

# Economic Challenges for Korea: Mega-Trends and Scenario Analysis

Danny Leipziger  
Managing Director  
The Growth Dialogue

KIEP Presentation  
October 8, 2018

# Structure of Presentation

Project Introduction and Purpose

Nature of Scenario Analysis

Gamut of Economic Risks Facing Korea Today

Megatrends

Scenarios

Risk Assessment: Vulnerabilities and Resilience

Moving Forward

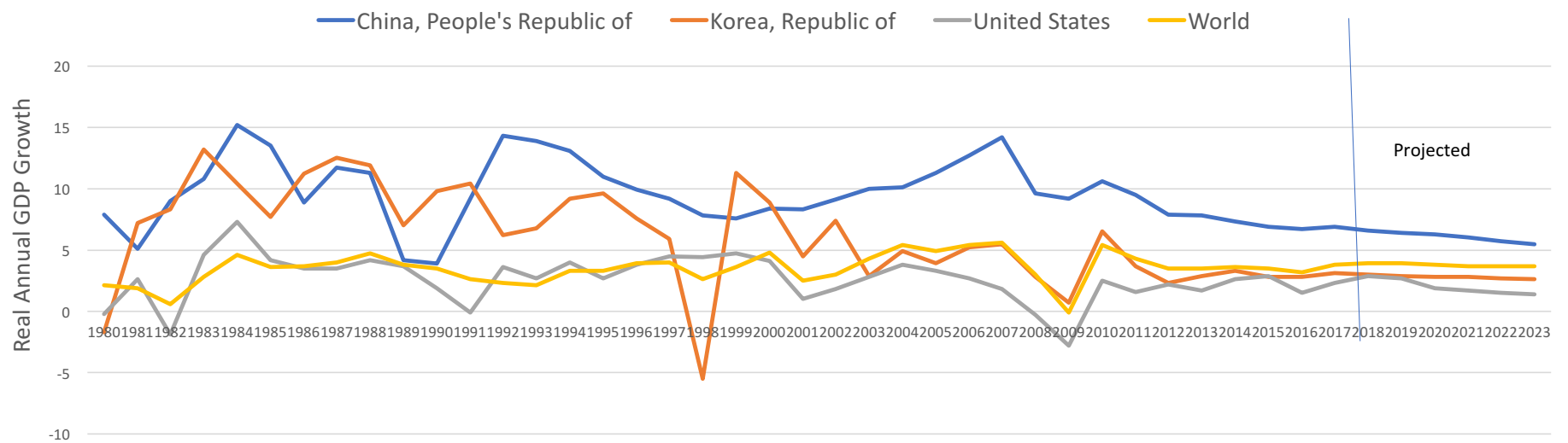
Potential Areas for Further Analysis



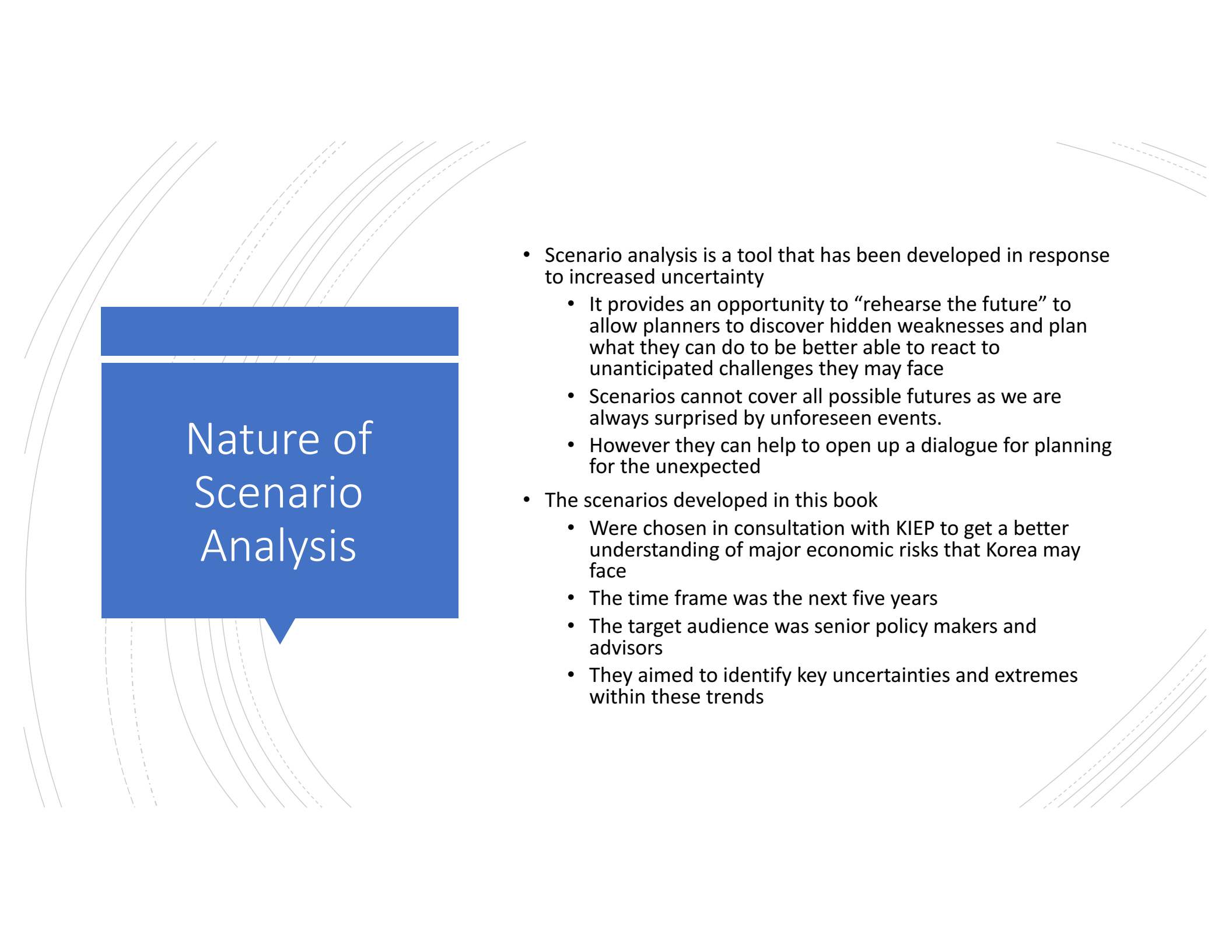
## Project Introduction and Purpose

- Preparedness is at the core of crisis management.
  - Most forecasts of economic and political events aim for the most likely outcomes.
  - But it is also useful to plan for less likely events that may have significant impacts
- The book aimed to examine some plausible external economic trends that could significantly affect Korea's economic future
  - These included three significant economic megatrends that have important implications for Korea
    - De-globalization
    - Disruptive technologies
    - Greater global uncertainty
  - These were used to create three game-changing scenarios, sometimes called Black Swan events:
    - A Trade War Scenario
    - A Troubled China Scenario
    - A Global Meltdown Scenario

# Real Annual GDP Growth: Korea China, U.S. and World:1980-2017 (actual) 2018-2023 (projected)



Source: IMF Datamapper (April, 2018 data)

The background features several sets of curved lines in shades of gray, some solid and some dashed, creating a sense of motion and depth. A blue rectangular box with a white border and a small white triangle pointing downwards at the bottom center contains the title text.

