Brainteaser

Problem:

- You are in a 100 story building with two identical crystal balls. You are trying to find out the maximum floor for where the balls can be dropped from before they break. The balls will always break on the same floor and anything above it, but never below that floor. In the most efficient way (least number of drops), what will be the maximum number of drops required to find the right floor in the worst case scenario?

- Ask if you have any clarifying questions!

Brainteaser

Answer:

- You will need at most **14 drops** to find the right floor considering all possible scenarios.
- The naïve solution: try every floor until it breaks (1, 2, 3, …). Worst case would require 100 drops.
- Slightly better solution: Drop the first ball on floor 50. If it breaks, work your way up with the second ball (1, 2, 3, …, 49). If it doesn't break, work your way up starting from floor 51 (51, 52, 53, …). Worst case is floor 100, requiring 51 drops.

Brainteaser

Answer:

- The even better solution: Drop the first ball on every 10th floor (10, 20, 30, …). Once it breaks, work your way up until you find the exact floor (i.e. 31, 32, 33, …). Worst case is floor 100, requiring 19 drops.

Brainteaser

Answer:

- The even better solution: Drop the first ball on every 10th floor (10, 20, 30, …). Once it breaks, work your way up until you find the exact floor (i.e. 31, 32, 33, …). Worst case is floor 100, requiring 19 drops.
- The solution: Drop the first ball with decreasing increments (14, 27, 39, 50, 60, 69, …). Then, work your way up. The worst case scenario will always be 14 drops.

- What if you had 3 balls?

Market Update

11/7/17 to 11/13/17

- Venezuela - announced they would default on upcoming debt obligations
- HY IG Spread - spread has continued to tighten for a while but it has started to expand to some extent recently
- US 2yr Yield - yield has continued to increase, reflecting higher rate hike expectations

Pitches of the Month

November 14, 2017

LKQ Corporation

Long Pitch

November 14, 2017

Overview

1. **Company Overview**
2. **Background Information**
3. **Investment Thesis**
4. **Why This Opportunity Exists**
5. **Valuation**

LKQ Corporation (LKQ)	
Price (10/22/17)	37.34
Debt	3,009,927
Cash	303,544
Net Debt	2,706,383
Diluted S/O	310,396
Market Cap	11,590,187
EV	14,296,570
TTM EV/EBITDA	13.81
2018 EV/EBITDA	11.60

Company Overview

What does LKQ do?

- A distributor of aftermarket automotive products, including replacement parts, components, and systems used in the repair/maintenance of vehicles

- Differentiating Factor:
  - Specializes in providing **aftermarket** collision and mechanical products
  - From:
    - New products produced by non-OEMs
    - Recycled products from salvage vehicles
    - Used products that have refurbished
    - Used products that have remanufactured

Company Overview

What does LKQ do?

Clear Value Proposition

	2015 Chrysler Town & Country **Wheel**	2006 Chevrolet Silverado **Engine**	2012 Chevrolet Malibu **Bumper Cover**
New OEM	$380	$5,896	$335
Remanufactured	$261	$2,069	$209
Recycled OEM	$85	$1,090	$175
New A/M	N/A	N/A	$209
Average Savings	**55%**	**73%**	**59%**

Company Overview

What does LKQ do?

- North America (~50% of revenue)
  - Mostly a collision repair part distribution business
  - 20x the size of the next competitor, allowing for industry-leading fill rates

Company Overview

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  - Built on key 3 acquisitions: ECP (2011), Sator (2013), and Rhiag (2016)

Company Overview

What does LKQ do?

- North America (~50% of revenue)
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- Europe (~35% of revenue)
  - Distributes mechanical parts – very limited on collision parts
  - Built on key 3 acquisitions: ECP (2011), Sator (2013), and Rhiag (2016)
- Specialty (~15% of revenue)
  - Distributes specialty products for RVs, trucks, and towing vehicles along with performance products

Company Overview

What does LKQ do?

