



**Asia-Pacific
Economic Cooperation**

Advancing Free Trade
for Asia-Pacific **Prosperity**

APEC Regional Trends Analysis

Rethinking Skills Development in the Digital Age

APEC Policy Support Unit
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KEY MESSAGES

Rethinking Skills Development in the Digital Age

- Digital technology has had profound impacts on nearly all aspects of living. It affects not only how we communicate or consume information but what we eat, where we live, how we work, and how we entertain ourselves.
- Digital technology has brought benefits to households and firms that utilise them. Data also show that it could contribute to economic growth. Preliminary data analysis shows that there is a statistically significant and positive correlation between digital technology use and GDP growth.
- However, the analyses with regard to employment show no clear relationship: preliminary estimates show that there is no statistically significant correlation between digital use and employment generation. While deeper analysis is needed, this may be pointing to the opposing impacts of digital technology on employment.
- On one hand, digital technology can result in computers doing the jobs that humans currently do. A study by Frey and Osborne (2013) finds that up to 47 percent of jobs in the United States are at risk of computerisation. Mid-skill jobs that are routine and follow clear rules—such as factory assembly, transcription, or simple accounting—can be codified into an algorithm and, hence, computerised.
- A related impact of digital technology is job polarisation: as most routine mid-skill jobs are computerised only non-routine and discretionary jobs at the low- and high-end of the skill spectrum will remain. To use a factory analogy, a robot might replace the chip assembler, but the hall janitor and the nanophysicist will likely keep their jobs. This will have implications not only on skills development and employment, but also on wage disparities and income inequality.
- On the other hand, humanity’s previous experiences with disruptive technologies have not resulted in doom and instead opened up new opportunities. Indeed, digital technology has opened up new industries (e.g., business process outsourcing) and jobs (e.g., app developer) that were unheard of previously.
- The advent of the digital age requires a rethinking of education and training, labour policy, and even social security. The changing economics of information—from information scarcity to information overload today—will change what we know and how we teach students. This will require revisiting curricula and orienting teachers with revised pedagogies. The rapid pace of technological change will require access to lifelong learning and continuing retooling: a particular challenge for an ageing workforce.

- Labour market and social insurance policies will also need to take into account the new realities of digital jobs. Workers' wages will no longer necessarily come from corporations or factories located in cities, but from work with multiple clients located across international borders. With the popularity of freelance work, precarity and casualisation will be the important labour issues in a digital age. Likewise, social security and insurance will need to be modified in the absence of firms from which to collect premiums.
- Digital technology and its disruptions make regional cooperation especially essential. The disruptions of digital technology have cross-border implications: decisions made in one economy may have impacts, and unintended consequences, in another economy. Regional cooperation thus has an important role to play in coordinating policies and regulations as well as information sharing and capacity building. The working relationships among APEC economies will prove valuable in helping economies navigate through a fast-changing digital environment.

Continued Growth amid Persistent Global Weakness

- The APEC region continued to grow during Q2 2016 at 2.4 percent, slightly higher than the previous quarter's level of 2.3 percent, but lower than the 2.8 percent GDP growth posted in Q2 2015.
- The continued GDP growth in APEC was attributed largely to steady private and public consumption amid low trade growth owing to the persistent weakness in global economic activity, aggravated by uncertainties from the Brexit vote and rising trade protectionism.
- The APEC region's values of merchandise exports and imports contracted by 6.4 percent and 6.6 percent, respectively, during the period January-August 2016 compared to the year-ago level. This contraction is in line with the drop in the value of world exports and imports by 4.4 percent and 4.9 percent, respectively, during the same period.
- Investor optimism in the APEC region as a whole is relatively strong as shown by the continued inflow of foreign direct investments (FDI). In 2015, FDI inflows to APEC increased by 42.3 percent to USD 953 billion compared to the previous year. The region attracted around 54.1 percent of the world's FDI, higher than the APEC share in 2014 of 52.4 percent and the 15-year average share (covering the period 2000-2015) of 46.1 percent.
- FDI entry into the APEC region continued to be boosted by an increasing number of investment-friendly measures, based on UNCTAD's *15th Report on G-20 Trade and Investment Measures* and November 2016 *Investment Policy Monitor*. In contrast, trade-restrictive measures have increased while trade-facilitating measures have declined.