## Nature of Scenario Analysis

- Scenario analysis is a tool that has been developed in response to increased uncertainty
  - It provides an opportunity to “rehearse the future” to allow planners to discover hidden weaknesses and plan what they can do to be better able to react to unanticipated challenges they may face
  - Scenarios cannot cover all possible futures as we are always surprised by unforeseen events.
  - However they can help to open up a dialogue for planning for the unexpected
- The scenarios developed in this book
  - Were chosen in consultation with KIEP to get a better understanding of major economic risks that Korea may face
  - The time frame was the next five years
  - The target audience was senior policy makers and advisors
  - They aimed to identify key uncertainties and extremes within these trends

The slide features a decorative background of curved lines in shades of gray, some solid and some dashed, creating a sense of movement and depth. A blue rectangular box with a white border and a small white triangle at the bottom center contains the title text.

## Gamut of Economic Risks Facing Korea

- Structural endogenous risks
  - High reliance on trade
  - Concentration of exports into Chinese and U.S. markets
  - Need for continuous innovation
- Medium term risks facing Korean economy
  - Weak domestic demand that can persist and create economic stagnation
  - Housing bubble that can be exacerbated by tighter or more volatile global financial conditions
  - Populist backlash against existing economic policies that can damage the Korean economy in the medium term



# Megatrends

- De-Globalization
  - The recognition that the assumption that globalization would continue unchanged no longer holds after the 2008-2009 Great Recession and its consequences
- Disruptive Technologies and Impact
  - Rapid advances in new ways of producing, distributing, and using things, mostly spurred by digital technologies but also by advances in biotechnology and nanotechnology
- Persistent Global Uncertainty
  - Different from risk, which can be assessed, uncertainty is state of affairs in which neither the set of outcomes, nor the probabilities of any conceivable outcome , are known and quantifiable



## Megatrend 1: De- globalization

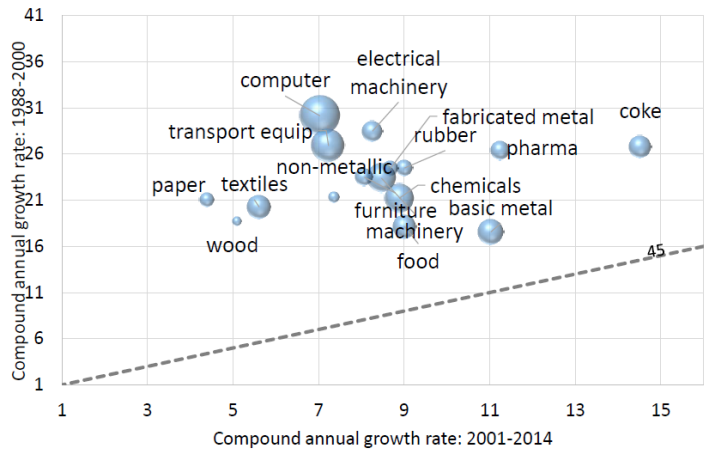
- Persistent slow down in international trade from 2x global gdp growth to 1x
- Corporate retrenchment away from global production model (accelerated since book publication by Trump's anti-trade rhetoric)
- Increasing protectionism (accelerated since book publication by Trump's unilateral tariffs on steel, aluminum from various countries and EU, plus tariffs on imports from China; and by the counter tariffs on U.S. imports by China and others)



# Trade, including IN GVCs, has Slowed

## Trade, including in GVCs, has slowed

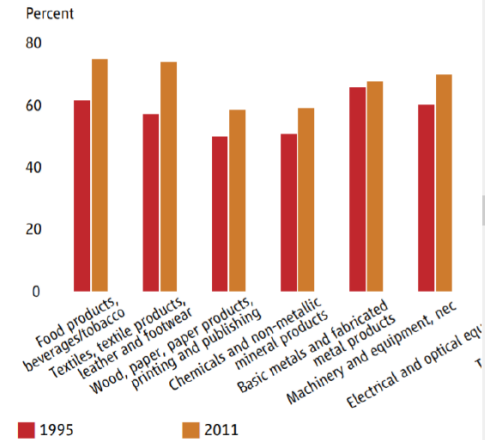
Trade slowed – relatively more in GVC intensive sectors



Source: WITS UN Comtrade. Note: Bubbles above the 45-degree line denote faster growth of trade in period 1988-2000 relative to

Sources: Calculations based on World Input-Output Database (WIOD) (2013 and 2016 releases) and World Integrated Trade Solution (WITS) database.

Change in domestic value added exports by sector, 1995-2011



Source: Trade in Value Added (TIVA) Database of the Organization for Development and World Trade Organization.