North America

- Collision
  - Aftermarket automotive products
  - Automotive glass distribution
  - Recycled & Refurbished
- Mechanical
  - Recycled engines & transmissions
  - Remanufactured Engines




Europe

- Mechanical
  - 175,000+ small part SKUs
  - Brakes, filters, hoses, belts, etc.
- Collision (limited)
  - Aftermarket (UK) & Recycled (Sweden)



Specialty

- Performance products
- Appearance & accessories
- RV, trailer & other
- Specialty wheels & tires



Background

Value Proposition of Using Aftermarket Parts

- Demand for aftermarket parts driven by cost savings
  - Most independent shops use aftermarket parts – cheaper and similar quality
- Pressure for insurance companies to lower costs
  - Most insurance companies only cover the cost of using aftermarket parts
  - Consumer has to make up the difference

Background

Historical Fragmentation of Aftermarket Parts in Europe

- European aftermarkets part has not flourished compared to that of the United States
  - Before 2010 - OEM’s placed strict restrictions on using aftermarket parts
    - Voiding of warranties
    - Elimination of aftermarket auto parts market
  - After 2010 – European Commission enabled customers to use aftermarket parts
    - Just needed to fulfill certain safety and environment conditions

- Slow Adoption
  - Not used to using and trusting aftermarket parts
    - Aftermarket penetration rate: 7% in Europe vs 35% in U.S.

Investment Thesis I: Growth Opportunity in Europe

Strong growth opportunity in Europe is multi-faceted

- Roll-up Strategy in Europe
  - Presence in Europe direct result of three acquisitions: ECP in 2011, Sator in 2013, and Rhiag in 2016
  - Goal is to build out a similar distribution network in Europe, as it has in North America – take advantage of fragmented European market
  - Historical financial returns:
    - IRR: mid-teens over 10 years
    - ROIC: 10 year average > 10%

Investment Thesis I: Growth Opportunity in Europe

Strong growth opportunity in Europe is multi-faceted

QUANTITATIVE FINANCE SOCIETY

Investment Thesis I: Growth Opportunity in Europe

Strong growth opportunity in Europe is multi-faceted

- Gross Margin Expansion
  - Consolidation of industry should drive margin expansion
    - Can leverage large network and purchasing power – better prices for inventory
    - North America Gross Margins: ~44%
    - Europe Gross Margins: 37%
    - Gap should close once the company expands its network (Management references goal of 40%)
- Organic Growth
  - Opening of new distribution centers along with general industry growth