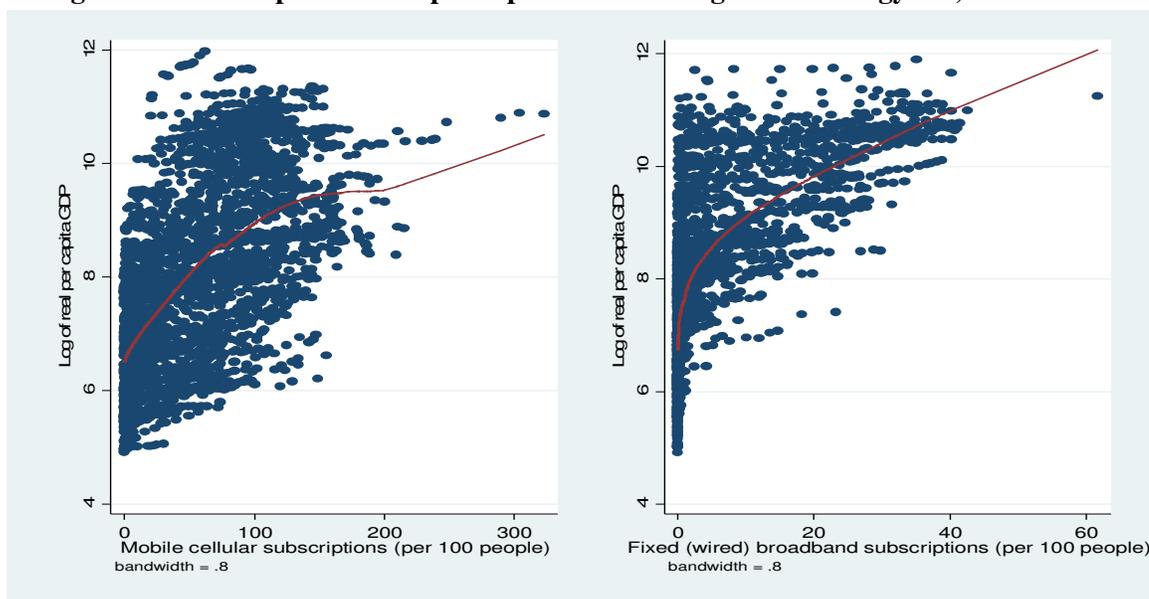
- Economic activity in the near-term is expected to be uneven among APEC economies, hinging on a mix of global weakness and domestic conditions. Downside risks are anticipated to dominate upside opportunities for near-term growth. Heightened uncertainty as to the economic impact of China's rebalancing, another round of US interest rates hike, Brexit and other developments, as well as trade protectionism could overwhelm such upbeat factors as the improvements seen in industrial production, recovery in commodity prices, and sustained inflow of FDI into the APEC region.
- As global headwinds persist, APEC economies need to fortify their resilience in order to continue to grow amid adverse external developments. An appropriate policy mix that addresses short-term growth requirements and medium-term prospects remains the key toward a higher and more sustainable growth trajectory.

RETHINKING SKILLS DEVELOPMENT IN THE DIGITAL AGE¹

Digital technology has permeated nearly all aspects of living. A modern office worker wakes up to the sound of a smartphone alarm clock whose supply chain was managed by global data standards; eats breakfast with food products grown and delivered using AI-enhanced logistical software; works with a laptop connected to the cloud; coordinates activities using mobile phones, email, and Voice over Internet Protocol (VoIP); organises a family dinner through an online booking system; and goes to sleep reading social media feeds over the same smartphone that serves as an alarm clock.

Clearly, digital technology has brought benefits to households and firms that utilise them. In households, they improve welfare by enabling a higher level of consumption through savings in transaction and search costs as well as expanding choices for goods and services. In firms, they increase productivity and minimise costs through more efficient coordination, resource allocation, and supply chain management. Indeed, access to and penetration of digital technology has positive impacts on economic growth. As can be seen in Figure 1.1, a higher rate of digital technology use (measured in terms of mobile cellular phone and fixed broadband subscriptions per 100 people) is correlated with per capita GDP. The fitted curves clearly show a synergistic relationship, and a plausible explanation is that digital technology increases GDP through its impact on consumption and production, while a higher income also increases firms' and households' access to digital technology.

Figure 1.1. Scatterplots of real per capita GDP and digital technology use, 2000-2014



Note: Fitted curves are generated using nonparametric locally weighted scatterplot smoothing (LOWESS).

Source: World Bank, World Development Indicators; and Directorate-General for Budget, Accounting and Statistics (Chinese Taipei).

¹ Prepared by Emmanuel A. San Andres, Andre Wirjo, Rhea C. Hernando, and Kathrina G. Gonzales. Research assistance from Adrian Wan Chun-ho is gratefully acknowledged.

The results in Table 1.1 show a similar story for APEC economies: growth in the number of mobile cellular and fixed broadband subscriptions is positively and significantly correlated with real GDP growth even after controlling for reverse causality. Although the estimated marginal effects are small, (i.e., a 1 percent increase in mobile phone subscribers is associated with additional 0.006 percent real GDP growth), these preliminary analyses provide indicative evidence that digital technology has a positive impact on economic growth even after controlling for most other factors that affect GDP growth in previous years.

