AVIATION WEEK
MRO
LATIN AMERICA

January 21-22, 2016
Lima, Peru

Presented by:

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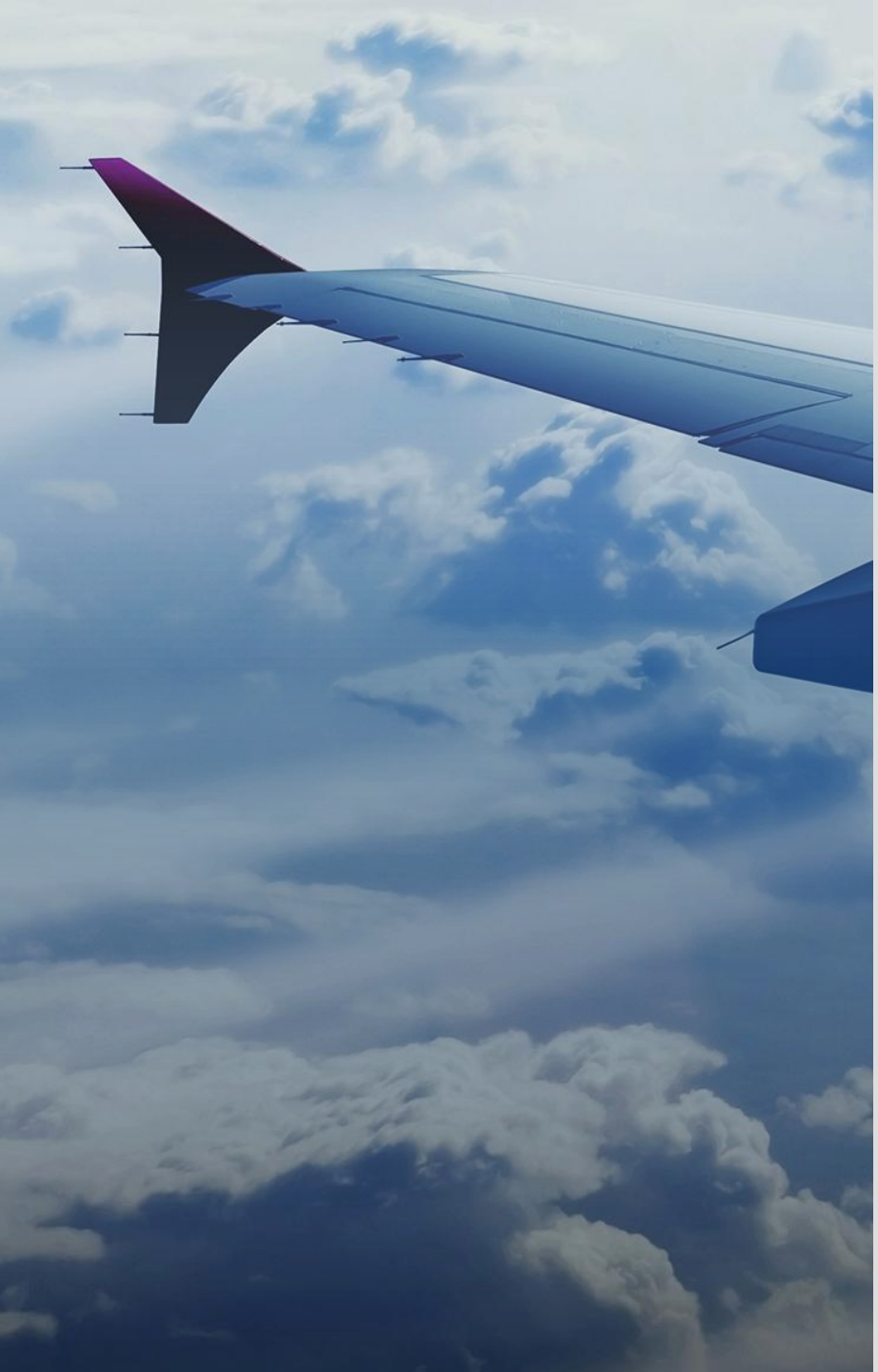
MRO Forecast and Market Trends

ICF INTERNATIONAL



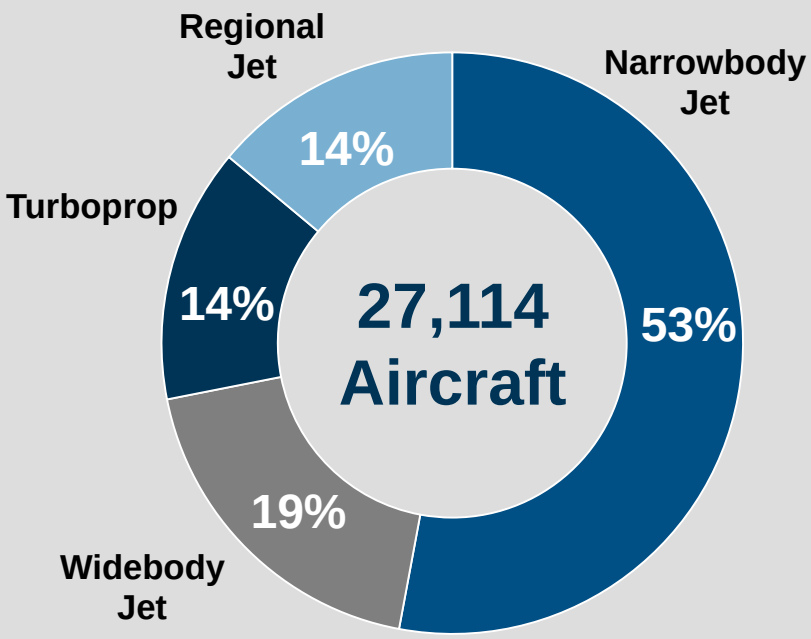
Today’s Agenda

- MRO Forecast
- Meet the Frackers!
- The *not-so-mighty-mighty* BRIC House
- The Next Big Thing!