Source: World Bank, *Trouble in the Making?* 2017

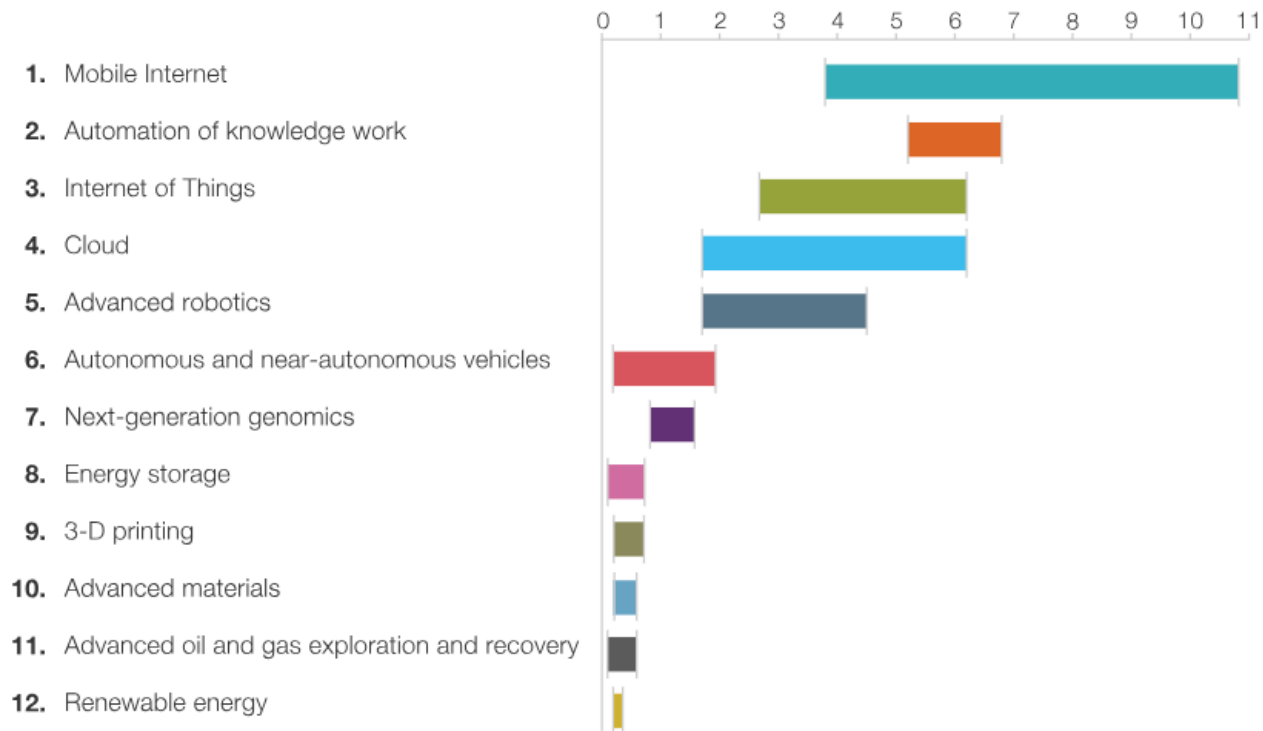


## Megatrend 2: Disruptive Technologies

- We are in period of rapid technological advance in digital, biological and nano technologies.
- The breakthroughs in these technology and the confluence of many of them have broad potential scope and can have significant disruptive economic impact
- It is difficult to predict how disruptive they will be, but their speed of development and diffusion is increasing compare to the past
- We focus on some of the key technologies affecting the digital transformation of industry and their impact on trade and jobs

## A gallery of disruptive technologies

Estimated potential economic impact of technologies across sized applications in 2025, \$ trillion, annual



SOURCE: McKinsey Global Institute

Notes on sizing: These economic impact estimates are not comprehensive and include potential direct impact of sized applications only. They do not represent GDP or market size (revenue), but rather economic potential, including consumer surplus. The relative sizes of technology categories shown do not constitute a "ranking," since our sizing is not comprehensive. We do not quantify the split or transfer of surplus among or across companies or consumers, since this would depend on emerging competitive dynamics and business models. Moreover, the estimates are not directly additive, since some applications and/or value drivers are overlapping across technologies. Finally, they are not fully risk- or probability-adjusted.

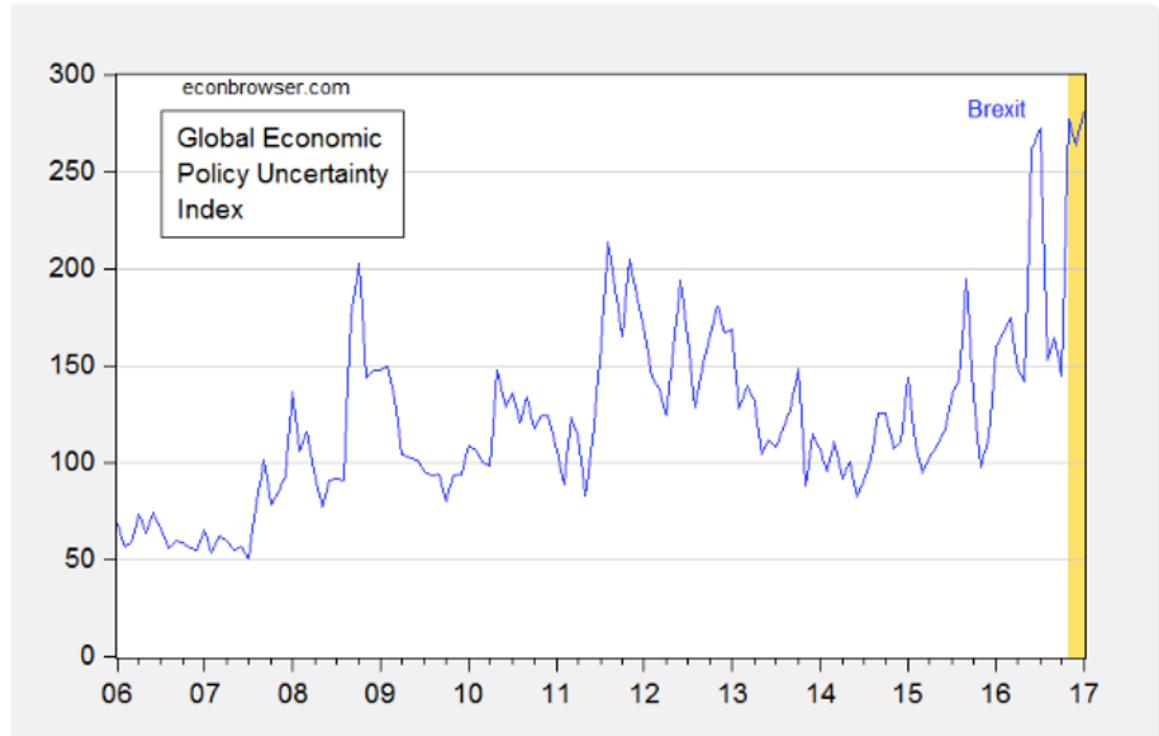


## Megatrend 3: Persistent Global Uncertainty

- Since the global financial crisis of 2008-2009 the comfortable world of the “know unknowns” has been replaced by the uncomfortable world where “unknown unknowns” are weighing on decisions
- Post crisis trends prompt greater uncertainty, resulting in
  - Sluggishness of most OECD countries in recovery
  - Slow trade growth
  - Declining private investment
- Uncertainty tends to be counter-cyclical, is most acute in recessions, and reduces GDP by compelling firms to scale back, stay liquid, and stay at home

## Economic Policy Uncertainty Index

- Note: Market GDP weights (blue). Orange denotes post Trump election.
- Source: [policyuncertainty.com](http://policyuncertainty.com). Accessed 03/02/2017