What is not as clear, however, is the relationship between digital technology and employment. While growth in the use of digital technology has positive significant correlations with GDP growth, the same cannot be said for employment. As can be seen in columns (3) and (4) of Table 1.1, correlation estimates between employment and digital technology use are statistically insignificant; i.e., the possibility that there is no statistical correlation between employment growth and digital technology use cannot be ruled out. This is not to say that digital technology use has no impact on employment—it is clear that digital technology is affecting (or disrupting) all facets of consumption and production. Rather, what these preliminary findings may be implying is that digital technology has positive and negative impacts on employment that may be cancelling out each other. On one hand, digital technologies may be making some jobs obsolete and reducing the demand for labour: just as printing reduced demand for calligraphers, sophisticated tax software may be reducing demand for tax accountants. On the other hand, digital technologies are also opening up new opportunities for employment that otherwise would not exist: an entire business process outsourcing industry has developed thanks to digital technology.

Table 1.1. Correlations between GDP/employment and digital technology use in APEC

	Real GDP		Employed workers	
	(1)	(2)	(3)	(4)
Mobile cellular subscriptions	0.006** (0.003)		0.018 (0.013)	
Fixed broadband subscriptions		0.005*** (0.002)		0.004 (0.007)
Lagged real GDP	0.936*** (0.023)	0.951*** (0.011)		
Real GDP (in 2005 USD)			0.261* (0.126)	0.300** (0.131)
Constant	1.622*** (0.554)	1.284*** (0.288)	9.458*** (3.127)	8.649** (3.383)
Observations	526	268	454	273
R-squared			0.744	0.695

Note: *** = significant at 99% confidence level; ** = significant at 95% confidence level; * = significant at 90% confidence level. Estimation model for (1) and (2) is Arellano-Bond panel regression to control for reverse causality. Estimation model for (3) and (4) is fixed effects panel OLS regression. All dependent and independent variables are in logs. Robust standard errors in parentheses.

Source: World Bank, World Development Indicators; Directorate-General for Budget, Accounting and Statistics (Chinese Taipei); and APEC PSU staff calculations.

Jobs Lost

The first, and most immediate, impact of digital technology is automation and, hence, substitution. Repetitive and routine jobs where one previously required a worker is replaced by a computer that can do the job more efficiently. A study by Frey and Osborne (2013) finds that, in the United States, around 47 percent of jobs are at risk of being computerised,² with computerisation being dependent on the pace at which engineering bottlenecks and associated issues can be addressed. They also provide evidence of a strong negative relationship between skills (as indicated by wages and educational attainment) on the one hand and an occupation's likelihood of being computerised on the other; that is, jobs that require higher skill levels are less likely to be computerised than lower-skilled routine jobs.

This result is corroborated by Autor and Dorn (2013) who find that technological progress, which significantly reduces the time and cost of doing a particular job, explained in part the steady decline in low-skilled non-service occupations³ in the United States from the 1970s until the 2000s. In contrast, the share of low-skilled service-oriented occupations⁴ in the US has increased by about 30 percent in terms of labour hours between 1980 and 2005, suggesting that technological changes have minimal impact on service jobs. They also find that the lower costs associated with computerisation complements the tasks performed by highly-educated workers.

The different impacts of digital technology across a wide spectrum of occupations reinforce fears that, sometime in the future, technology could outpace and replace employment. Computers and robots will replace jobs in the near future so that large segments of the labour market will shrink, determined by the pace and impact of digital technology. The most vulnerable workers are those who do routine tasks that require simple cognitive and manual activities following explicit rules and codes, such as factory assembly, transcription, or simple accounting or data collection. However, workers who do service jobs that are non-routine and discretionary—house cleaners, gardeners, and manicurists as well as doctors, programmers, and researchers—will get to keep their jobs in the future. Thus, while low-wage/low-skill and high-wage/high-skill work will remain, jobs in the mid-range may disappear—a phenomenon known as job polarisation. These middle-wage/middle-skill jobs, which are routine enough to be developed into an algorithm and valuable enough for firms to invest in their automation, are most at risk.

Empirical data show that there is already a gradual phasing out of middle-skilled jobs in favour of automation. For example, the key findings of a European jobs monitor conducted in 2014 showed that, in 2011-2013 when employment rates declined across the European Union, the greatest share of this decline was among low- to middle-skilled workers (Eurofund 2014). In particular, workers in the manufacturing and construction industry,

² In their study, Frey and Osborne defined computerization as job automation through computer-controlled equipment.

³ Examples of non-service occupations include production and craft occupations, operative and assembler occupations, and transportation, construction, mechanical, mining, and farm occupations.

⁴ Service occupations are jobs that involve assisting or caring for others, for example, food service workers, security guards, janitors and gardeners, cleaners, home health aides, child care workers, hairdressers and beauticians, and recreation occupations. Service occupations are distinguished from the service sector, a broad category of industries ranging from health care to communications to real estate.

including specialised building and related trades workers; labourers; metal, machinery and related trades workers; as well as drivers and mobile plant operators have seen significant shedding in their employment levels. In contrast, employment growth was higher in either end of the skills distribution, or the high-skilled and low-skilled workers.