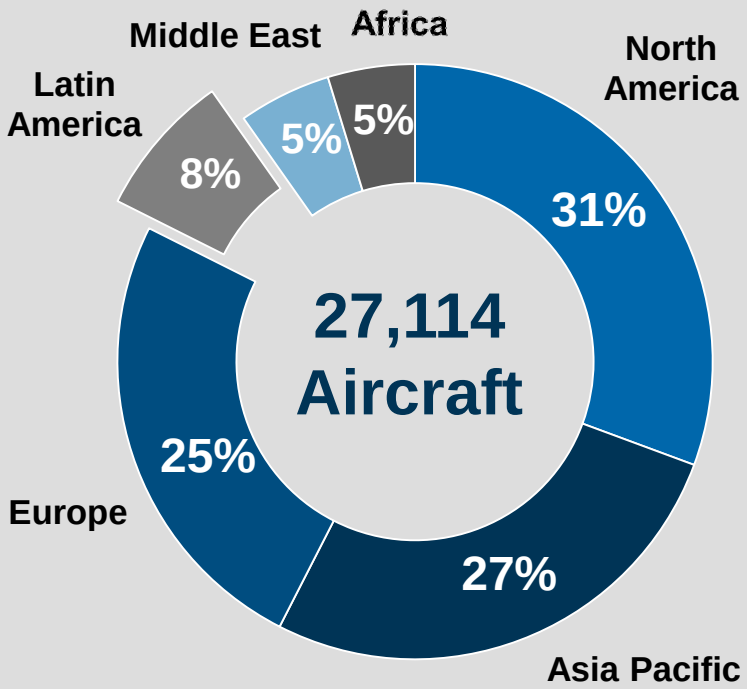
MRO Forecast

The current commercial air transport fleet consists of over 27K aircraft

2015 Global Commercial Air Transport Fleet



By Aircraft Type



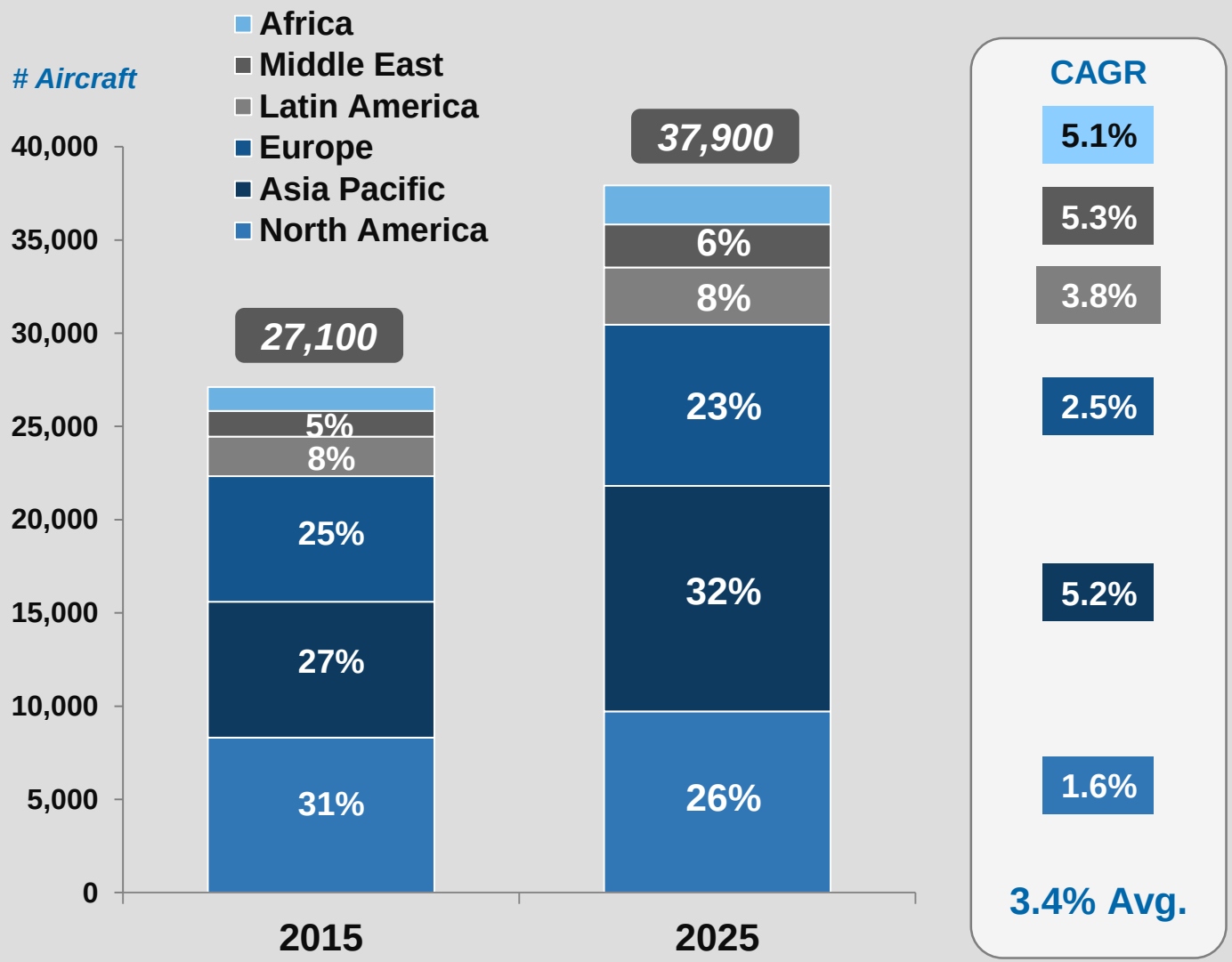
By Global Region

Source: CAPA 2015

The combination of strong air travel demand and the need to replace ageing aircraft will drive fleet growth at 3.4% annually

- Air traffic growth of ~4.1%
- Fuel costs in $55/bbl range
- ~19,600 aircraft deliveries
- ~8,800 aircraft retirements

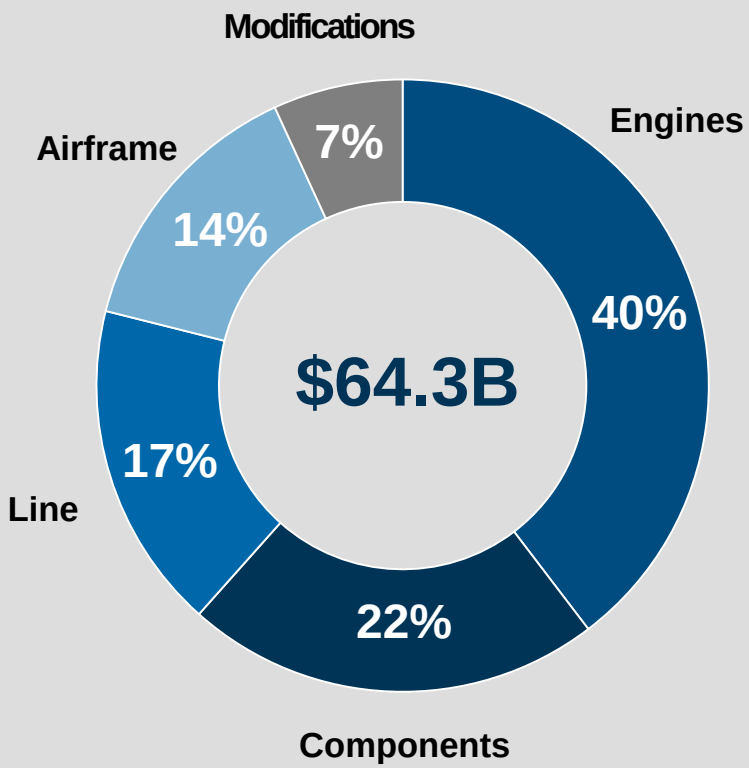
10 Year Global Air Transport Fleet Growth



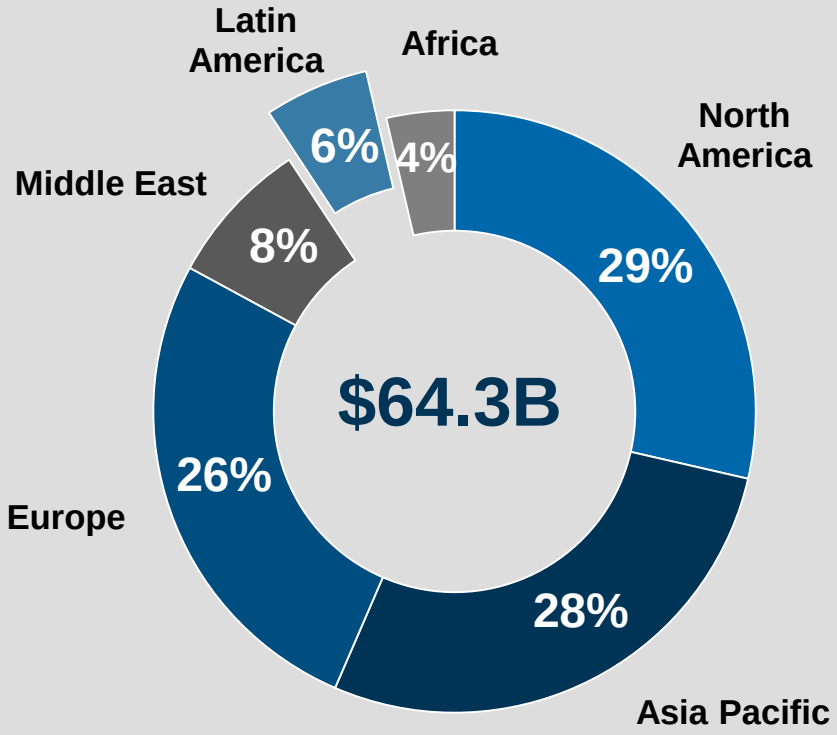
Source: ICF International, CAPA 2015

Current air transport MRO demand is $64.3B; with Asia equivalent to North America and Europe in market size

2015 Global MRO Demand



By MRO Segment



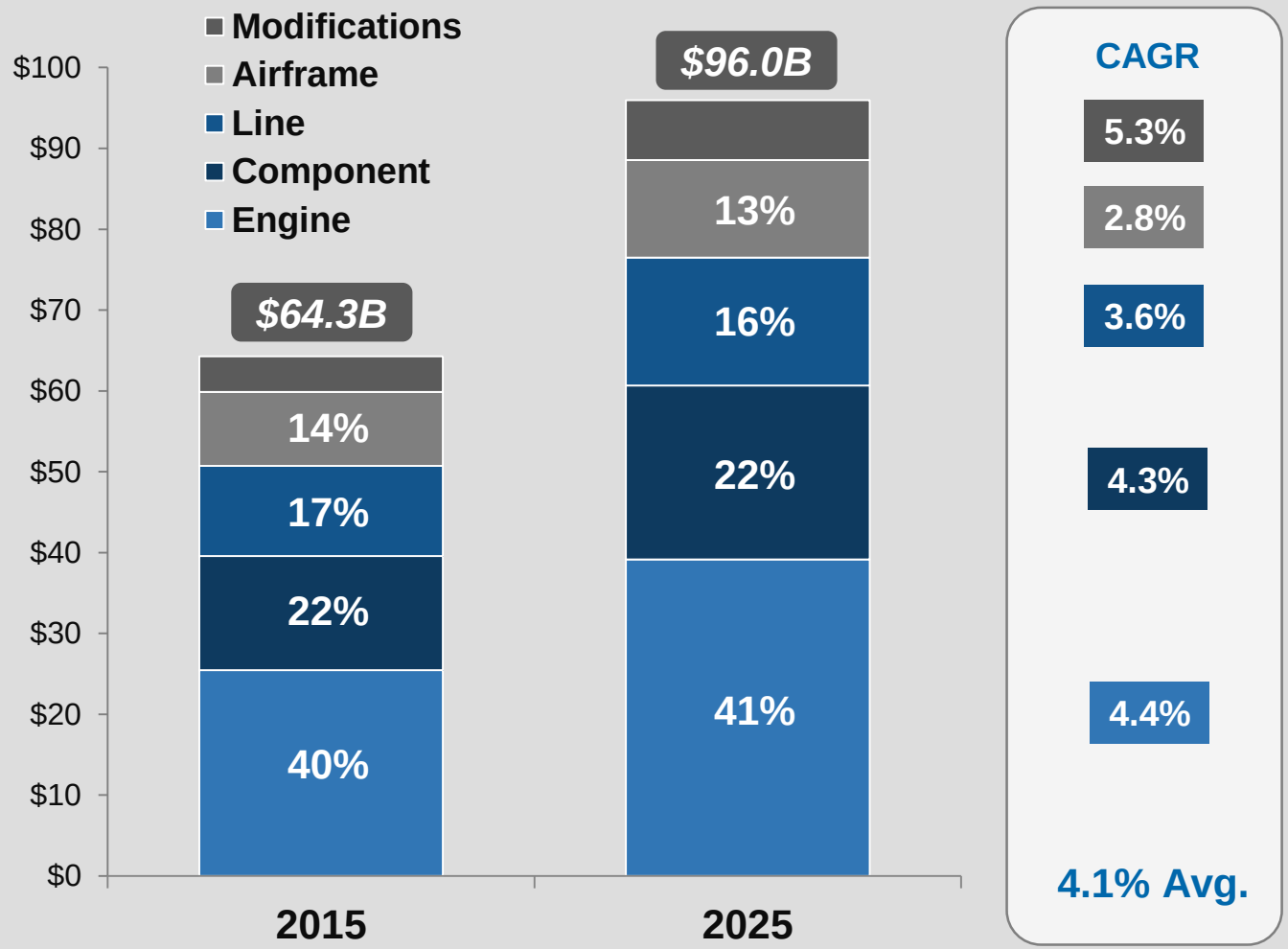
By Global Region

Source: ICF International; Forecast in 2015 $USD, exclusive of inflation

The global MRO market is expected to grow by 4.1% per annum to $96B by 2025

- The strongest drivers of growth are the engine and component markets
- Reduced labor intensity of airframe heavy checks as the fleet renews and increased intervals...offset in emerging markets by increasing labor rates
- Aircraft upgrades (e.g. interiors, winglets) drive high modifications growth