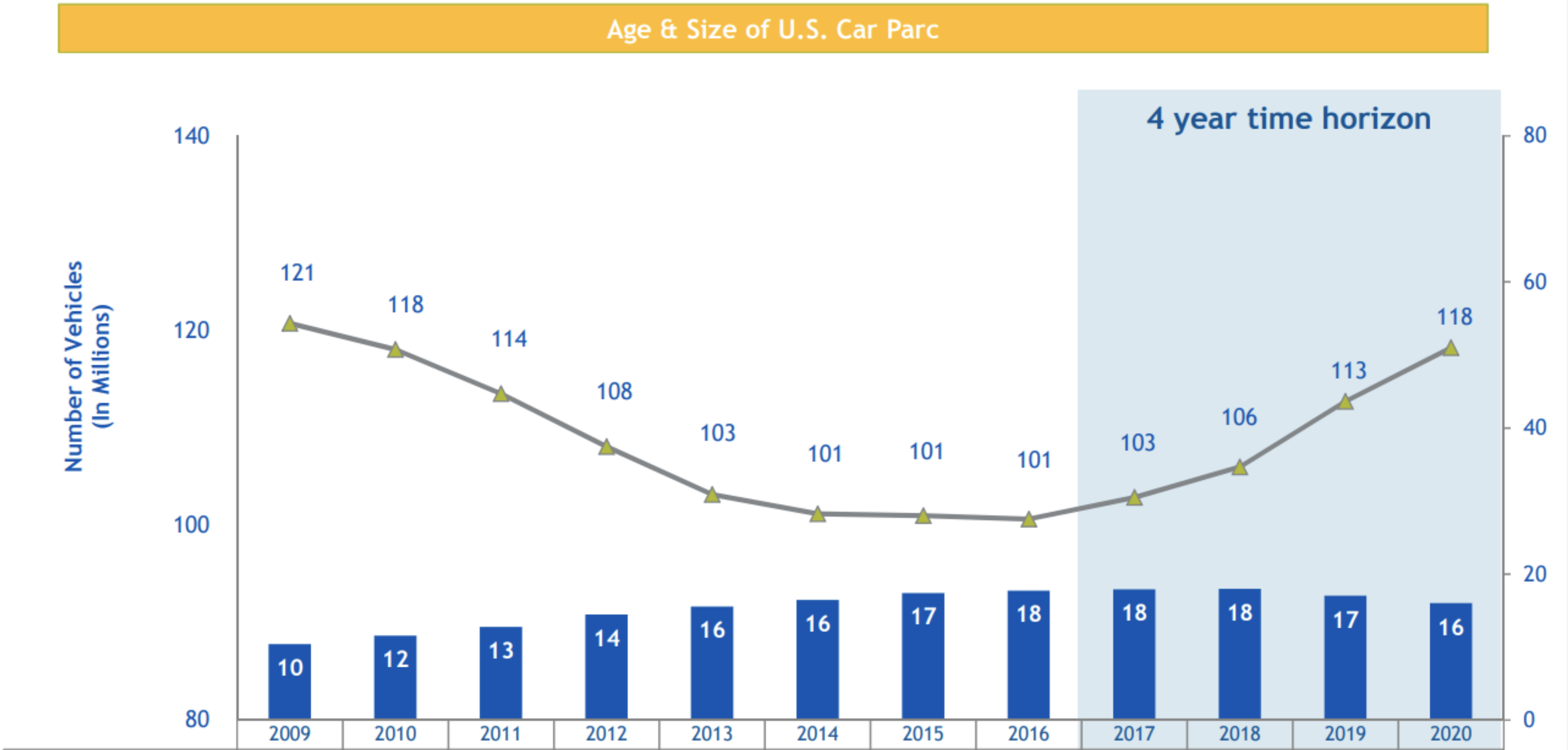
Investment Thesis II: “Sweet-Spot” Cars

Tailwinds from Increase in “Sweet-Spot Cars”

- Number of Cars Within “3-10” years is a key driver of the business
  - Management has stated how the low number of “sweet-spot” cars have held back growth rates in recent quarters

Investment Thesis II: “Sweet-Spot” Cars

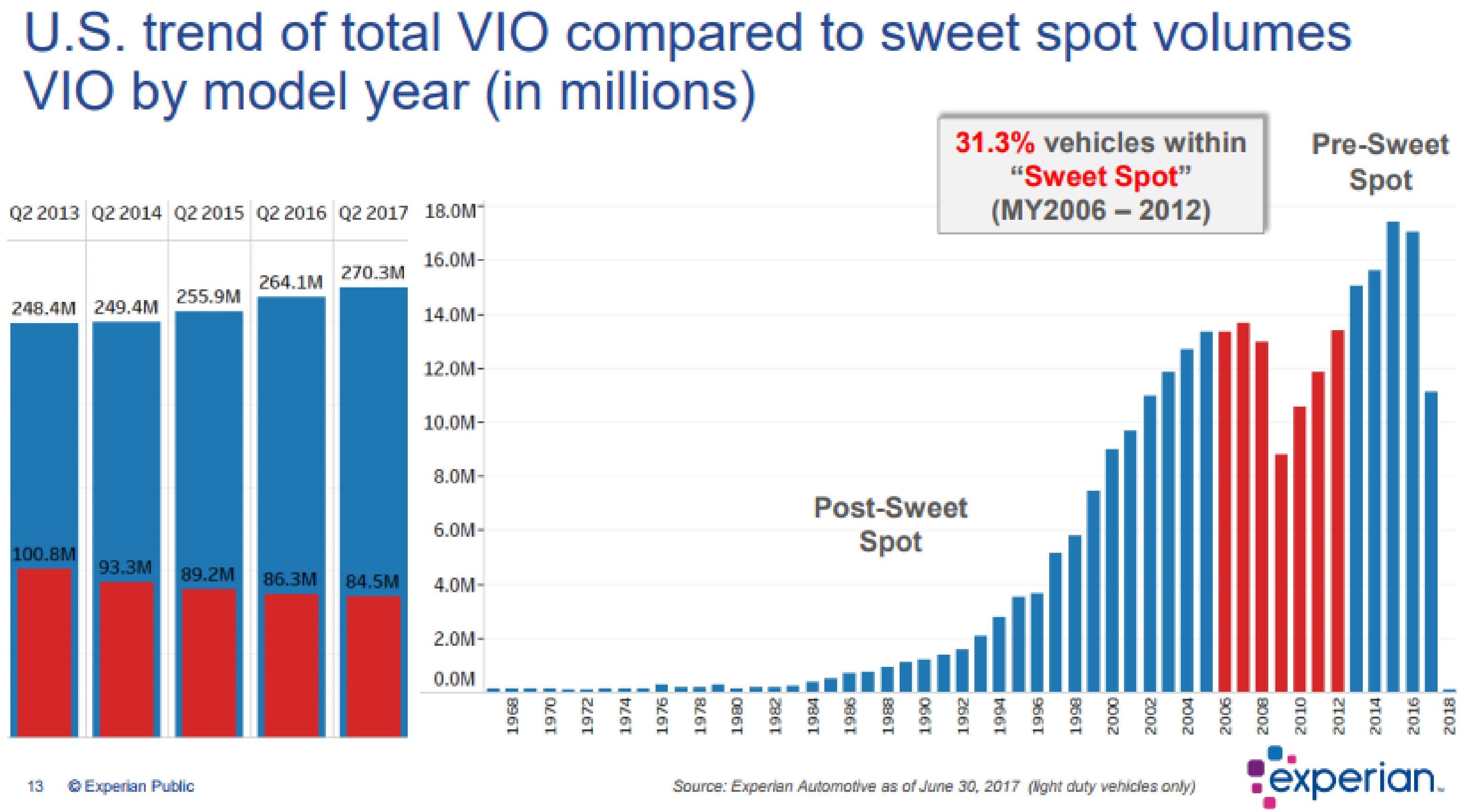
Tailwinds from Increase in “Sweet-Spot Cars”