In the US, empirical evidence points to declining demand for routine tasks as a key source of job polarisation. Autor and Dorn (2013), in the same study mentioned earlier, noted declines in the middle-skilled workers even as employment gains were observed at the tails, resulting in a U-shaped employment pattern. They attributed this to consumer preferences that favour variety over specialisation, and technological progress that favours the substitution of routine and codifiable tasks by technology due mainly to lower costs.

Although further studies need to be conducted to understand the implications of digital technology on job polarization, it is recognised that the shift from routine to non-routine tasks is an important feature of digital technology and has implications on the required skills and overall employment growth across all economic sectors. Moreover, as wages are often related to skills and productivity levels, job polarisation will likely result in a similar polarisation in wages, with important implications in income inequality and social equity.

Jobs Created

While jobs are lost as automation and machines take over the role of performing certain tasks, all is not doom and gloom. Even as technology displaces workers, it also leads to the creation of new jobs and opportunities. A good starting point to indicate that technology has created jobs is perhaps to do a Google search of “10 jobs that didn’t exist 10 years ago.” Looking at the various lists provided by different sources such as World Economic Forum, Forbes, and Digital Marketing Institute, one realises that positions such as app developer, social media manager, cloud computing specialist, digital marketing specialist, and data scientist, though common now, would have been unheard of a decade ago or so. App developer, for instance, would not have been a job until Apple and Google introduced iPhones and Android operating system in 2007 and 2008, respectively (or to be more precise until App Store and Google Play were launched in 2008). Cloud computing specialist would have been unfamiliar since the term “cloud computing” was only introduced in the 2006 Google conference. Likewise, social media manager would have been less known since many platforms were just launched in the mid-2000s and hence still at the inception stage.

This observation appears to be corroborated by the World Economic Forum, which noted in its *Future of Jobs* report that the most in-demand occupations in many industries and economies did not exist five to 10 years ago. It also cited a prediction that 65 percent of children joining primary school today would be working in jobs which do not exist yet.

Central to the discussion in the previous section is the assumption that technology and jobs are substitutes. Technology is making old, routine jobs obsolete and causing them to disappear. However, in their place are new jobs which are totally different, unrelated and, most importantly, cannot be substituted by technology, at least for now. While technology

can indeed make some jobs disappear, it also has the ability to complement labour and hence improve their productivity either directly or indirectly. Therefore, instead of making the jobs obsolete, technology has simply taken over some aspects of the job and allow workers to focus on aspects which cannot be automated (and usually of higher value-added). As a result, the firms are able to undertake more activities, increase profits, and even hire more people.

One example of the complementarity between technology and employment is the effect of automated teller machines (ATMs) on the employment of bank tellers, as shown in a report by *The Economist* (2011). In 1985, the United States had 60,000 ATMs and 485,000 bank tellers. Going by the argument that technology and jobs are substitutes, one would expect to see the number of ATMs rising and bank tellers falling over time. Instead, it was observed that by 2002 the United States had 352,000 ATMs and 527,000 bank tellers—the use of ATMs did not kill off demand for bank tellers. Instead, ATMs facilitated access to financial services, increasing the consumer base of financial institutions and, therefore, requiring more bank tellers to serve new clients. In addition, the same article noted that the arrival of ATMs led to demand for ATM maintenance workers: jobs which would not have existed without the ATMs.

The complementary effect of technology on jobs (or rather the job-creation impact of technology) can actually be observed at the broader level if one is to look at the impact of the “sharing economy” apps such as Uber, Go-jek, Upwork, and TaskRabbit. Uber, for example, provides an opportunity for people, including previously unemployed individuals, to provide ride services and gain earnings in the process. Go-jek enables people with vehicles to provide various services such as courier and food delivery as well as those with relevant skills to provide cleaning services, among others. TaskRabbit matches freelance labour with demand in tasks such as moving, handyman and painting, essentially creating a marketplace for these skills.

Up-to-date data pertaining to the service providers associated with these apps such as the number of drivers that signed up with Uber and the number of freelance labour that registered with TaskRabbit are unlikely to be available publicly for strategic reasons. However, information from third parties point to significant contribution of these apps in generating jobs. Vall and Krueger (2015), for instance, indicated that starting from a base of near zero in 2012, more than 160,000 drivers in the United States were associated with Uber by end of 2014. Meanwhile, a market study by consultancy firm Edelman Berland (2014) indicates that 53 million Americans, or a third of the workforce, are involved in the freelance economy. These freelance jobs are reliant on internet platforms such as Upwork and TaskRabbit that not only share information between freelance workers and potential employers, but also provide a setting to develop trust by monitoring performance and allowing 360-degree performance evaluations.