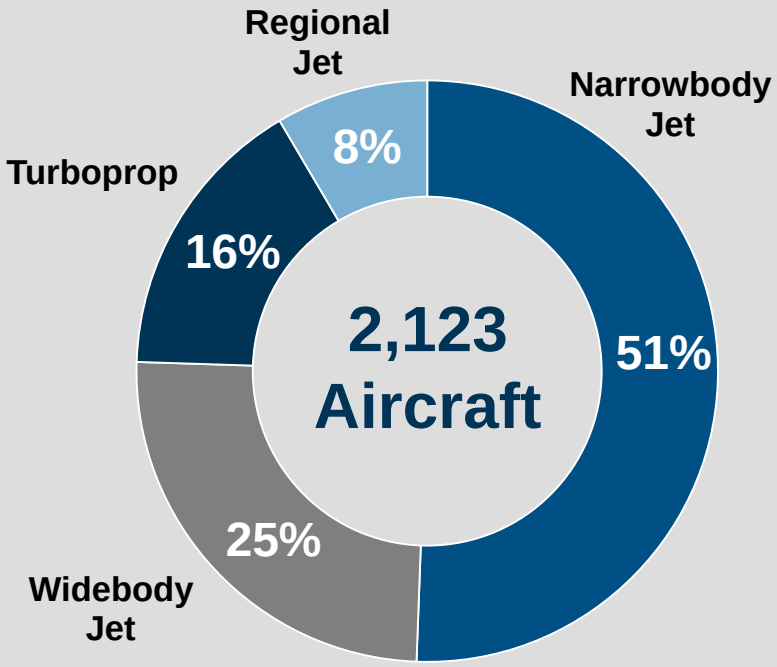
10 Year Global MRO Demand Growth



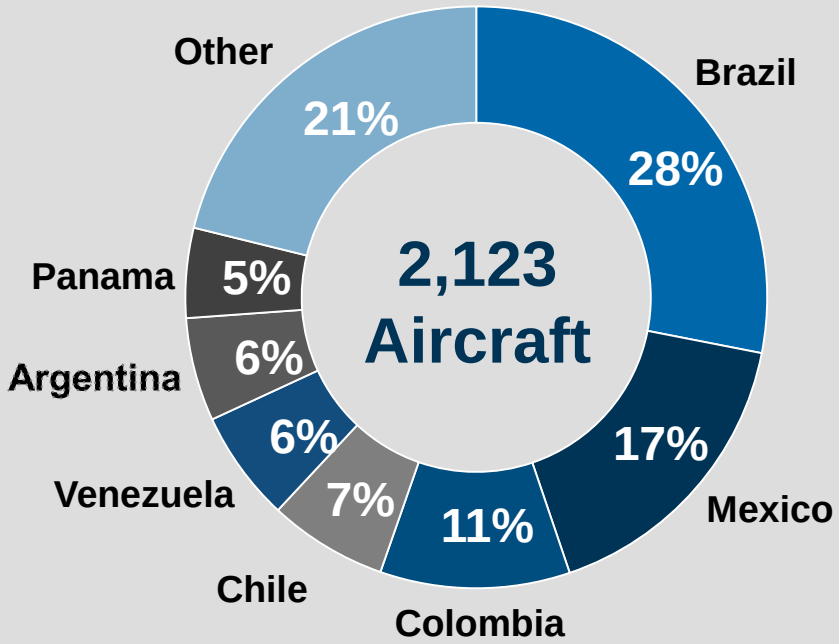
Source: ICF International; Forecast in 2015 $USD, exclusive of inflation

The current Latin American commercial air transport fleet consists of over 2,100 aircraft

2015 Latin American Commercial Air Transport Fleet



By Aircraft Type



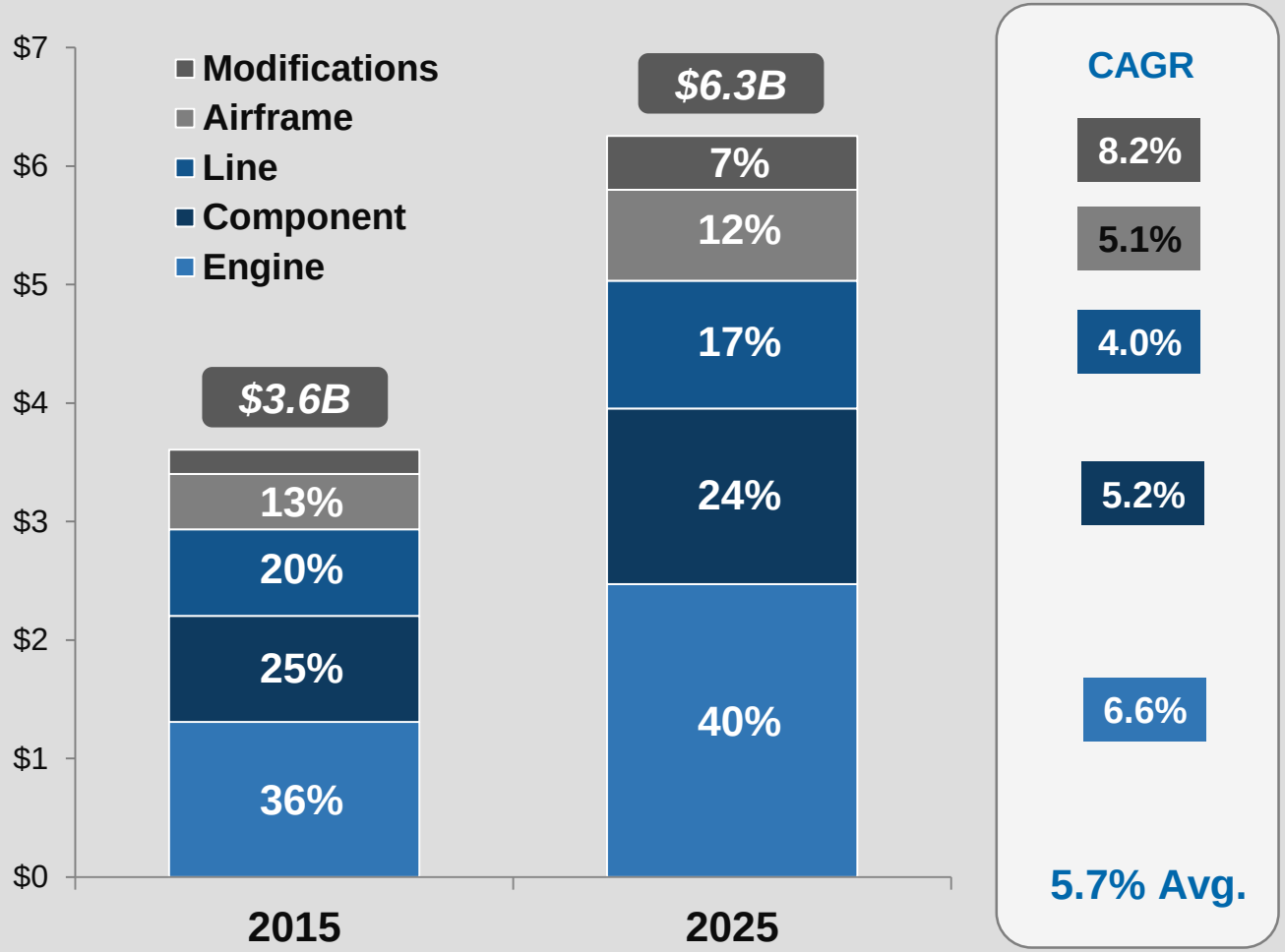
By Country

Source: CAPA 2015

The Latin American MRO market is expected to grow to approx. $6.3B by 2025, at 5.7% per annum

- Latin American MRO growth is driven by continued narrowbody aircraft deliveries
- MRO spend on widebodies in Latin America will also nearly double by 2025 as the fleet increases by 56%
- With the anticipated fleet growth, the strongest MRO spend areas will be for engines and components

10-Year Global Latin American MRO Demand Growth



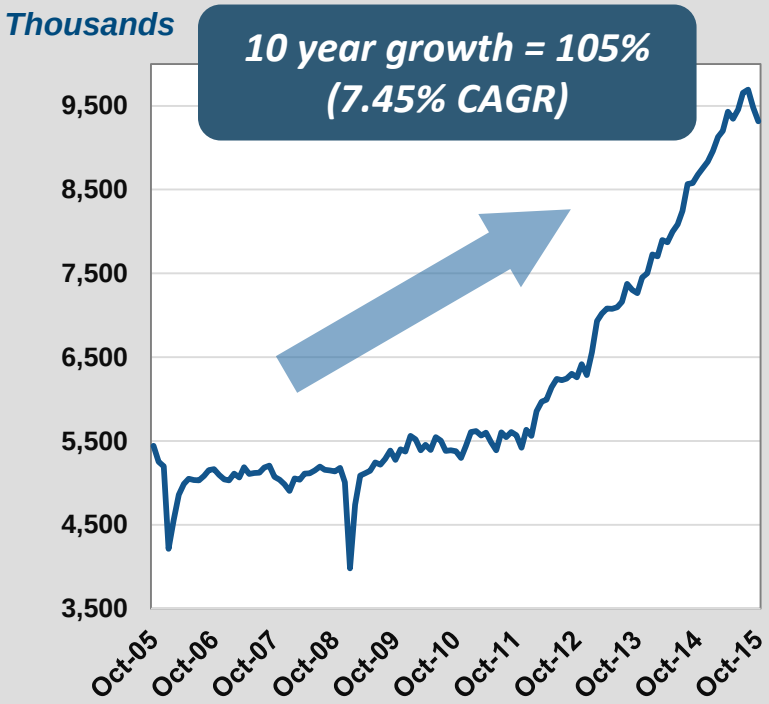
Source: ICF International; Forecast in 2015 $USD, exclusive of inflation

Meet the Frackers!