# Uncertainty/Impact Matrix of Key Trends and Extremes Chosen for Scenarios


Uncertainty (across) Impact (down) In the next five years	Low	Medium	High
Low	Demographics and aging and its consequences in 5 years time	Disruptive technologies	
Medium	Rebalancing of economic power		Impact on Jobs, incomes and inequality
High			Retreat of Globalization <ul style="list-style-type: none"> <li>• A Trade War is an extreme version of this trend</li> <li>• Persistent Economic Uncertainty and its extreme versions:               <ul style="list-style-type: none"> <li>- A Troubled China</li> <li>- A Global Meltdown</li> </ul> </li> </ul>

# Heat Map for Korea 2017

Scenarios	Risk Measures		
	Low	Moderate	High
Trade War		✓	
Troubled China		✓	
Global Meltdown	✓		
<b>Megatrends + Scenarios</b>			
De-globalization + Trade War			✓
Disruptive technologies + China			✓
Heightened Uncertainty + Meltdown		✓	



# Scenarios

- Trade War Scenario
  - Troubled China Scenario
  - Global Meltdown Scenario
- 





# Trade War Scenario

- We developed the trade war scenario as a low probability but high impact event given Trump's election platform and initial actions
- Since then, the Trump Administration has enacted strong protectionist measures and started a trade war with allies and with China.
- We modeled the trade war scenario based on the historical experience of the trade war of the 1930s, updated to the greater role of trade today
  - We assumed it started between U.S. and China
  - But rapidly turned into a global trade war (as in the 1930s)
  - Are we moving toward this full scale global trade war?

# Main Partners for Imports and Exports 2015

## The Links among Korea, the US and China

### A. Five main partners for merchandise exports

China		Korea		United States	
Country	Share	Country	Share	Country <sup>a</sup>	Share
<i>United States</i>	<b>18.0</b>	<i>China</i>	<b>26.0</b>	Canada	18.6
Hong Kong SAR, China	14.7	<i>United States</i>	<b>13.3</b>	Mexico	15.7
Japan	6.0	Hong Kong SAR, China	5.8	<i>China</i>	<b>7.7</b>
<i>Korea</i>	<b>4.5</b>	Vietnam	5.3	Japan	4.2
Germany	3.0	Japan	4.9	United Kingdom	3.8

### B. Five main partners for merchandise imports

China		Korea		United States	
Country	Share	Country	Share	Country <sup>b</sup>	Share
<i>Korea</i>	<b>10.4</b>	<i>China</i>	<b>26.7</b>	<i>China</i>	<b>21.8</b>
<i>United States</i>	<b>9.0</b>	Japan	10.5	Canada	13.1
<u>Other Asia n.e.s.</u>	8.6	<i>United States</i>	<b>10.1</b>	Mexico	12.9
China	8.6	Germany	4.8	Japan	5.8
Japan	8.5	Saudi Arabia	4.3	Germany	5.5

Source: World Bank WITS Available at: [wits.worldbank.org](http://wits.worldbank.org). Accessed January 15 2017.

Notes: Shares among China, Korea, and the United States in are in red bold italics. (a) Korea is the seventh largest export partner for the United States with a 2.9 percent market share; and (b) Korea is the sixth largest import partner for the United States with a 3.2 percent market share.

## Global Impact of Trade War: IMF Models

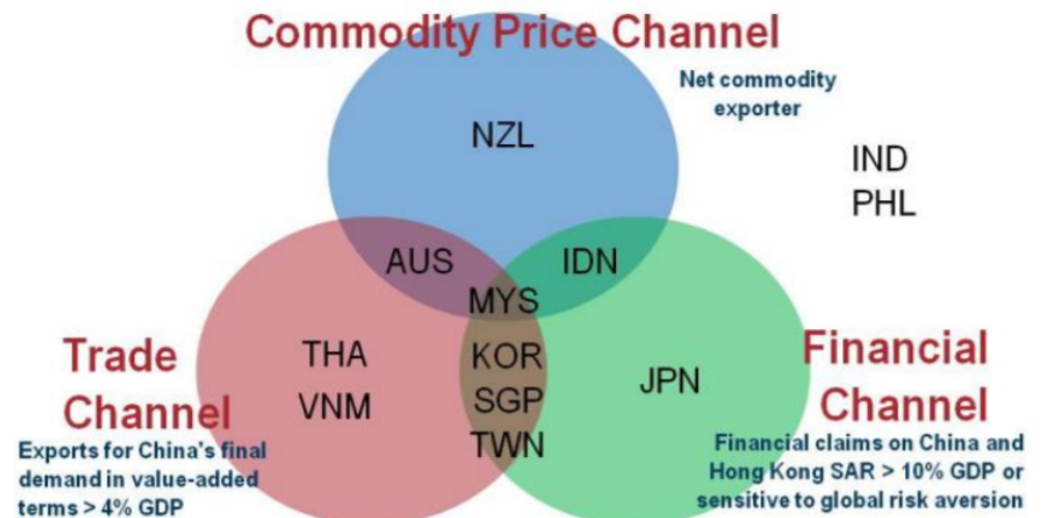
- IMF assumed 10% tariff hikes and we assumed double that Impact of tariff increase of 20%
  - Average drop of 30% in global trade
  - Average drop of 3-4 percentage points in global GDP impact on Korea would be larger because its much more dependent on trade than China and the U.S
    - Its very dependent on trade with these two countries, and the global trade climate would sour and have further negative effects on Korea we didn't include any KORUSFTA impacts
- *Caveat is that we didn't include any trade diversion effects of a trade war*



## Troubled China Scenario

- Current outlook for China is positive
- However the scenario posits three plausible events
  - A further slow down in China's growth from around 6% to around 4%
  - A Chinese financial crisis because of China's rapid credit expansion
  - More dramatic Chinese rebalancing from trade to the domestic market
- Moreover, all three of these events may happen concurrently which would greatly increase the potential impact
- The impact on Korea of the troubled China scenario would be:
  - A significant fall in exports to China negatively impacting Korea's growth
  - Even greater if the slowdown in China also impacts a slow down in global growth given that China is one-sixth of global GDP