A New Approach to Skills

The advent of digital technology has radically changed the dynamics of the labour market. Technologies change so fast that skills learned in a pioneering programming language

could be rendered obsolete with the arrival of a more secure or powerful language. Meanwhile, established brick-and-mortar jobs—such as in medicine, food service, law enforcement, or tourism—are increasingly using digital technology and requiring practitioners to have higher-level computer skills beyond using word processors or spreadsheets.

The ability of governments and firms to identify and predict skills demand—and hence coordinate training needs—has also been diminished in the digital age. While industrial and education policy can coordinate the labour market for skill sets that remain largely unchanged over decades (e.g., welding, typing), it cannot do so when skills required change in a shorter period of time than it takes to train students (e.g., app development).

Although digital technology has disrupted labour markets, it also provides the opportunity to adapt to these changes. Digital technology has changed the reach and content of training programmes, giving access to training to more people at a faster pace. Distance learning and open universities are increasing in number and enrolment, while education platforms like Coursera and edX are bringing lectures, syllabi, and courses from professors in top universities to global audiences for free. Meanwhile, algorithms employed by platforms such as JobStreet and LinkedIn are reducing transactions costs related to job search and application while making employer-employee matching more efficient.

But, more importantly, digital technology has changed the costs of information. In the pre-digital age, gathering information was costly and knowledge was scarce. Students and researchers needed to trawl through tomes of books and periodicals in libraries to gather information; information in broadcast media had to be sifted through reams of magnetic tape. Searching, finding, and collecting information was costly and largely inaccessible. Hence, education needed to fill the gap by providing information to students through iteration and memorisation, usually taking years to transfer enough information to ensure a graduate can navigate the world of work. Today, with access to digital technology, information is relatively cheaper and more accessible. The information that took days and several library trips to acquire in the 1980s can now be gathered in seconds with a Google search. Rather than scarcity of information, the problem in the digital age is information overload—i.e., too much information.

Because of the wide availability and accessibility of information, there is a need to rethink what skills are needed to be taught in educational institutions and training centres. Rather than providing information and transferring knowledge, the skills needed in the digital age include the ability to learn continuously and to scientifically sift through the various sources of information (and disinformation) available. In the digital age, knowing where to look for and how to verify information is more important than memorising names, dates, and facts. Drilling students that the sun is about 149.6 million kilometres from earth is less important than teaching them how to look for and verify the soundness of this information.⁵

⁵ Information on sun-earth distance is obtained from the National Aeronautics and Space Administration (NASA): http://www.nasa.gov/audience/foreducators/k-4/features/F_Measuring_the_Distance_Student_Pages.html

Employment in the digital age requires basic cognitive skills, such as literacy and numeracy, but a well-equipped worker nowadays also needs skills that are easily transferable across jobs and occupations. A worker needs to be adaptive and flexible, being quick to learn new skills as they are required by the job market. As the World Bank (2016) put them, workers in the digital age require higher-order cognitive, socioemotional, and technical skills (Figure 1.2).

Figure 1.2. Skills needed in a modern economy



Source: World Bank (2016).

This is where policy can play a crucial role in rethinking skills and jobs in the digital age. Human capital and skills development policy need to adapt to the new challenges and opportunities hoisted by digital technologies. Educational and skills development policy will need to rethink curricula to develop skills needed in a digital age, and teachers will need to be trained in new pedagogies. Access to continuing and lifelong learning—including for an ageing workforce—will need to be ensured, while technical skills provision will need to quickly adapt to changing labour market requirements.

Labour market and social insurance policies will also need to take into account the new realities of digital jobs. Workers' wages will no longer necessarily come from corporations or factories located in cities, but from freelance work with multiple clients located across international borders. Precarity and casualisation will be the important labour issues in a digital age. Likewise, social security and insurance will need to be modified in the absence of brick-and-mortar firms from which to collect premiums.

The Role of Regional Cooperation

Regional cooperation is especially vital in a digital age. While most education and labour policies are formulated at the domestic level, the disruptions of digital technology have cross-border implications. Decisions made in one economy may have impacts, and unintended consequences, in another economy. Regional cooperation thus has an important

role to play in coordinating policies and regulations as well as information sharing and capacity building. In 2014 in Beijing, Leaders endorsed the APEC Initiative of Cooperation to Promote Internet Economy⁶ in order to cooperate on policies related to digital technologies and avoid unintended consequences of uncoordinated laws and regulations. They established the Ad Hoc Steering Group on the Internet Economy, which started meeting in 2015, to discuss issues related to internet and digital economy and promote initiatives for regional cooperation on this area. Among other members, the Steering Group includes representatives from the Human Resources Development Working Group (HRDWG) and the Policy Partnership on Science, Technology and Innovation (PPSTI), both of which discuss cooperation on skills development and science education.