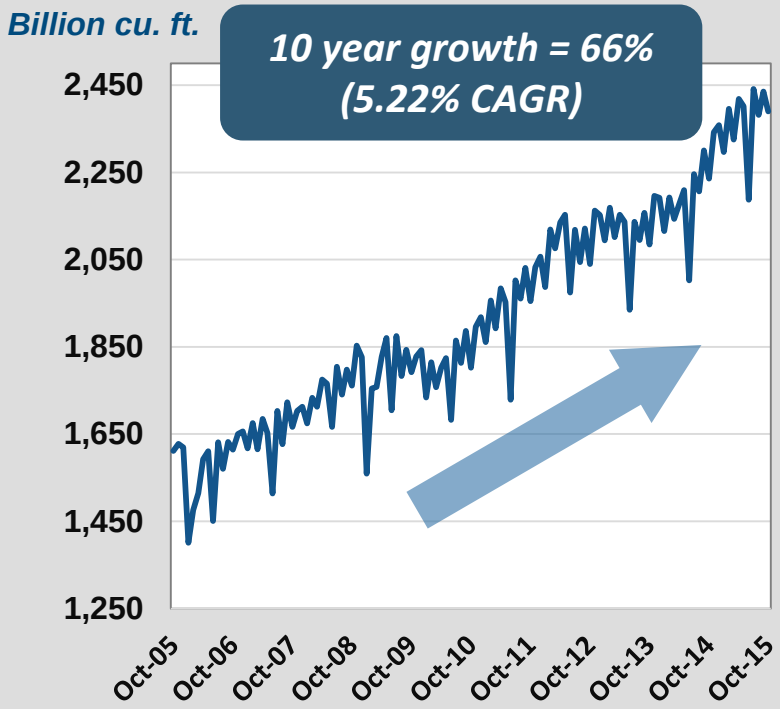
Breakthrough technologies in horizontal drilling and hydraulic fracturing (aka fracking) resulted in a US-led energy revolution

North American crude oil and natural gas production have soared in recent years…

U.S. Crude Oil Production
(Barrels / day)



U.S. Natural Gas Production
(Monthly marketed production)

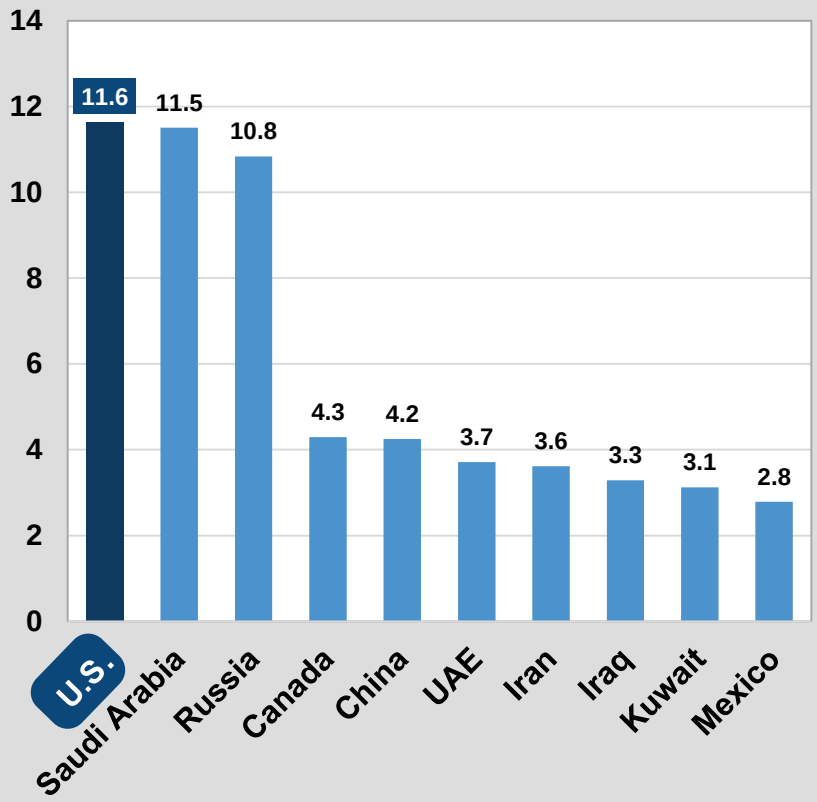


Source: ICF International analysis

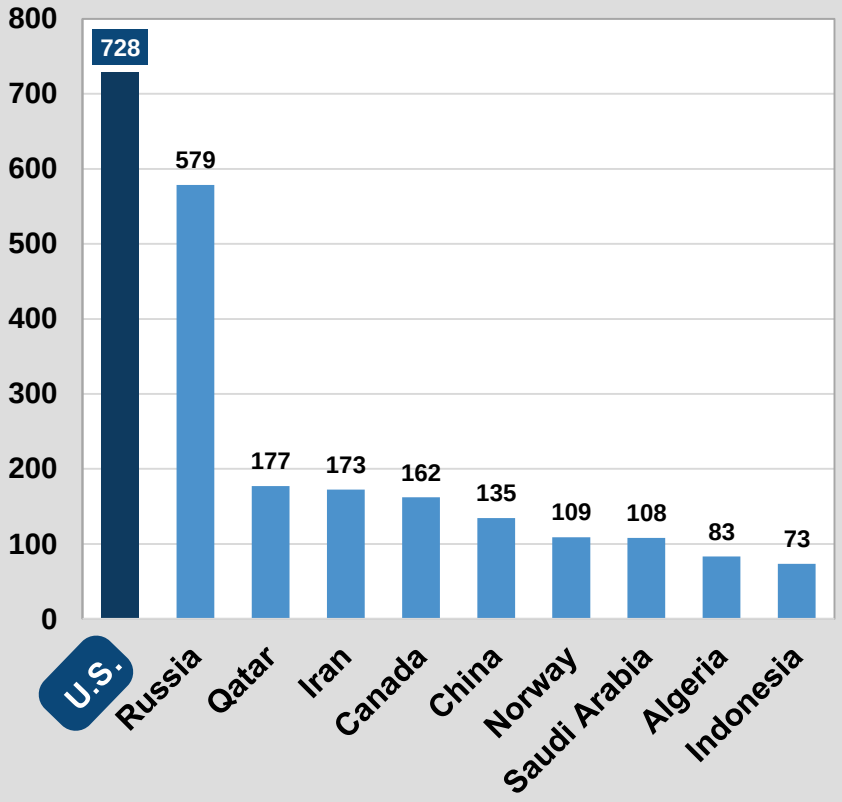
The US energy revolution has completely upset the global economic and geopolitical balance of power

…making the U.S. a global powerhouse in energy production

Global Oil Production
(Million barrels / day as of June 2015)



Global Natural Gas Production
(Billions of cubic meters as of June 2015)

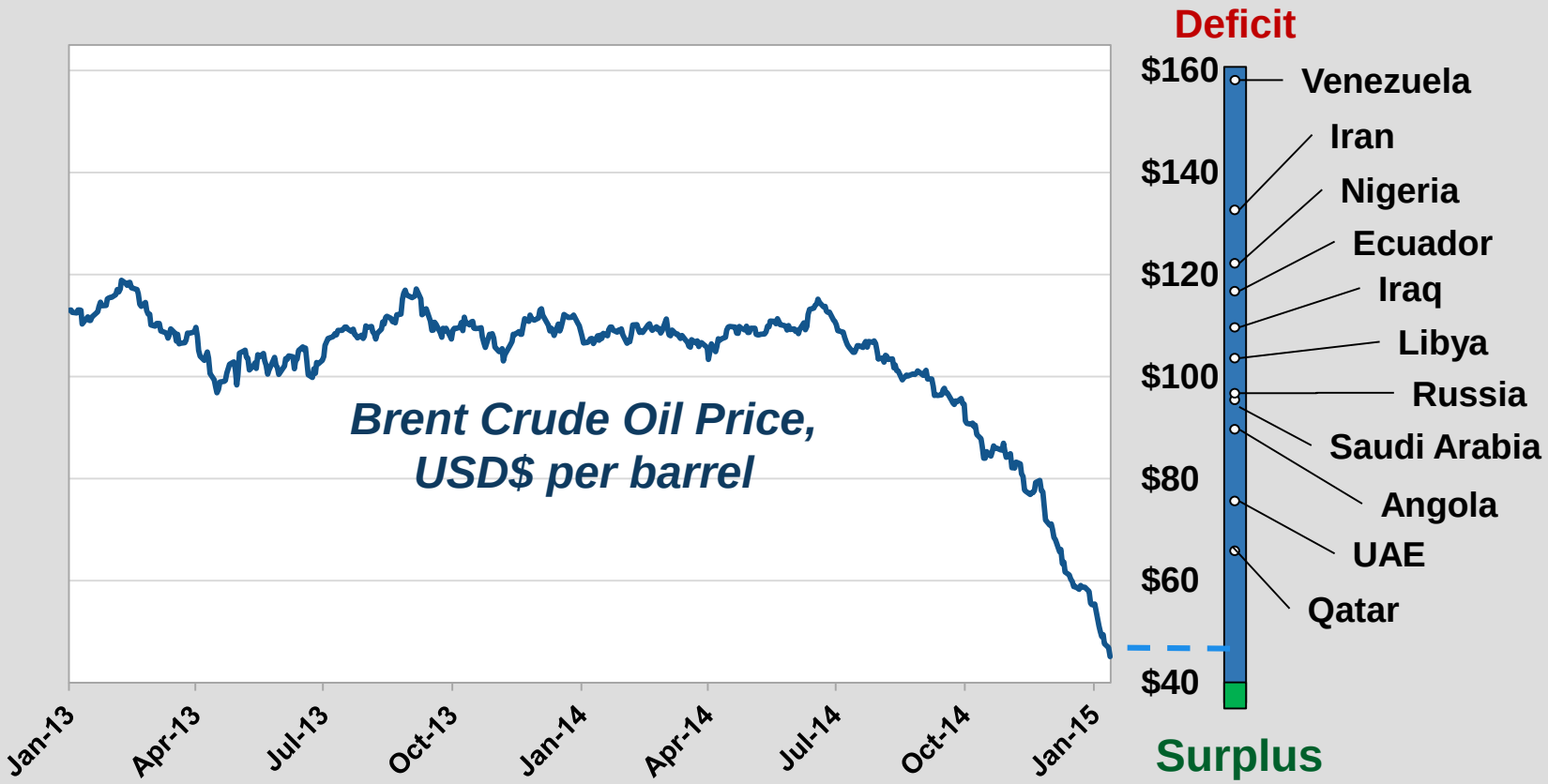


Source: BP Statistical Review of World Energy June 2015, ICF International Analysis