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
New(SAAR)	10	12	13	14	16	16	17	18	18	18	17	16
Collision 3-10 Years	121	118	114	108	103	101	101	101	103	106	113	118

Investment Thesis II: "Sweet-Spot" Cars

Tailwinds from Increase in "Sweet-Spot Cars"



Why the Opportunity Exists?

Market's Reaction to Amazon Threat

- AutoZone (AZO)

Why the Opportunity Exists?

Market's Reaction to Amazon Threat

- O'Reily Automotive (ORLY)

Why the Opportunity Exists?

Market's Reaction to Amazon Threat

- North America
  - Very limited overlap between Amazon and the North America segment of LKQ
    - Amazon: focusing on mechanical repair market
      - Ex. spark plugs, filters, lights, wipers
    - LKQ: suppliers collision repair parts
      - Bulkier to ship and cut to specific specifications
      - Ex. doors, fenders, and bumpers
- Europe
  - Greater threat for European segment
  - However, repair shops require high-level of service for specific part and delivery time – Amazon would need to expand Europe distribution network

Why the Opportunity Exists?

Market's Reaction to Threat from Autonomous Driving and Collision Reduction

- Investors concerned with negative impact of autonomous driving on NA business – fewer collisions
  - Overblown threat
    - Timeframe should be beyond timeframe of investment
    - Adoption of semi-autonomous first
      - Could be beneficial – even if number of returns were lowered, could be made back with each part being more expensive

Valuation

Some made-up numbers that act as pretend proof I am right.

- Key Points:
  - $11 bn market cap – will move based on whether the company beats/meets/misses consensus expectations
  - Company can grow through organic and inorganic
  - Can’t project out how many the company will acquire in each year
  - Long-term play

Valuation

Some made-up numbers that act as pretend proof I am right.