Earlier in 2003, Chinese Taipei proposed the APEC Digital Opportunity Centre (ADOC) project whose objective is to provide training to various segments of society in topics such as basic computer training, internet access, e-commerce, e-marketing, etc. A total of more than 100 centres have since been established in both urban and rural areas. Considering its role in improving IT literacy, APEC economies may want to collectively build on this success by establishing more centres, particularly in underserved areas.

Economies may want to leverage on APEC working relationships to exchange information on skills development in a digital age so as to identify gaps in their strategies and learn from one another on how they can be made more effective. In implementing their skills development strategies, economies are likely to encounter several challenges. For instance, although there is consensus that current skills need to be upgraded, the exact skills of the future cannot be determined with a certain degree of confidence due to the pace at which technologies are evolving. In this regard, knowledge dissemination and capacity building workshops can be organised under the ambit of APEC to gain insights on how these challenges can potentially be overcome.

Digital technology is not going to go away. The disruptions that it has unleashed—on daily lives, on the labour market, on societies—will persist and solutions developed during previous industrial revolutions will no longer be enough. This theme paper sought to outline some of the challenges APEC economies will face in a digital age, and deeper research and analysis will be needed to identify risks, challenges, and opportunities for human resource development. Moreover, forward-looking domestic policies and regional cooperation will be needed to navigate through the changes to ensure that economic growth remains humane, inclusive, and sustainable. Unfortunately, there is no app for that.

Box 1.1. Digital skills policy in the APEC region

Recognizing that relevant skills are required to navigate through the digital age successfully, APEC economies are implementing various initiatives to ensure that their workers are digital-literate and hence able to leverage on the opportunities provided. Many have formulated frameworks and strategies whose objectives include guiding the transformation process and providing an overview of the various initiatives that the

⁶ http://www.apec.org/Meeting-Papers/Annual-Ministerial-Meetings/Annual/2014/2014_amm/annexf.aspx

economies plan to undertake. Examples include Chile's Agenda Digital 2020, Japan's Smart Japan ICT Strategy, Mexico's National Digital Strategy, New Zealand's Digital Economy Work Programme, and Thailand's National Digital Economy Master Plan. Most of these frameworks and strategies identify the importance of equipping people with the right skills as an essential area where efforts need to be focused.

These initiatives can generally be grouped into several broad categories. The first pertains to reforming their current education curricula and/or introducing new curricula so as to incorporate ICT skills as part of the learning process. Australia, for example, recently developed a new curriculum for technologies to provide children with the opportunity to learn skills such as programming and data analysis using different software. Hong Kong, China introduced Enriched IT Programme in secondary schools starting from the 2015/16 school year to provide training to talented students as well as those interested in IT. Malaysia inserts computer skills in the curriculum through its Digital.Tech@Schools initiative. New Zealand is reviewing how digital technologies are being positioned in the curriculum and hopes to determine areas of improvements from the process.

The second group relates to lifelong learning initiatives that enable people to upgrade their skills as and when necessary. Brunei Darussalam has its ICT Competency Program to provide people with the opportunity to learn and upgrade their ICT skills. Mexico plans to establish a network of community centres for training and digital education to equip its population with the necessary skills. The Philippines has its National ICT Competency Management Service courses—developed by the newly formed Department of Information and Communications Technology—to increase the competitiveness of its workforce in ICT-related fields. Singapore introduced SkillsFuture to enable its people to upgrade their skills by utilizing credits provided by the government.

Related to the above is the recognition and acknowledgement by some economies that the perspectives of industry players are important and it is critical that they are engaged in one way or another to ensure that skills learnt are relevant to the industry. Singapore's TechSkills Accelerator (TeSA) initiative is one example where industry players are very much an integral part of the initiative as their inputs are sought in defining market needs and identifying skills gaps among others. In addition to equipping students with digital skills, Canada's Focus on Information Technology (FIT) program also provides opportunities for industry-sponsored work experience and internships. New Zealand's ICT Skills Forum provides a platform where government and industry associations can collectively attempt to overcome challenges faced by the private sector in attracting people with the right skills. The United States' National Initiative for Cybersecurity Education (NICE) is a partnership between government, academia and industry players in the area of cybersecurity training and workforce development.

Putting in place the right initiatives to equip people with the relevant skills is one aspect of the equation. Another critical component is the importance of making people realize the potentials provided by the digital era and, therefore, see the benefits of improving

their digital literacy. This aptly brings us to the third group of initiatives, which pertain to career advisory services. Among the objectives of Australia's Digital Careers, for instance, is to raise awareness and interest in ICT careers via a range of events including career fairs, conferences and seminars. Malaysia's eAspirasi campaign is aimed at promoting ICT as a career. Singapore's Career Advisers Programme and Integrated Career Services (which are embedded in its SkillsFuture and TeSA initiatives respectively) provide advisory services to interested individuals in areas such as job opportunities and skills needs.