The potential for sustained reduction in oil revenues could further destabilize many already fragile economies

Low oil prices are exerting tremendous stress on economies dependent on energy exports

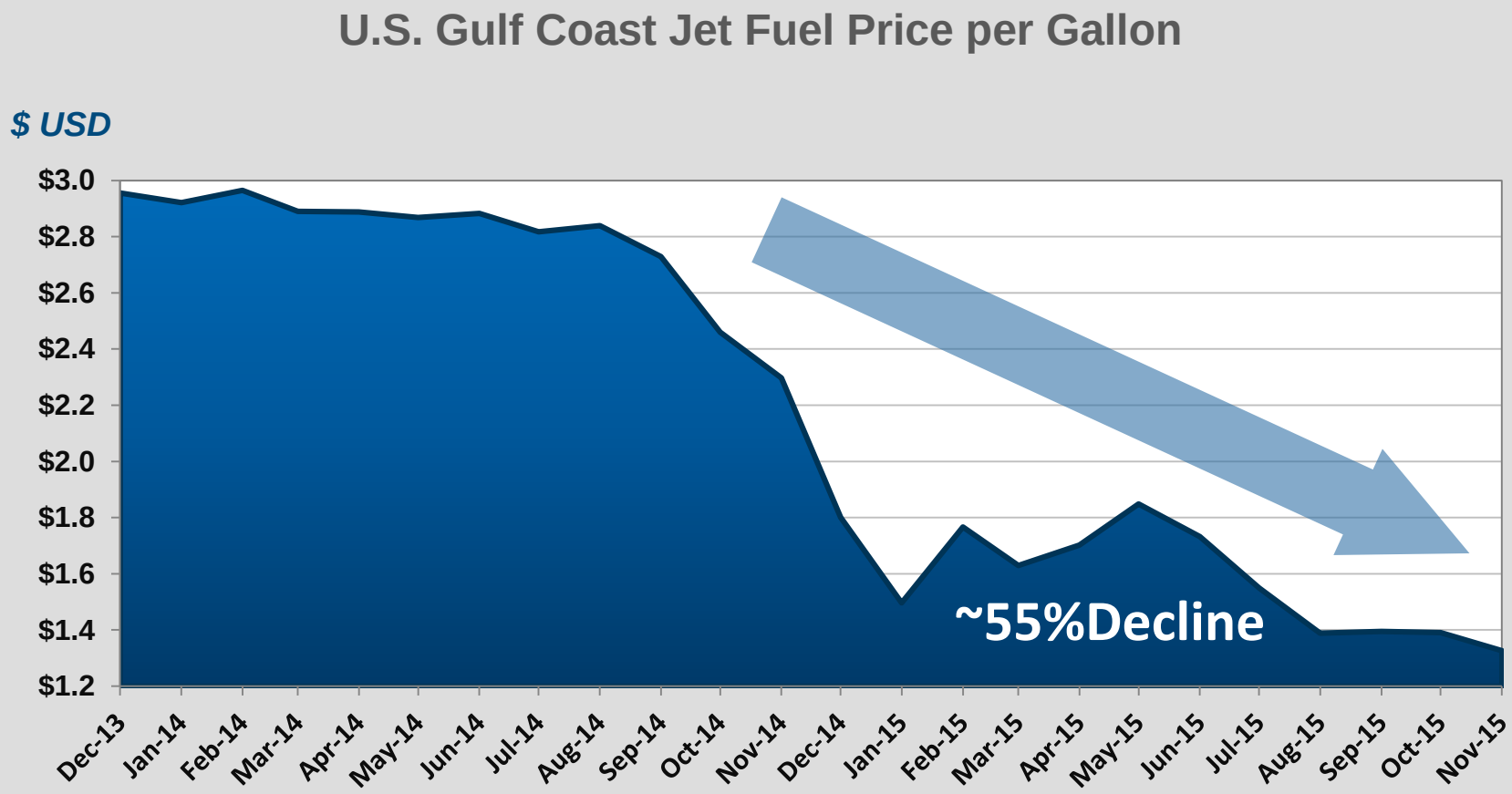
National Government Fiscal Budgets' Break-Even Oil Price
(2014)



Source: BP Statistical Review of World Energy June 2015, ICF International Analysis

Continued low fuel costs will have significant repercussions throughout the aviation & MRO supply chain

Aviation fuel costs have dropped over 55% during the past 24 months



Source: EIA; ICF International analysis

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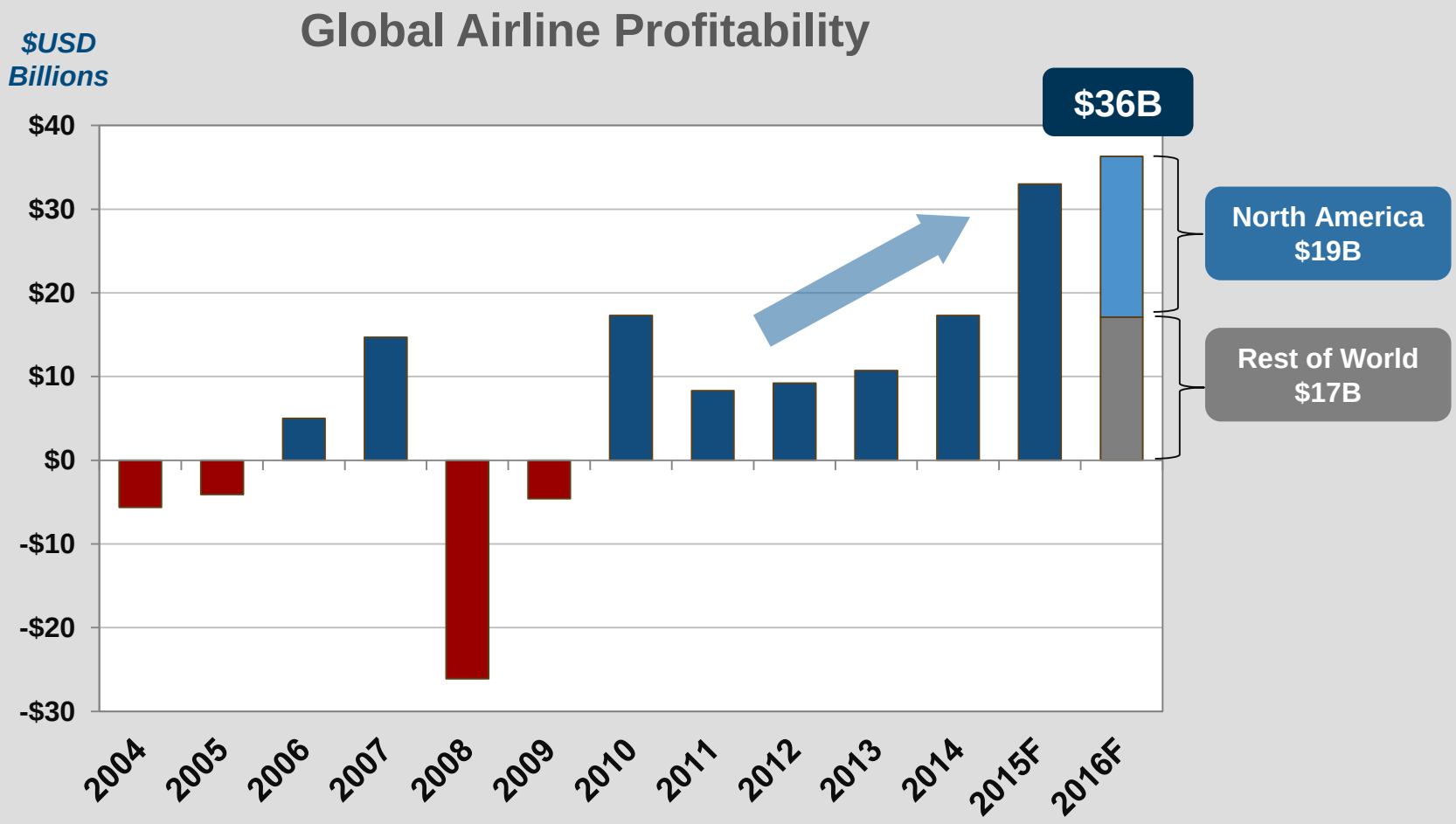
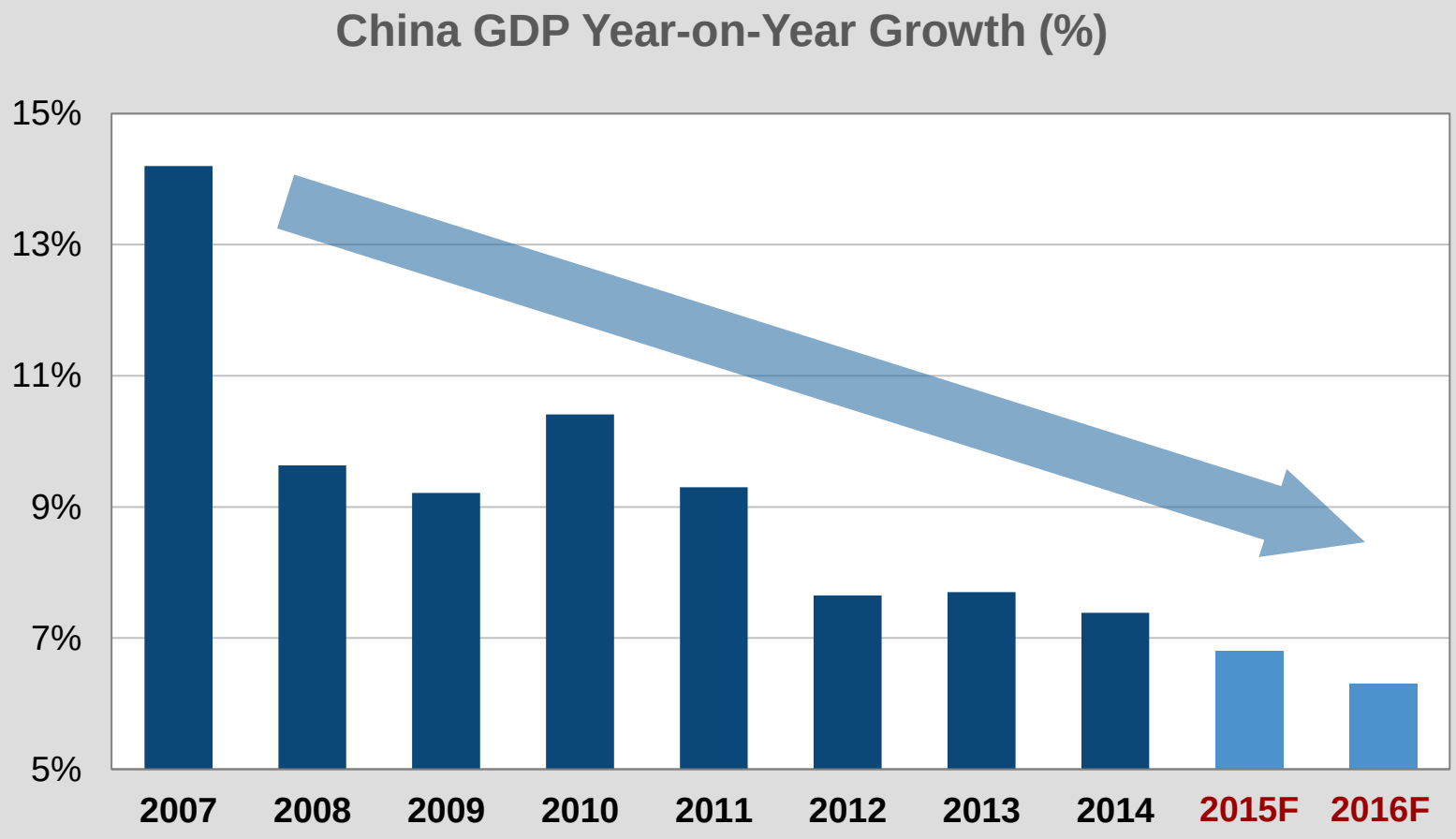