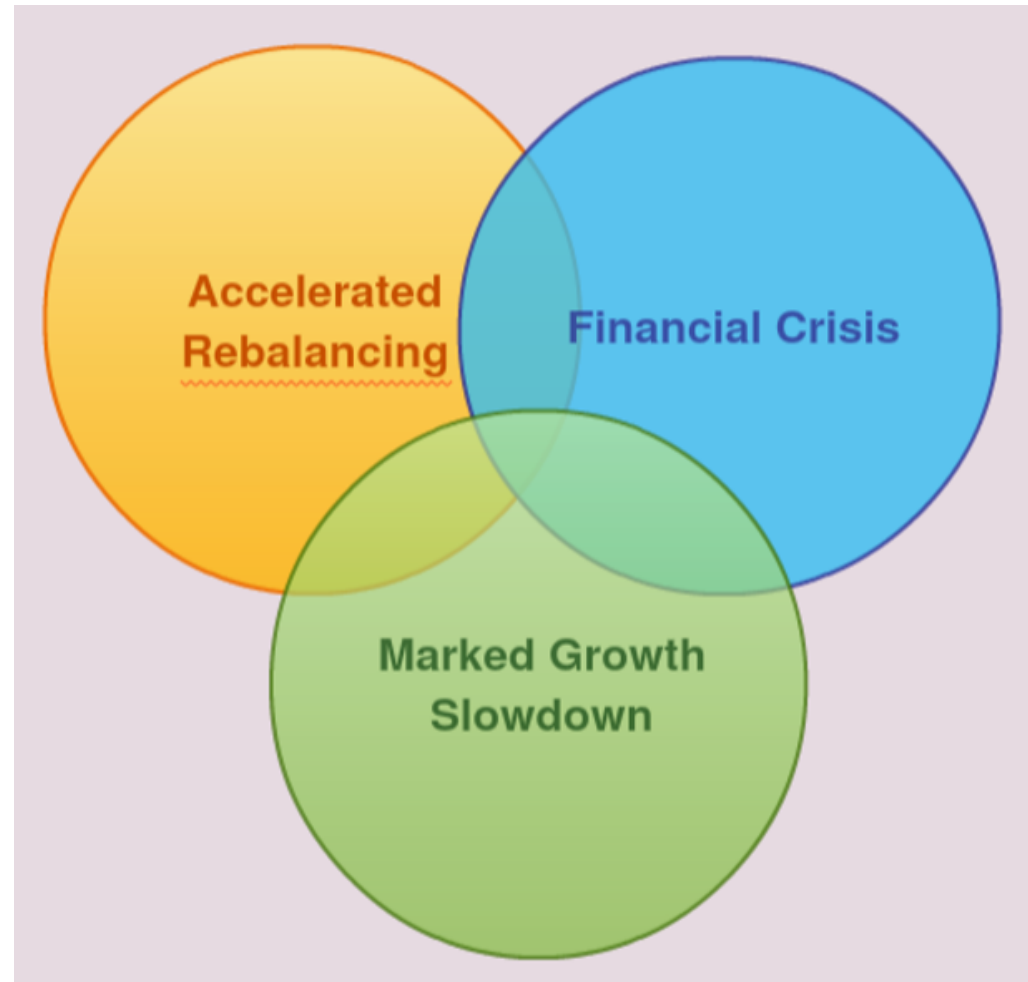
# Channels of Spillovers from a Slowdown in China



Source: IMF staff estimates.

Note: AUS = Australia; IDN = Indonesia, IND = India; JPN = Japan; KOR = Korea; MYS = Malaysia; NZL = New Zealand; PHL = the Philippines; SGP = Singapore; THA = Thailand; TWN = Taiwan Province of China; VNM = Vietnam.

# A Troubled China Scenario Interaction



# Global Meltdown Scenario

A Global Meltdown Scenario could originate from many sources:

- Financial crisis emanating from the U.S., China, or heavily indebted developing countries
- Wave of protectionism and retaliation
- Continued macro economic difficulties in one of major economic blocks (like EU)
- Major security shocks such as those connected to cyber attacks

We base our estimates on models developed by the IMF

- The trade story dominates
- Financial stagnation and protectionism are the main drivers (see next slide)
- The net impact is that global output in 2021 stands a full 3% points below its expected level.

Global inaction increases risks

joint response

- Key response for individual countries is to have an internally consistent scenario with significant downsides identified and at the global level to improve cooperation and

# Illustrative Dynamics of Global Financial and Macroeconomic Collapse

Risk sell-off prompted by protectionist actions lowers asset prices 20%

Banking stress ensues and spreads rise

Private investment falls

As asset prices fall, banks need to shore up capital and reduce credit

Secular stagnation sets in, protectionism rises due to unemployment, fiscal pressures, and greater external uncertainty

Lack of global confidence reduces investment 6% in U.S. and EU and 3% in ROW and consumption falls by additional 2% in U.S. and EU and 1% in ROW

Output falls in various economies by 1.6%-6.8%

Government debt rises, limiting fiscal expansion

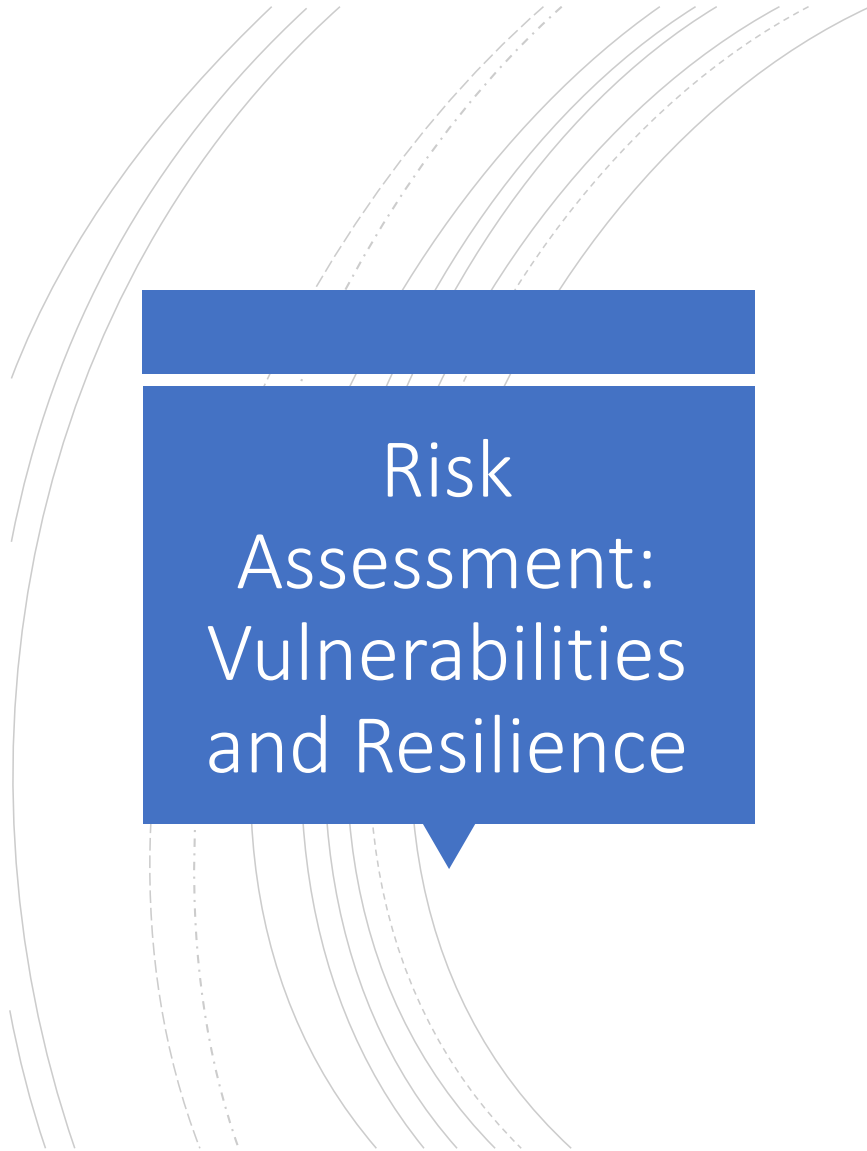
Imports of major economies fall by 20% and global exports decline by 20%