CONTINUED GROWTH AMID PERSISTENT GLOBAL WEAKNESS ⁷

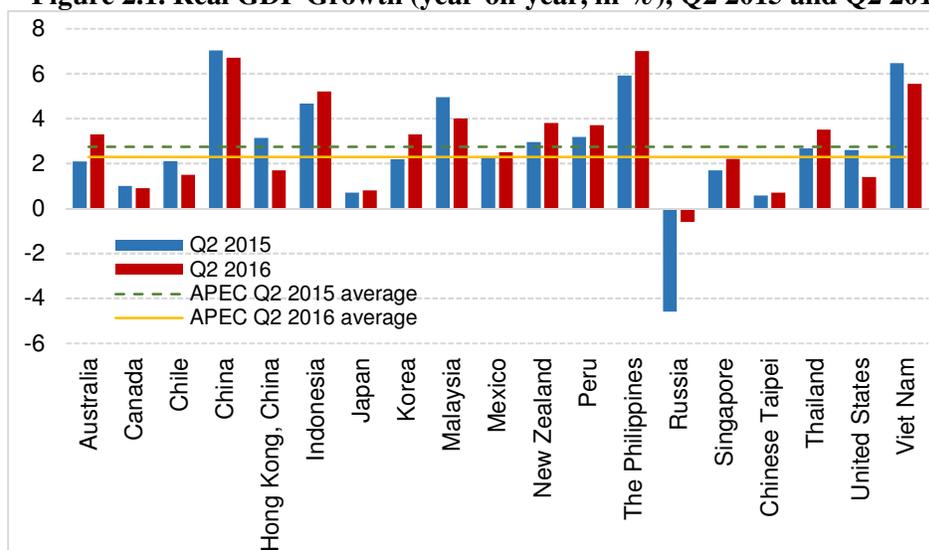
APEC GDP Growth

GDP grew by 2.4% in Q2 2016, lower than the year-ago level of 2.8%.

The APEC region grew by 2.4 percent in Q2 2016 amid the persistent weakness in global economic activity, slightly higher than the 2.3 percent posted in the previous quarter, but representing a decline compared to the 2.8 percent GDP growth in Q2 2015.⁸

All of the 21 APEC member-economies recorded growth in GDP during Q2 2016 except for Russia, which contracted by 0.6 percent as the plunge in oil prices affected fiscal revenues, constraining spending (Figure 2.1). Russia's contraction for the review quarter is less negative than in the previous quarters.

Figure 2.1. Real GDP Growth (year-on-year, in %), Q2 2015 and Q2 2016



Note: Data not available for Brunei Darussalam and Papua New Guinea.

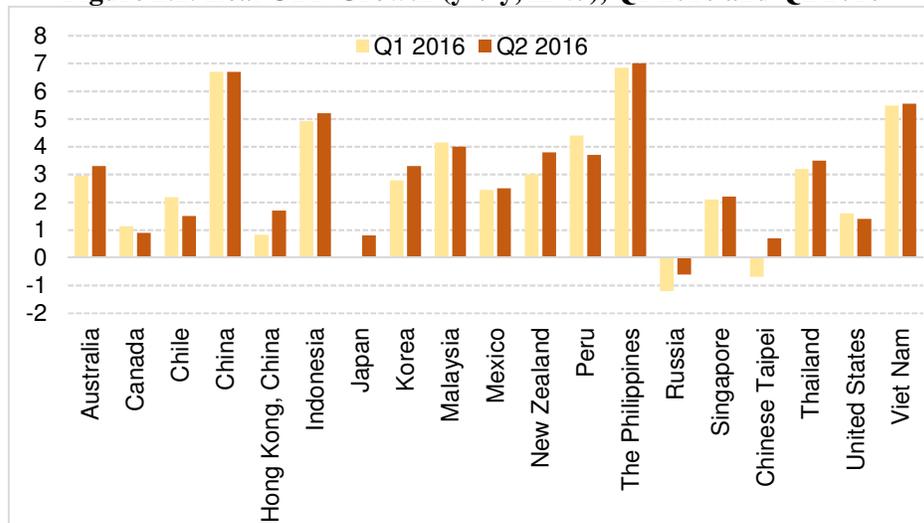
Sources: Asian Development Bank (ADB), International Financial Statistics (IFS), the World Bank (WB), The Economist Economic and Financial Indicators, various economy sources, and APEC PSU staff calculations.

The growth story in Q2 2016 is generally similar to Q1 2016, with the APEC region buoyed largely by domestic consumption while exports remained low. In particular, sluggish trade performance contributed to Chinese Taipei's reversal to a contraction of 0.68 percent in Q1 2016 as China, its major trade partner, continued its economic restructuring away from an export-driven growth towards a consumption-and-services-led growth. Russia also contracted in Q1 2016 by 1.2 percent as export revenues from oil prices declined significantly (Figure 2.2).