Consolidated Income Statement (in thousands)	Q1	Q2	Q3	Q4	2017	2018	2019	2020
Revenue								
North America	$ 1,208,240	$ 1,206,514	$ 1,074,678	$ 1,243,957	$ 4,733,390	$ 4,979,278	$ 5,324,518	$ 5,603,169
%Revenue	*51.6%*	*49.1%*	*48.5%*	*52.9%*	*50.5%*	*50.2%*	*50.2%*	*50.8%*
Parts and Services Revenue	1,079,875	1,075,656	954,678	1,123,957	4,234,167	4,480,055	4,825,295	5,103,946
%Growth	*10.4%*	*5.5%*	*3.2%*	*3.2%*	*4.9%*	*5.8%*	*7.7%*	*5.8%*
%Growth Organic	*1.8%*	*2.8%*	*1.2%*	*1.2%*		*3.8%*	*5.7%*	*3.8%*
%Growth Acquisition	*8.3%*	*2.9%*	*2.0%*	*2.0%*		*2.0%*	*2.0%*	*2.0%*
%Growth Foreign Exchange	*0.2%*	*-0.2%*	*0.0%*	*0.0%*		*0.0%*	*0.0%*	*0.0%*
Other Revenue	128,365	130,858	120,000	120,000	499,223	499,223	499,223	499,223
Europe	820,897	889,751	832,379	841,570	3,384,597	3,654,836	3,946,694	4,064,897
%Revenue	*35.0%*	*36.2%*	*37.6%*	*35.8%*	*36.1%*	*36.8%*	*37.2%*	*36.8%*
Parts and Services Revenue	819,167	887,872	830,879	840,070	3,377,988	3,648,227	3,940,085	4,058,288
%Growth	*50.1%*	*7.9%*	*8.0%*	*8.0%*	*15.8%*	*8.0%*	*8.0%*	*3.0%*
%Growth Organic	*8.5%*	*4.1%*	*6.0%*	*6.0%*		*6.0%*	*6.0%*	*6.0%*
%Growth Acquisition	*51.5%*	*10.0%*	*10.0%*	*10.0%*		*10.0%*	*10.0%*	*5.0%*
%Growth Foreign Exchange	*-9.9%*	*-6.2%*	*-8.0%*	*-8.0%*		*-8.0%*	*-8.0%*	*-8.0%*
Other Revenue	1,730	1,879	1,500	1,500	6,609	6,609	6,609	6,609
Specialty	314,934	363,470	307,381	266,502	1,252,287	1,289,856	1,328,551	1,368,408
%Revenue	*13.4%*	*14.8%*	*13.9%*	*11.3%*	*13.4%*	*13.0%*	*12.5%*	*12.4%*
%Growth	*6.7%*	*5.5%*	*3.0%*	*3.0%*	*4.6%*	*3.0%*	*3.0%*	*3.0%*
Eliminations	(1,228)	(1,324)	(1,000)	(1,000)	(4,552)	(4,552)	(4,552)	(4,552)
Total Revenue	2,342,843	2,458,411	2,214,438	2,352,030	9,370,274	9,923,969	10,599,764	11,036,473
	21.9%	*6.7%*	*0.3%*	*9.4%*	*9.2%*			

Valuation

Some made-up numbers that act as pretend proof I am right.

COGS	(1,412,750)	(1,493,402)	(1,341,385)	(1,413,357)	(5,663,446)	(5,932,396)	(6,305,421)	(6,519,215)
Gross Profit	930,093	965,009	873,053	938,673	3,706,828	3,991,573	4,294,342	4,517,258
Consolidated Gross Margin	*39.7%*	*39.3%*	*39.4%*	*39.9%*	*39.6%*	*40.2%*	*40.5%*	*40.9%*
Gross Margin for NA	*44.4%*	*43.9%*	*44.0%*	*44.0%*		*44.5%*	*45.0%*	*45.0%*
Gross Margin for Europe	*37.0%*	*37.2%*	*37.0%*	*37.0%*		*38.0%*	*38.0%*	*39.0%*
Gross Margin for Specialty	*30.0%*	*30.0%*	*30.0%*	*30.0%*		*30.0%*	*30.0%*	*30.0%*
Facility and warehouse expenses	(189,780)	(190,936)	(177,155)	(188,162)	(749,622)	(793,918)	(847,981)	(882,918)
%Revenue	*-8.1%*	*-7.8%*	*-8.0%*	*-8.0%*	*-8.0%*	*-8.0%*	*-8.0%*	*-8.0%*
Distribution expenses	(185,810)	(194,392)	(177,155)	(188,162)	(749,622)	(793,918)	(847,981)	(882,918)
%Revenue	*-7.9%*	*-7.9%*	*-8.0%*	*-8.0%*	*-8.0%*	*-8.0%*	*-8.0%*	*-8.0%*
Selling, general and administrative expenses	(267,227)	(278,942)	(254,660)	(270,483)	(1,077,581)	(1,141,256)	(1,218,973)	(1,269,194)
%Revenue	*-11.4%*	*-11.3%*	*-11.5%*	*-11.5%*	*-11.5%*	*-11.5%*	*-11.5%*	*-11.5%*
Restructuring and acquisition related expenses	(2,928)	(2,521)	(6,643)	(7,056)	(28,111)	(29,772)	(31,799)	(33,109)
%Revenue	*-0.1%*	*-0.1%*	*-0.3%*	*-0.3%*	*-0.3%*	*-0.3%*	*-0.3%*	*-0.3%*
Total Operating Expenses	(645,745)	(666,791)	(615,614)	(653,864)	(2,604,936)	(2,758,863)	(2,946,734)	(3,068,140)
%Revenue	*-27.6%*	*-27.1%*	*-27.8%*	*-27.8%*	*-27.8%*	*-27.8%*	*-27.8%*	*-27.8%*
EBITDA	284,348	298,218	257,439	284,809	1,101,892	1,232,709	1,347,608	1,449,118
%Revenue	*12.1%*	*12.1%*	*11.6%*	*12.1%*	*11.8%*	*12.4%*	*12.7%*	*13.1%*