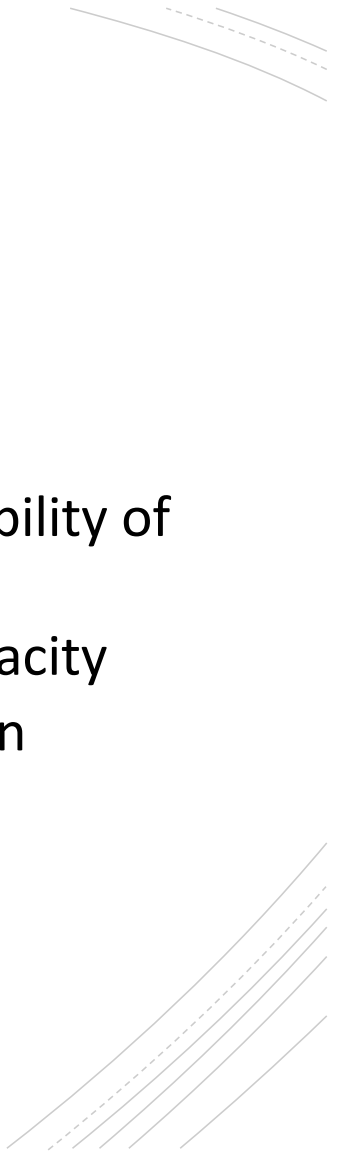
## Impact on Korea: Simulated Deviations from Baseline Trends

	2016	2017	2018	2019	2020	2021
Korean output	0.0	-0.6	-1.2	-1.4	-1.6	-1.7
Korean exports	0.0	-1.6	-3.7	-5.6	-7.4	-9.3

Source: IMF Simulations



Risk  
Assessment:  
Vulnerabilities  
and Resilience

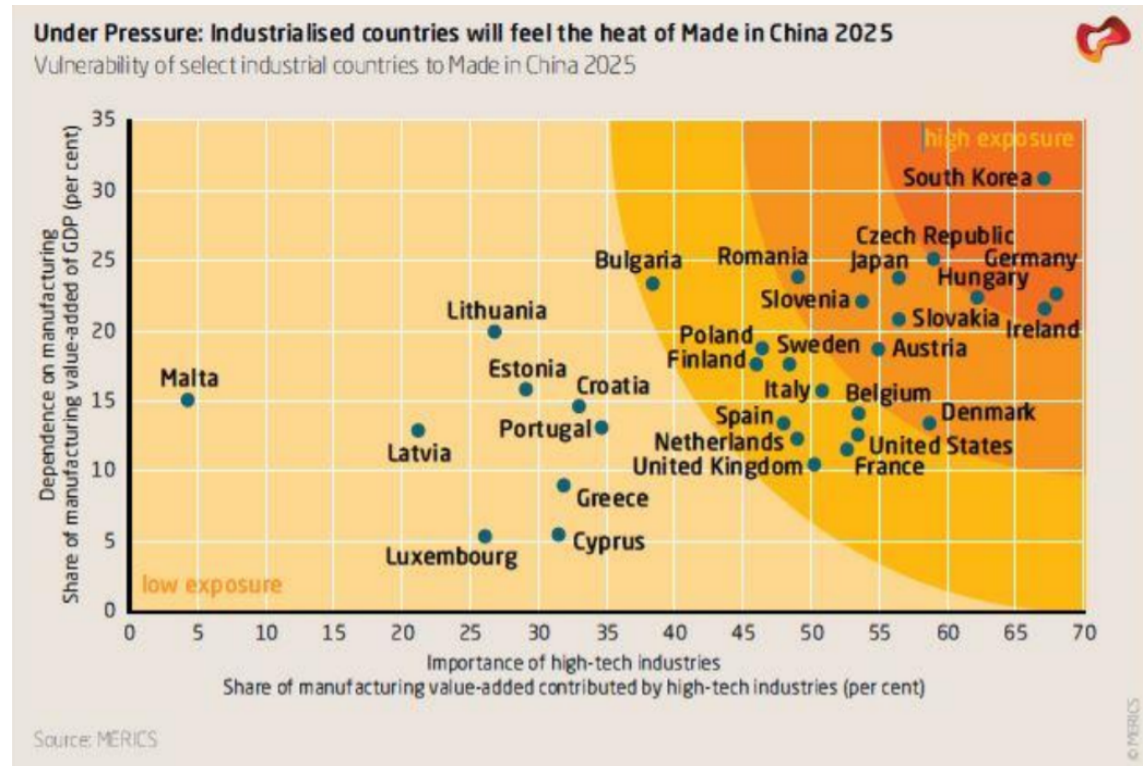
- The Chinese Challenge
  - Managing Risks
    - Improving Efficiency and Flexibility of the Economy
    - Strengthening Innovation Capacity
    - Increasing Trade Diversification
- 



# The Chinese Challenge

- **Rapid development of technological capability** – This was already very fast, and it is being accelerated because of increased trade friction with U.S.
- **Competition in exports**—Four of the top ten exports of Korea and China are the same at the four digit level of disaggregation and China’s exports have been growing faster than Korea’s
- **Ambitious innovation plans**— Made in China 2025 and Internet Plus are very comprehensive, well funded plans to attain dominance in most key new technologies

Korea is the Most Vulnerable Economy to China's Ambitious Technology Program



Source: MERICS, Berlin 2016



# Managing Risks

- The three scenarios developed in the report are not the only one possible. Neither are they mutually exclusive although they were considered independently.
  - All had very negative implications for Korea, including 2% to 5% reductions in GDP and 9%-30% reductions in exports.
  - Main reason for negative impacts is Korea's very high dependence on trade (which is 85% of GDP and much higher than for China or the U.S.).
  - In addition, trade with China accounts for 26% of Korea's total trade, that with the U.S. accounts for more than 10%.
- Some of these as well as other scenarios can happen concurrently, compounding the negative impact
- Even in short time since the report, some events considered low probability have become much more likely
  - Trade war has started
  - Risk of financial crisis has increased
  - Global uncertainty has increased