Source: EIA; ICF International analysis

The *Not-So-Mighty-Mighty* BRIC House

China's seemingly insatiable demand for global commodities was a key driver of the BRICS economic growth

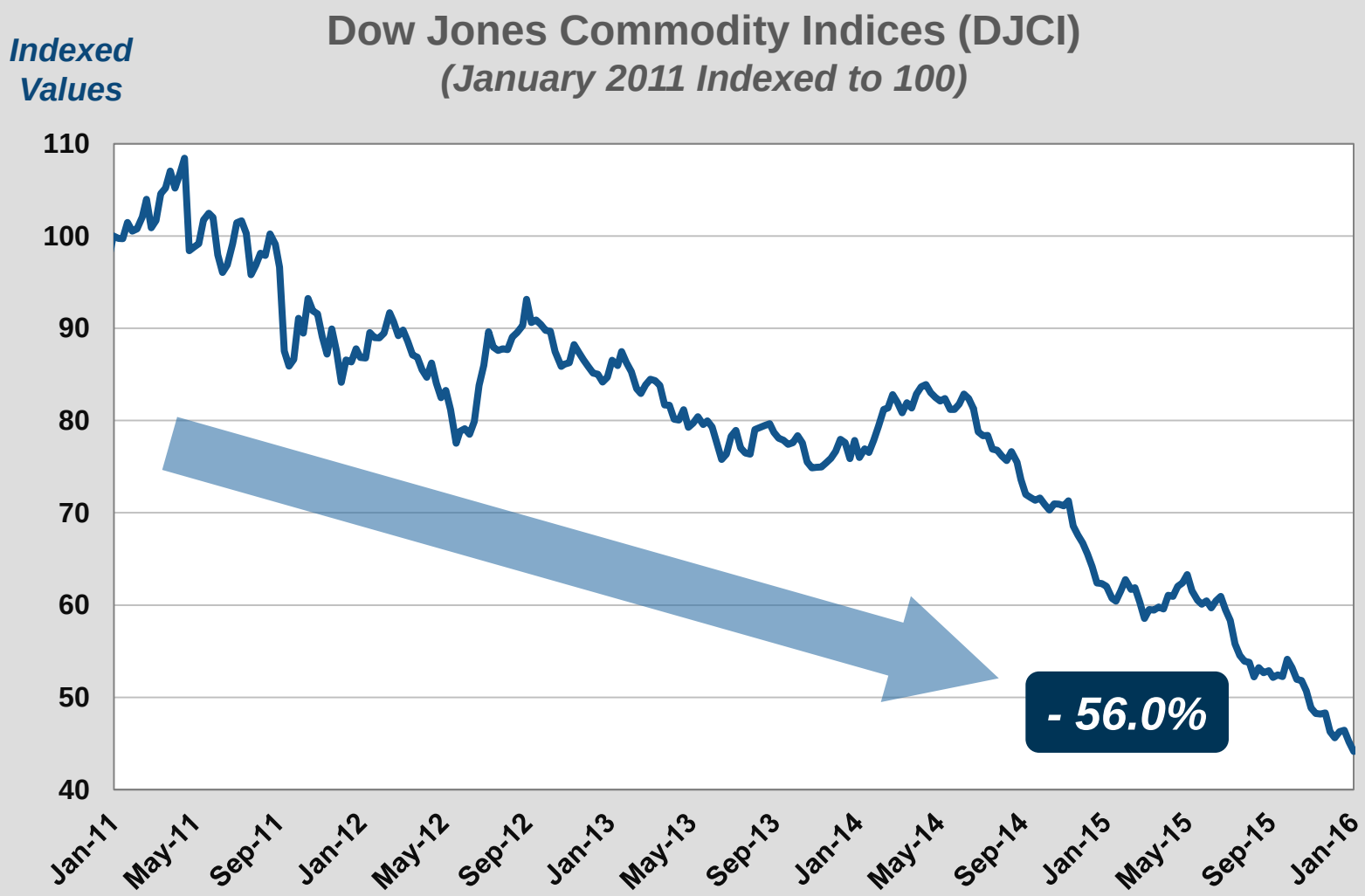
After years of staggering GDP growth, China's economy has been steadily slowing



Source: IMF, World Economic Outlook Database October 2015, ICF International Analysis

Latin American economies must continue to diversify away from commodities in order to minimize the adverse economic impact of plunging commodity prices

Over the past 5 years, commodity prices have plummeted more than 55%



Source: ICF analysis

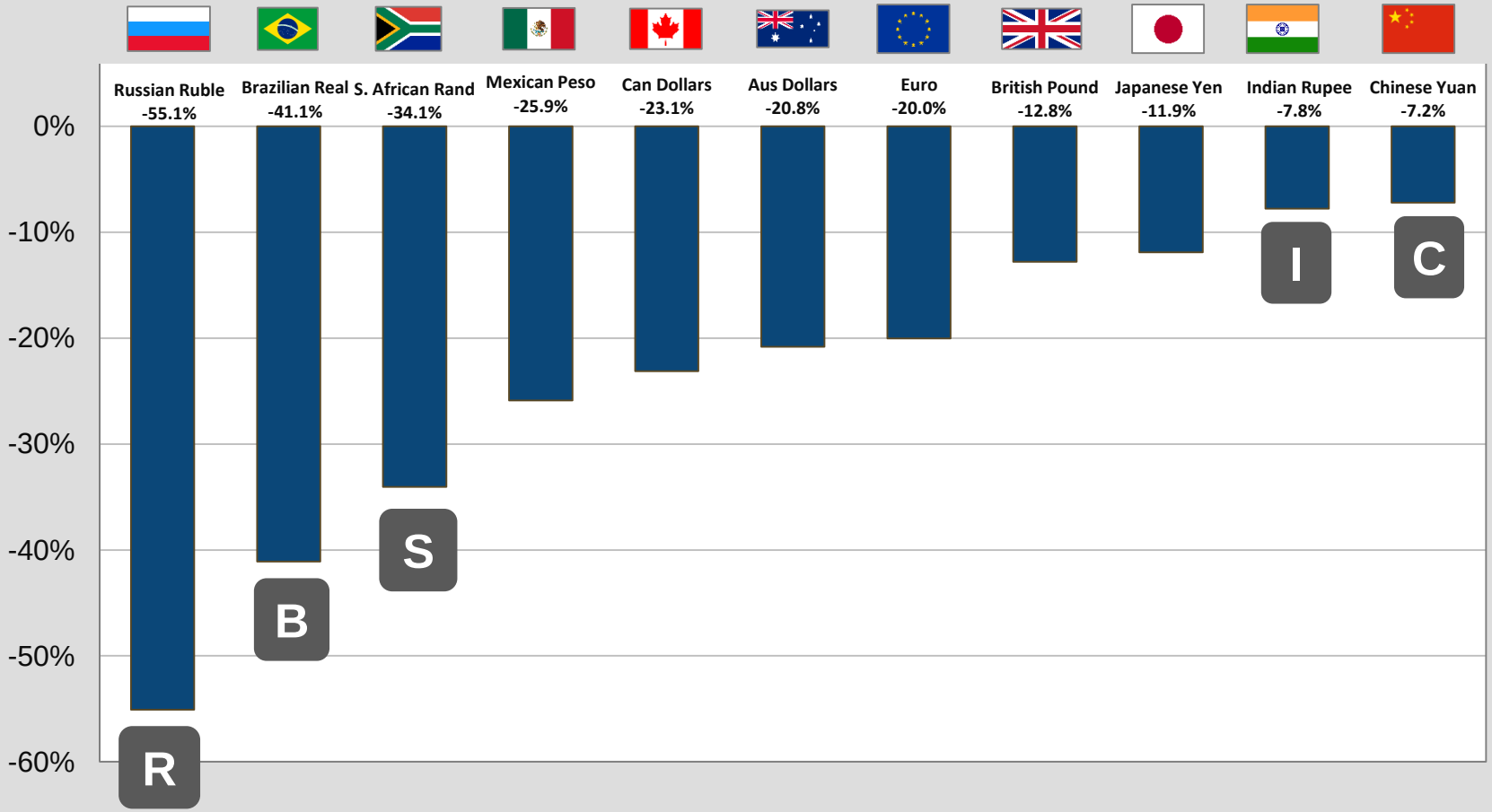
The dramatic increase in oil & gas market supply and reduced demand for commodities has led to a stronger US Dollar