Valuation

Some made-up numbers that act as pretend proof I am right.

2019 EBITDA	1,347,608
Multiple	12
EV	16,171,297
Debt	3,009,927
Cash	303,544
Market Cap	13,464,914
Diluted S/O	310,396
Price	$43.38
Upside	16.2%

Long PHP (Philippine Piso)

Macro Pitch

November 14, 2017

Thesis

- The PHP will reverse its decline as geopolitical risks fade, infrastructure projects become more immediate in investors' purviews, and a rapidly growing economy fuels growing exports.
- These positive indicators would also put pressure on inflation and increase expectations for a rate hike by the Filipino Central Bank.
- I propose we should long the PHP against a basket of EM currencies as the currency will likely outperform its peers in the near term.

Country Background

Geography and Politics

- <u>Pre</u>
- “W … o ahead. You are inte … e money and the … one,” he said. “Yo … ’t fuck with us.”
- -Ro
- Poli … ive legislature
- Geo … slamist insu … a Sea

Country Background

Economy

- Statistics
- GDP growth: 6.7%
- Unemployment: 4.7%
- Public Debt-to-GDP ratio: ~45.8%
- Profile
- Major Exports: Semiconductors, electronics, copper products, shipbuilding and repair, coconut oil etc, agricultural products, etc. Also growing point of outsourcing for services eg call centers.

Government Policy

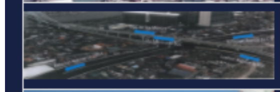
Effectiveness

- Duterte is a highly effective figure due to his popularity and control of the legislature, despite international and localized outrage at his behavior. His economic nationalism, strongman persona and social centrism is highly attractive to Filipinos.
- He has been able to sign in substantive executive orders (incl commissioning new anti-poverty programs)
- He has also already passed infrastructure spending packages worth $18 billion

Government Policy

Infrastructure

DUTERTE NOMICS BUILD BUILD BUILD PHILIPPINE INFRASTRUCTURE TRANSPARENCY PORTAL

PROJECT	PROJECT NAME	IMPLEMENTING AGENCY	SECTOR	BUDGET	START DATE	STATUS
	NLEX - SLEX Connector Road	DPWH	Roads and Bridges	PHP 23,302,000,000	2010/05/06	Project Development
	Bonifacio Global City to Ortigas Road Link Project, Sta. Monica-Lawton Bridge and Viaduct (Phase I & II-A)	DPWH	Roads and Bridges	PHP 4,012,100,000	2012/05/01	Project Implementation
	NAIA Expressway Phase II	DPWH	Roads and Bridges	PHP 20,450,000,000	2011/05/01	Project Development
	Mandaluyong Main Drainage Project (MMDP), Phase II	DPWH	Flood Control	PHP 359,170,000	2014/08/18	Project Procurement
	Pasig-Marikina River Channel Improvement Project, Phase III (JICA PH-P252)	DPWH	Flood Control	PHP 7,545,000,000	1998/06/01	Project Procurement
	NLEX Harbor Link, Segment 10	DPWH	Roads and Bridges	PHP 9,000,000,000	2014/05/30	Project Implementation

Fading Geopolitical Risks

And it’s not just a lazy news cycle

- The Mindanao (Marawi) crisis is virtually over. While some martial law is still in place as some remnants of Islamist groups have taken to the countryside, the group’s leaders have been killed and control inside the city has been restored.
- His campaign of extrajudicial killings has come to an end. He has returned his signature campaign responsibility of combating drug-related crime to the relevant law enforcement agency.
- Fears that the Philippines would wreck havoc on the balance of power between China and the US-aligned bloc generally faded. Duterte has distanced himself from entangling the government with China’s while his anti-US rhetoric has mainly remained rhetoric.
- Duterte has also begun to engage in peace negotiations with Communist rebels based in small pockets in the country and abroad, further lowering the potential for violence.