---

# Managing Risks: Key Recommendations

- Primary way to manage potential risks is to act in advance to increase resilience and therefore lower risks
- All three scenarios and megatrends combined with elements of the scenarios imply Korea will face significant needs to restructure to adjust to the external shocks
- Nature of restructuring will depend on nature of shock, but will generally involve:
  - Increasing flexibility of the economy to redeploy capital and labor to more viable industries, and strengthening social protection
  - Taking advantage of new technologies
  - Adjusting to new trade condition
- Matrix in next slide shows that increasing flexibility of the economy is the most relevant policy for all the scenarios

# Heat Shield for Korea: Risks and Relative Importance of Three Key Areas of Policy Action

Scenarios	Policy Actions		
	Increase Trade Diversification	Strengthen Innovation	Improve Efficiency and Flexibility of Economy
Trade War	High	High	High
Troubled China	High	Medium	High
Global Meltdown	Low	Low	Medium
<b>Megatrends + Scenarios</b>			
De-globalization + Trade War	Very High	High	Very High
Disruptive technologies + China	Medium	Very High	Very High
Heightened Uncertainty + Meltdown	Low	Low	High



# Improving Efficiency and Flexibility of the Economy

- Korea's economy lags in some key elements of competitiveness and flexibility of its economy (see rankings in next slide)
- It needs to improve factor markets, regulation, and its overall institutional regime leading to greater productivity and adaptability
- It also has to improve its social protection system in order to support people who are vulnerable to the inevitable economic restructuring that will be necessary to deal with the external shocks including:
  - Adoption of disruptive technology
  - Increased global competition from other countries adopting disruptive technology
  - Global financial crisis and or increased protectionist pressures



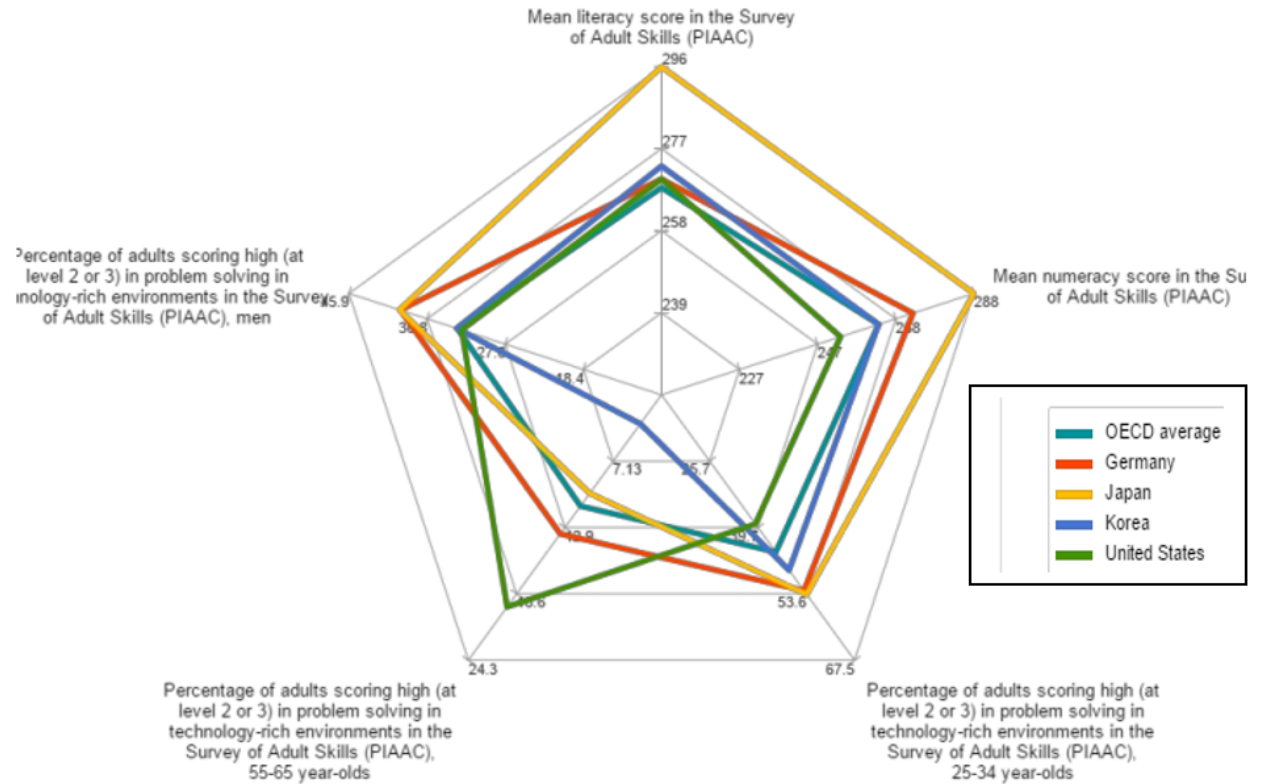
International  
Rankings on  
Competitiveness  
and Network  
Readiness 2016

Country Rank (out of 138 countries)	Global Competitiveness Index	Institutions	Goods Market Efficiency	Labor Market Efficiency	Financial Market Development
United States	03	27	14	04	03
Germany	05	22	23	22	20
Japan	08	16	16	19	17
Korea	26	63	24	77	80
China	28	46	56	39	56

- Note: An ranking highlighted in red indicates the worst performance among the five countries.
- Sources: WEF World Competitiveness Report 2016-7, and WEF World Information Technology Report 2016

Comparison of Adult Skills and Capabilities: Korea, Germany, Japan, U.S. and OECD Average Capabilities: Korea, Germany, Japan, U.S., and OECD Average

- Korea lags Japan in 4/5 measures
- Korea badly lags the U.S. in skills of the 45-54 age cohort
- Korea does well in the youngest cohort, but Korea also faced high unemployment of graduates and of the young more generally



Source; OECD

---

## Economic Regime: Key Policy Recommendations

- Strengthen competition, reduce barriers to entry especially in service sector, openness to new ideas, new markets, and new ways of doing business
- Improve efficiency of labor market, especially opportunities for skilled young workers
- Improve financial system, especially support for start-ups and growth
- Strengthen social protection system, especially support for non-regular and displaced workers



# Strengthening Innovation Capacity

- A strong innovation capacity is a critical factor for Korea to develop and adapt disruptive technologies to local use.
- Korea is one of the top performers in overall R&D spending to GDP
- However, innovation is more than R&D and includes many elements of the broader institutional regime where Korea does not do as well (see next slide on rankings)In addition
  - Skills of its labor force
  - Entrepreneurship in general
  - Links between universities and the productive sector
  - Links with global research efforts