FOREX Impact

- Partially offsets the positive impact of low fuel costs for operators
- Increases the cost of dollar based flight hour agreements (and parts/material in general)
- Cost of labor for in-country MROs is cheaper driving up margins for US dollar based contracts
- Buying/leasing aircraft becomes more expensive

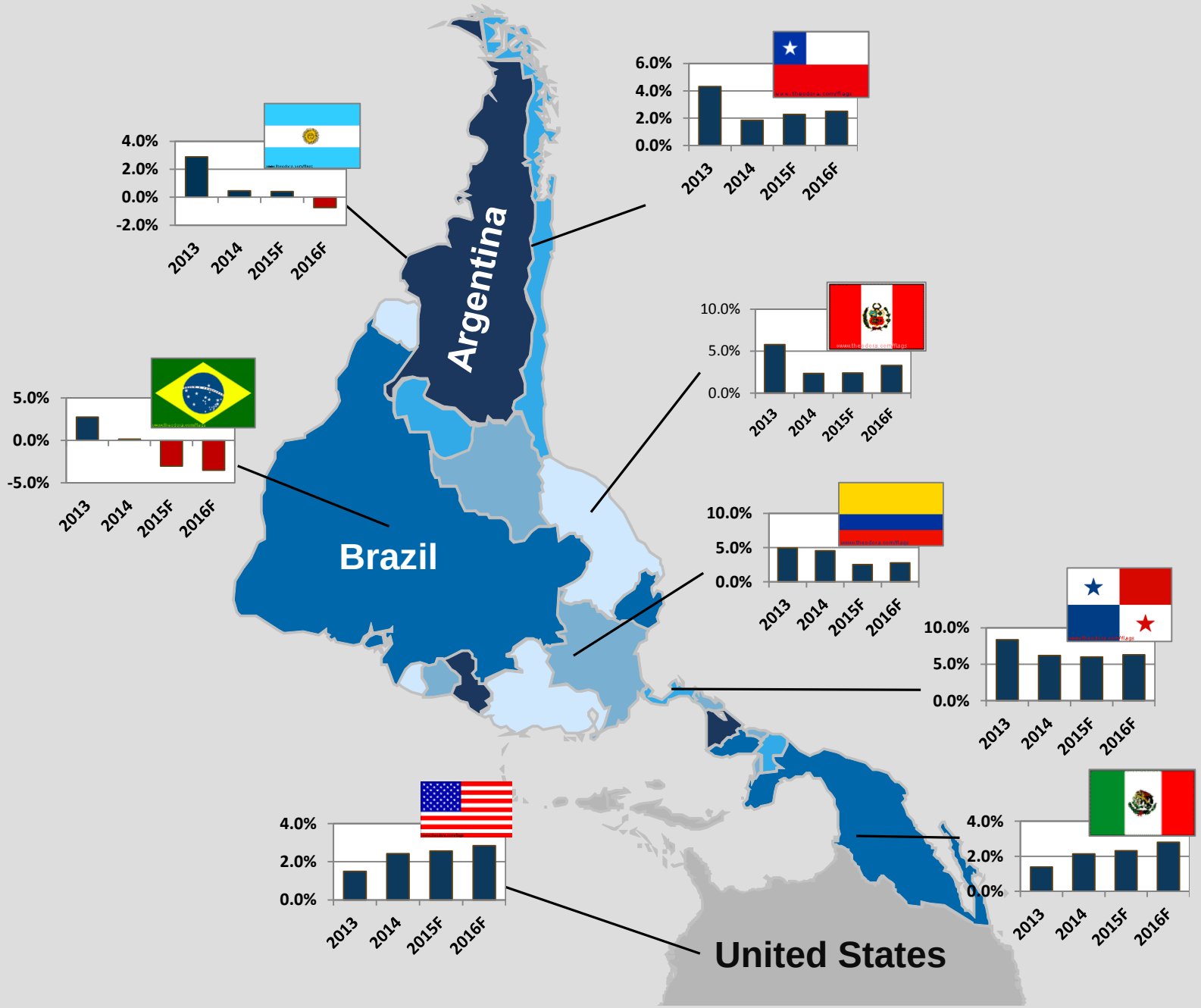
Global Currency Exchange Rates vs USD

% Value Change, Jan. 2014 – Jan. 2016



Source: Oanda historical exchange rates, ICF International Analysis

Latin America GDP growth continues to be negatively impacted by the global economic slowdown (more specifically China and commodities)



Note: All GDP Growth are calculated based on constant price (nation currency)
Source: IMF Economic Outlook Oct 15

While North American carriers are enjoying historic profitability, Latin American carriers continue to struggle

Aerolinas Argentinas

Jan-Aug 2015 Net Profits: ($85.8M)
Jan-Aug Net Margin: -6.4%

LAN & TAM (LATAM)

Q1-3 2015 Net Profits: ($203M)
Q1-3 2015 Net Margin: -2.7%

GOL

Q1-3 2015 Net Profits: ($788.7M)
Q1-3 2015 Net Margin: -44.3%

Avianca

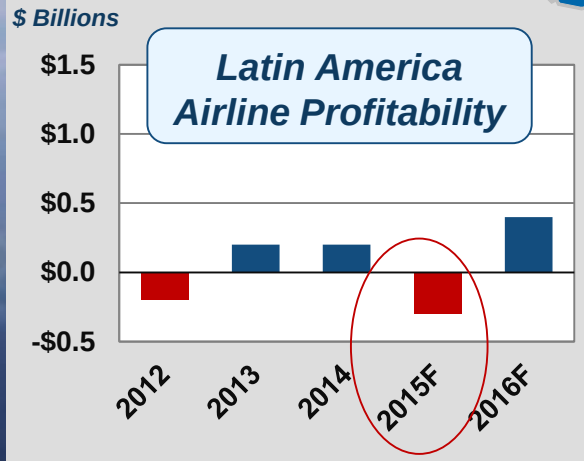
Q1-3 2015 Net Profit: $112.M
Q1-3 2015 Net Margin: 3.4%