Strong Economic Fundamentals

Immense potential for economic growth

- The Philippines economy continues to demonstrate high potential for growth. Demographics and income growth are fostering an urban middle class while simultaneously reducing poverty - fueling increases in productivity and consumption.
- Furthermore, there are lots of low-hanging fruit for government to boost productivity/growth: including improving institutions protecting property rights and less complicated regulation: all keystones of Duterte’s campaign.
- Internationally, the global economy continues to enjoy a nearly universal tailwind, which benefit highly procyclical Philippine manufactures such as semiconductors, other tech-related industries and copper products.
- The current account deficit is transitory - the import of capital equipment (rather than poor export performance) for infrastructure seems to be driving last year’s increased imports. Once the infrastructure begins its use, the infrastructure projects’ net contribution to net exports should become positive again. Besides, FDI inflows should support further PHP strength.

Central Bank

Upside Risks for Interest Rates

- Inflation has been in target range of 2-4%, so the bank has not raised its benchmark rate of 3% recently.
- Growing spending and tax reform will create price pressures that could lend itself to a rate hike
- Medium-term inflation effect of the record-low peso should also support the case for an inevitable rate hike
- Ultimately, it certainly does not make sense that a country with ~7% growth, and a currency that took a big hit, as well as a loosening fiscal policy, should continue to experience only 3% inflation.

Central Bank Profile

Intuition & Drivers

- Governor Espenilla was one of Duterte’s more measured appointments.
- Centrist, measured, and respected, he has taken measures to cool the property market → No reason to believe he will not uphold the bank’s mandate of inflation targeting.
- Even if he had objectives that aligned with Duterte’s (not independent), there isn’t much of a case for an accommodating policy.
- A weak peso would mean capital imports for his infrastructure plan are more expensive and foreign-denominated bonds harder to pay back (currently constitute roughly ~44% of public debt)

A Note on Equities

Not as overvalued as they seem

- A common symptom of a risk-on late-stage bull market, especially in equities, is a chase for market laggards that haven't kept up with rallies elsewhere. This is especially true in Asia - flows chased value in Korean equities and then HK equities. While Philippine equities have rallied as well, capital outflows had intensified due to geopolitical concerns.

Index	P/E
PSEi	23.10
FTSE Bursa Malaysia KLCI	16.38
JCI (Indonesia)	22.66
nifty	23.45
TWSE	16.16
KOSPI	16.18
HSI	13.95

- Recent accounts that the Filipino equities are trading at expensive valuations aren't exactly true. It is in line with comparable countries with similar growth profiles such as Indonesia and India, and is in fact underpricing the better economic growth potential of the Philippines relative to other countries.

Positive Carry

- The Filipino 2-year treasury yield stands at 4.399%, and the US's at 1.687%.
- Not as high as some other EM's, but also not as low.

Expression

FX Products You Can Trade

- Global recession or shift to risk-off sentiment which could drive money away from EMs/FMs, especially those with higher risk perceptions.
- A debt crisis fuelled by excessive debt (the promised $180 billion infrastructure plan is about 60% of gdp) – although debt remains a small percentage of the economy, and inflation is likely to force the Central Bank's hand before the government borrows too much.
- The more proximate threat is from a credit downgrade due to overspending. Moody's has sovereign debt at Baa2 (June 2017) (1 step above investment grade) and Fitch has it at BBB- (minimum investment grade). If these agencies junked the bonds, it would intensify capital outflows.
- Continued regional instability in Mindanao and beyond, despite being dismissed here, could continue to rattle investors if military operations continue.
- Technical trends are against a short-term rally in the peso.

Thank you!

Questions?

Announcements

- Tacos and Talks with Morgan Stanley
  - Thursday, November 16
  - 6pm – 8pm
  - KMC 1-70
  - Open to all underclassman who want to learn more about MS
  - Campus ambassadors will be present to talk and answer any questions