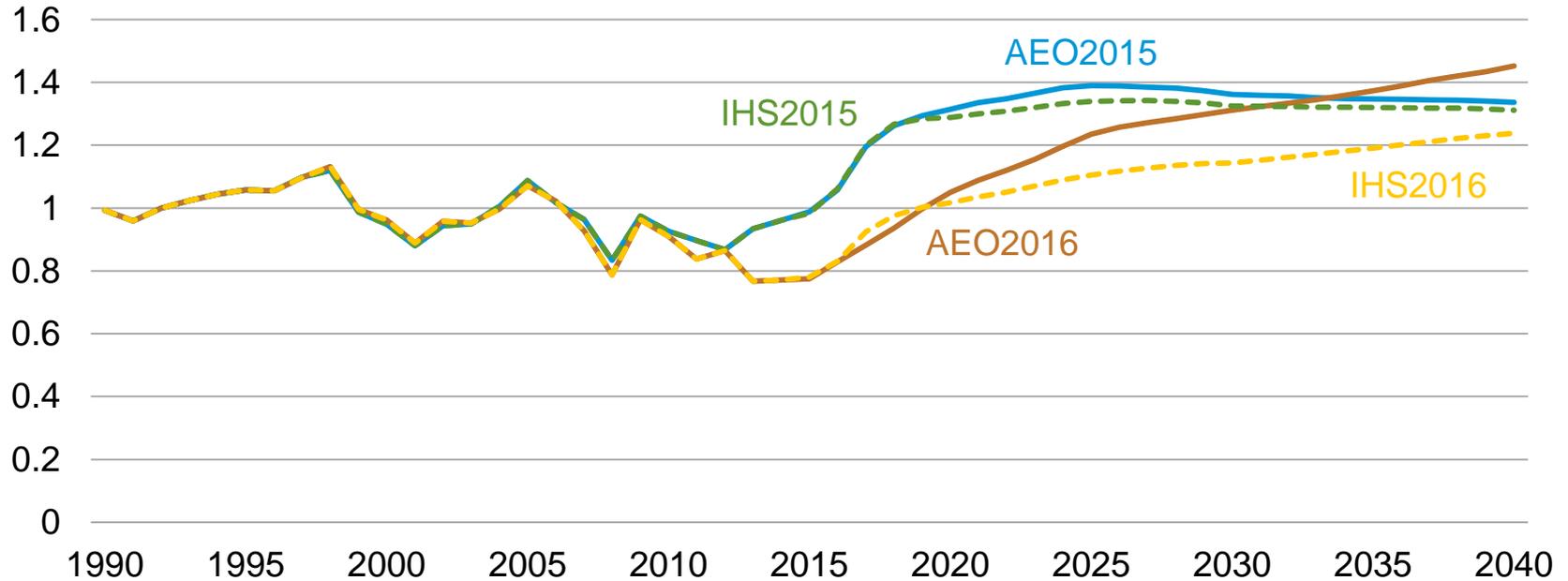
indexed organic chemicals shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Agricultural chemicals (NAICS 3253)

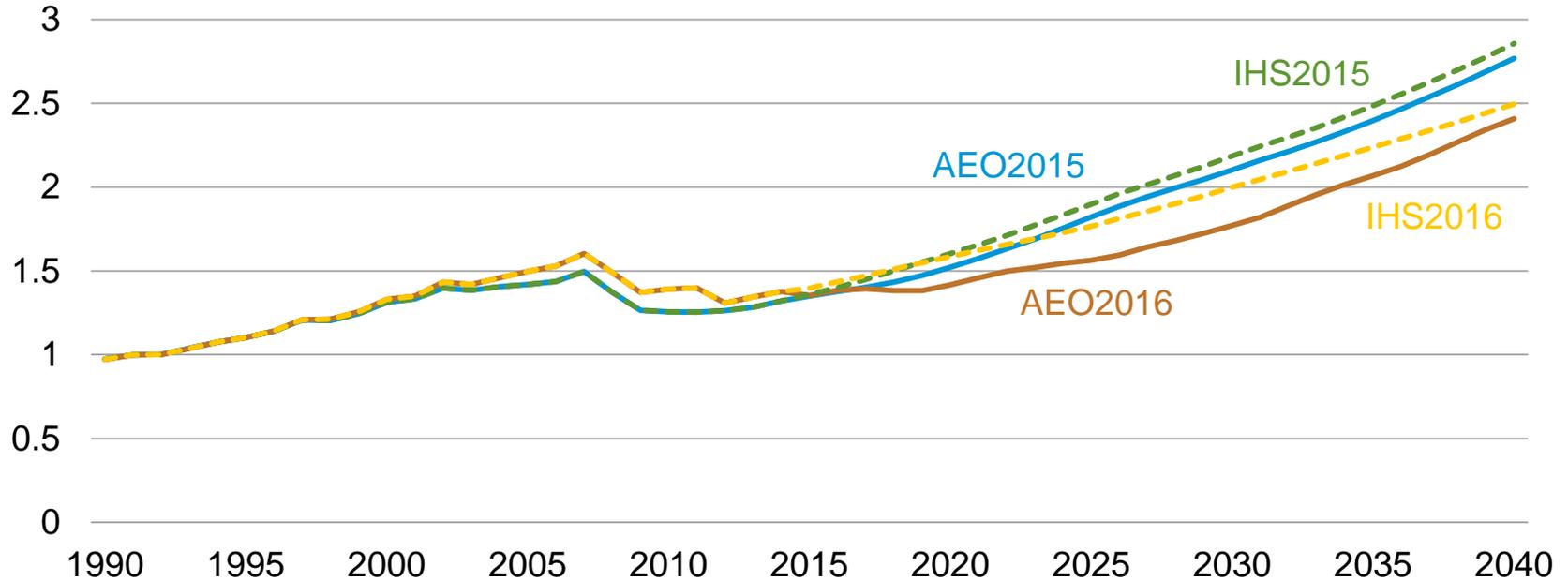
indexed agricultural chemicals shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs

Other chemicals (NAICS 3254-9)

indexed other chemicals shipments
1992 = 1.0



Source: IHS, AEO2015, AEO2016 preliminary runs