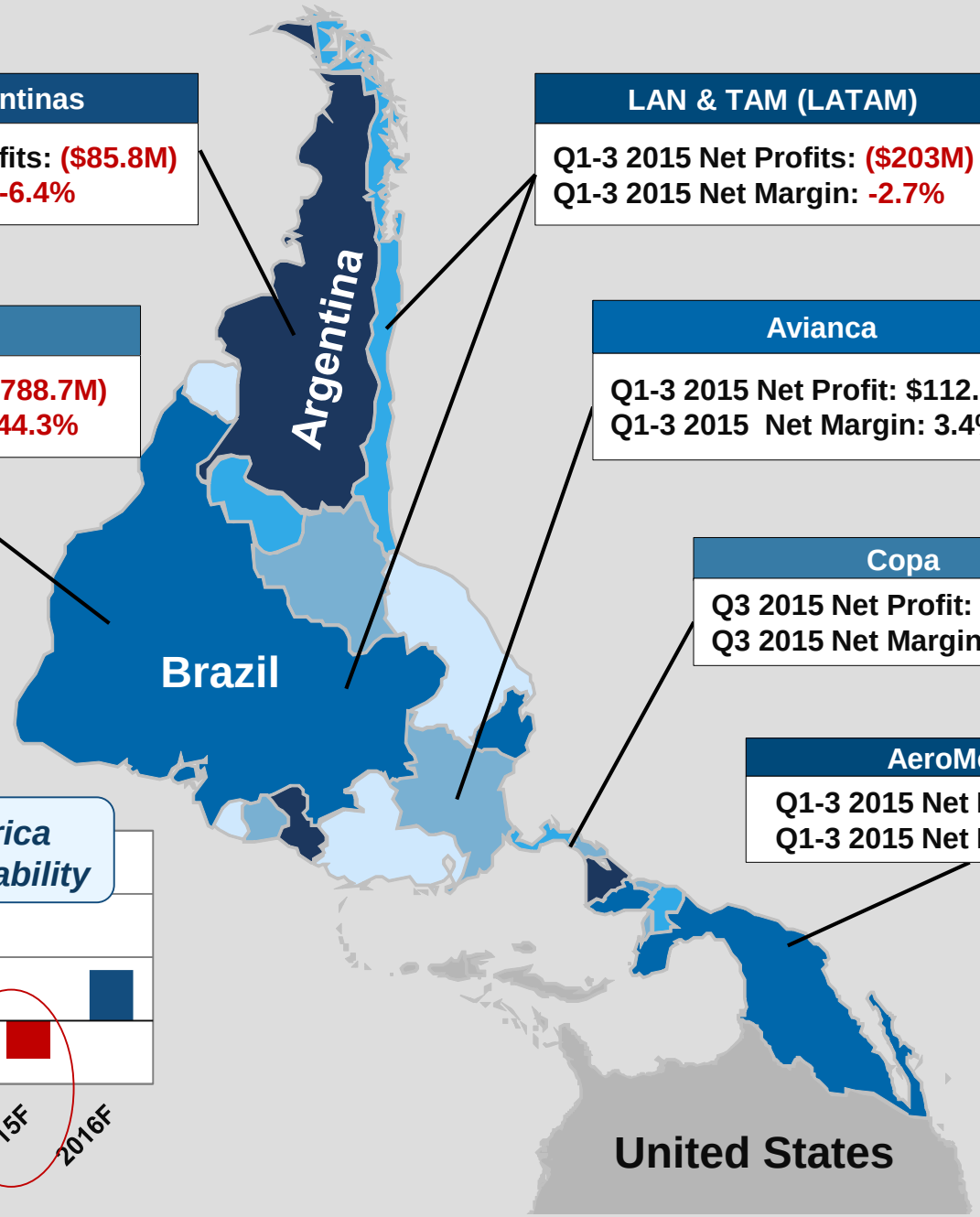
Copa

Q3 2015 Net Profit: $6.2M
Q3 2015 Net Margin: 1.1%

AeroMexico

Q1-3 2015 Net Profit: $737M
Q1-3 2015 Net Margin: 5.9%



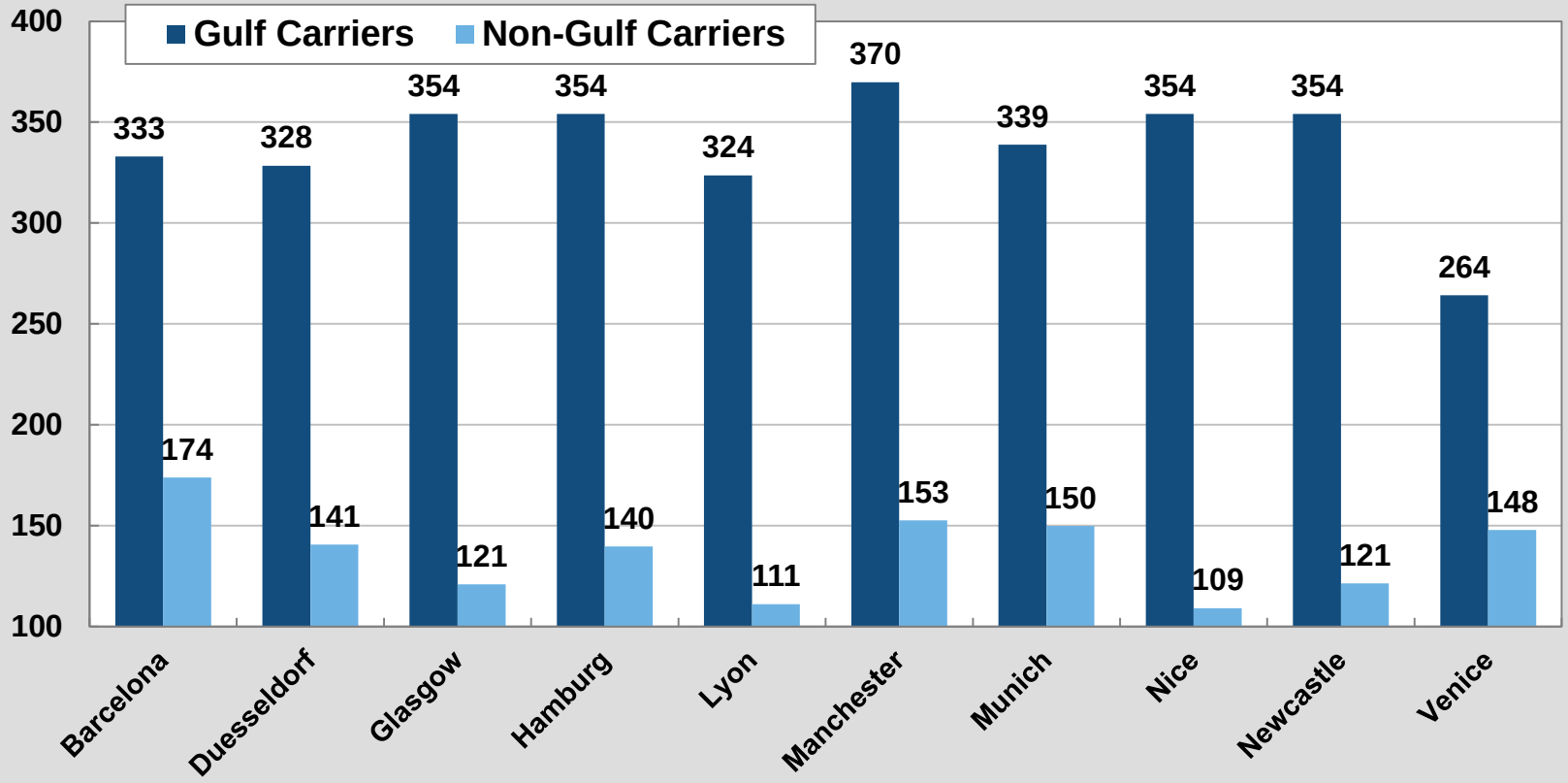


Source: Company websites, IATA, ICF International Analysis

March of the Middle East Titans; coming soon to an airport near you!

European Secondary Airports

Average Number of Seats per Departure in 2015

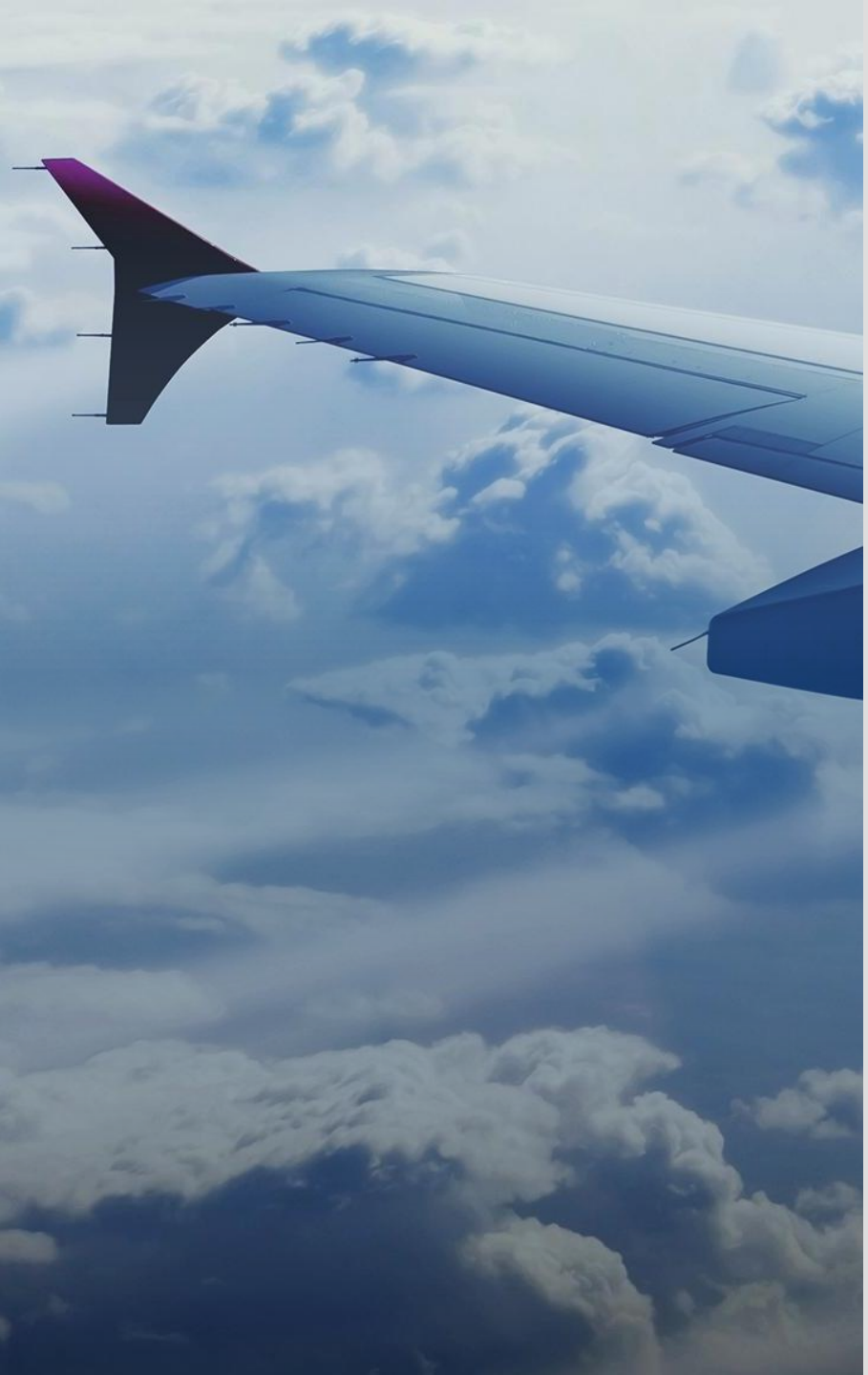


Lufthansa's Frankfurt hub has lost nearly a 3rd of its market share on routes between Europe and Asia since 2005, with more than three million people now flying annually from Germany to other destinations via Gulf hubs – The Economist

Source: OAG Data, ICF International Analysis

The Next Big Thing…

ICF believes that virtual reality (VR) technology will be as disruptive to MRO training as 3D-printing is to parts manufacturing



In Summary…

- The US energy revolution has disrupted global economics and geopolitics
- The economic slowdown in China has dramatically impacted commodity export dependent BRICS
- Latin America's exposure to commodity prices and impact of currency exchange rates will continue to drive economic headwinds in the region
- Virtual reality has the ability to transform the way technicians are trained

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THANK YOU!

For questions regarding this presentation, please contact:

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- LEAN Continuous Process Improvement
- Military Aircraft Sustainment

ICF is one of the world's largest and most experienced aviation & aerospace consulting firms

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  - Dedicated exclusively to aviation and aerospace
  - Blend of consulting professionals and experienced aviation executives
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