## International Rankings on Innovation Capability: U.S., Germany, Japan, China, and Korea- 2016

<b>Country</b>	<b>Innovation Index</b>	<b>Human Capital and Research Sub-Index</b>	<b>Infrastructure Sub-Index</b>	<b>Market Sophistication Sub-Index</b>	<b>Business Sophistication Sub-Index</b>
United States	4	14	13	1	11
Germany	10	10	22	16	15
Japan	16	13	7	8	10
Korea	11	3	9	14	7
China	25	29	36	21	13

Source: Cornell, INSEAD, and WIPO. The Global Innovation Index 2016

# Innovation Capacity: Key Policy Recommendations

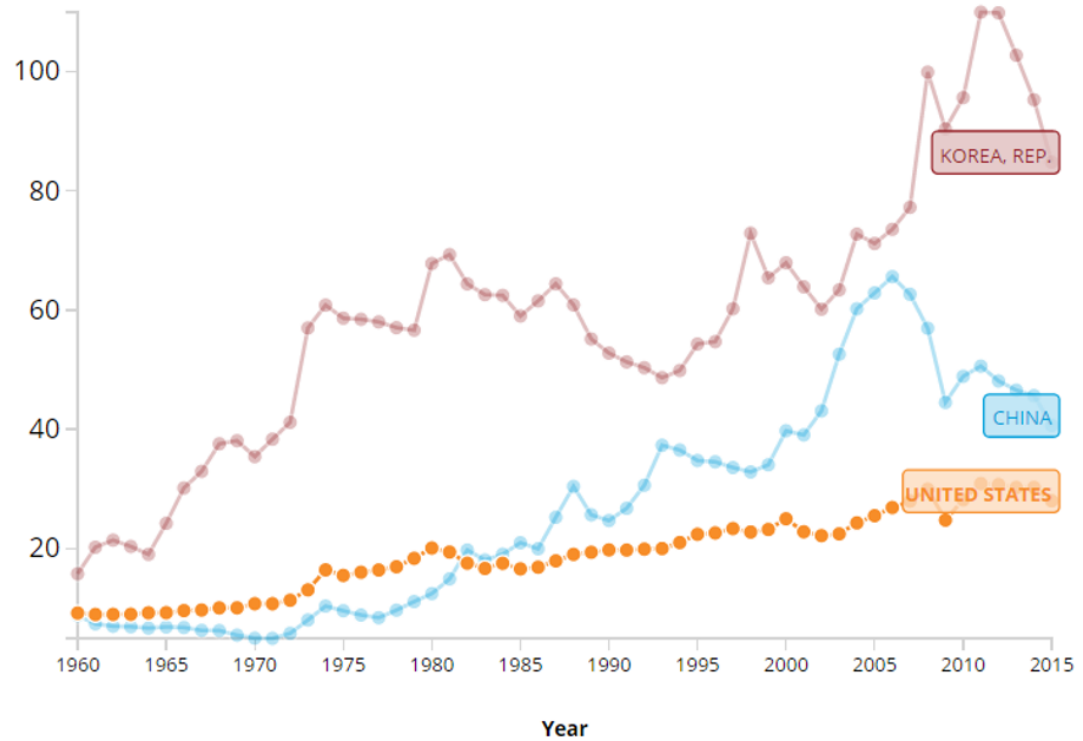
- Improve efficiency of innovation system
  - Strengthening research universities and their link to the private sector
  - Strengthen inks to very dynamic global innovation system
- Reduce mismatch between skills university students receive and the needs of market
  - Requires not only improving relevance of curriculum, but also
  - Upgrading the skills of those who have left the labor force and need new skills
- Improve entrepreneurial skills and attitudes
  - Put greater emphasis on creativity and risk-taking even at early stages of academic system
  - Provide more entrepreneurship training in higher education and more technical and financial support for start-ups
- Improve competition policy by reducing concentration of power that retards start-up success



## Increasing Trade Diversification

- Korea is very heavily dependent on trade (see next slide)
  - It is heavily dependent on trade with China and the U.S
  - It is also very dependent on the import of raw materials and intermediate products
- While this has served Korea well in time of global expansion of trade, such high trade dependence poses a large risk given increased global protectionism and the start of a trade war
- Korea needs to expand its alternative trade agreements and more strongly pursue opportunities in growing markets

Merchandise  
Trade as a  
Percent of  
GDP: China,  
Korea, and U.S.  
1980-2016





---

# Trade Diversification: Key Policy Recommendations

- Exploit opportunities for trade diversification in Asia through Regional Comprehensive Economic Partnership (RCEP)
  - RCEP is world's largest economic block and offers great potential given the rapid growth of China, India and Indonesia
- Increase trade with India
  - India offers much potential for trade and investment given the rapid growth of its economy and its middle class in particular
- Consider joining the Comprehensive and Progressive TPP
- Reduce Korea's very heavy dependence on trade by further developing the domestic market
  - Given the risks of increasing protectionism, Korea should also reduce its very high dependence on international trade by developing its non-traded sectors, including infrastructure, housing, health, and other services



## Moving Forward

---

The report analyzed a limited set of economic trends and risks that could have a strong impact on Korea

---

It has encouraged policy makers and advisors to weigh these and other risks and policies to increase resilience to these risks

---

Further follow-up analysis is warranted to develop more specific policy recommendations in the areas identified above

---

The success of policies to address these risks will depend on broader public understanding of the potential severity of the challenges and the need for difficult reforms

---

We encourage a broader discussion with society at large to create a common sense of purpose that is necessary for Korea to continue to advance through uncertain times

---

The slide features a decorative background of thin, curved lines in shades of gray, some solid and some dashed, creating a sense of movement and depth. A blue rectangular box with a white border and a small white triangle at the bottom center contains the main title text.

## Potential Areas for Future Policy Analysis by the Growth Dialogue and/or Others

- The strategic re-positioning of Korea in light of the now existing trade war between the U. S. and China ( GD Proposal Accepted)
- Deeper dive into domestic labor markets where significant segmentation and inefficiency exist and technological dislocations will exacerbate unfavorable trends, such as
  - youth unemployment,
  - elder poverty,
  - inadequate retraining/lack of life-long learning
  - (GD Proposal possible for 2019-2020)
- Deeper dive into employment and regional impacts of high FDI investment in parts of the U.S. and the political economy aspects (GD Proposal possible for 2019-2020)
- A new analysis of potential areas for new industrial policies in light of “Made in China 2025 “ and new modes of government-business collaboration ( GD Proposal possible for 2019-2020)

Thank You!

Danny Leipziger

Email: [dleipzig@gwu.edu](mailto:dleipzig@gwu.edu)