⁷ Prepared by Rhea C. Hernando. This report takes into account all available information on GDP growth, trade and investments, as of 31 October 2016.

⁸ The GDP growth rate for the APEC region is a weighted average of the growth rates of all 21 member-economies.

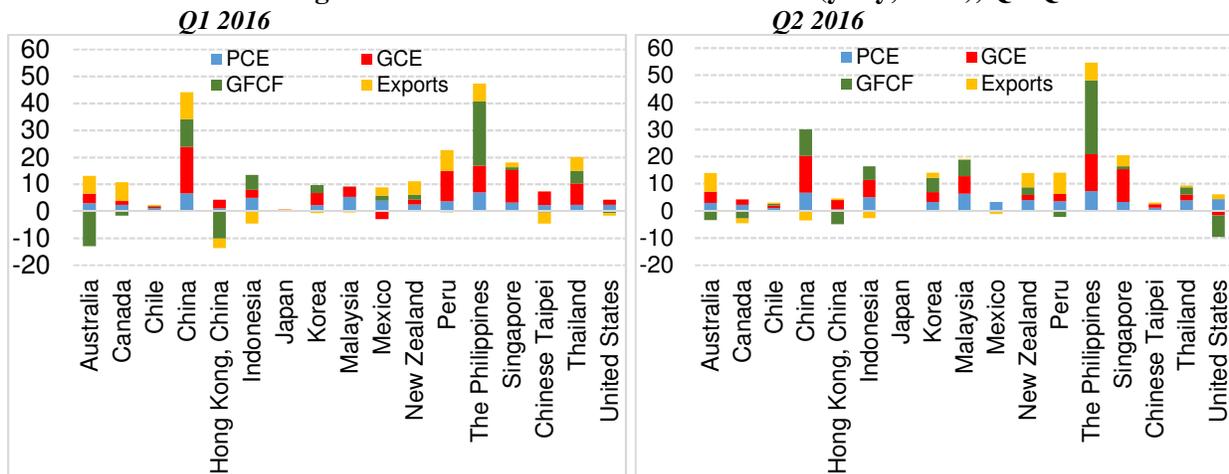
Figure 2.2. Real GDP Growth (y-o-y, in %), Q1 2016 and Q2 2016



Note: Data not available for Brunei Darussalam and Papua New Guinea.
Sources: Asian Development Bank (ADB), International Financial Statistics (IFS), the World Bank (WB), The Economist Economic and Financial Indicators, various economy sources, and APEC PSU staff calculations.

The region continued along the path of growth during the first half of 2016, attributed mainly to steady private and government consumption even as trade and investment continued to disappoint (Figure 2.3).

Figure 2.3. Contributions to GDP Growth (y-o-y, in %), Q1-Q2 2016



Note: Data not available for Brunei Darussalam; Papua New Guinea; Russia; and Viet Nam. Missing bars in a particular economy denote either zero growth or unavailable data.

Legend: PCE is private consumption expenditure; GCE is government consumption expenditure; and GFCF is gross fixed capital formation.

Sources: ADB various economy sources and APEC PSU staff calculations.

Private and public consumption provided steady support to growth.

Private consumption expenditure remained positive among APEC economies during the first half of 2016. Household demand was boosted by continued low commodity prices, especially oil, as well as accommodative interest rates which encouraged credit. In addition, generally strong government spending helped fuel growth, with some economies implementing fiscal stimulus measures.

The contributions of private and public consumption to GDP growth remained crucial, particularly in view of persistently weak global demand which adversely affected trade growth.

The prolonged lethargy in global demand, due in part to the lingering effects of the 2008 global financial crisis, was aggravated by heightened uncertainty, owing largely to the unexpected Brexit result and the magnitude and timing of another round of US monetary policy rates hike. The combination of lethargic global demand and increased uncertainty was manifested in disappointing trade performance as well as generally lower contribution from gross fixed capital formation (GFCF) during the period January-June 2016. Moreover, an increasing trend towards inward-looking policies weigh down further global trade.

Trade Performance

Growth in the value of merchandise exports and imports contracted during the period January-August 2016.

The APEC region's trade performance during the period January-August 2016 mirrored the sluggishness in global demand, with the value of merchandise exports contracting by 6.4 percent along with goods imports at 6.6 percent compared to the same period in 2015. The contraction in APEC trade is in line with the contraction in the value of world exports and imports at 4.4 percent and 4.9 percent, respectively (Table 2.1).

In terms of APEC's share of world trade, the region experienced a slight decrease from 54.3 percent in January-August 2015 to 53.2 percent in the period covering the first eight months of 2016.

Table 2.1. Value and Growth of Merchandise Trade, January-August 2015 and 2016

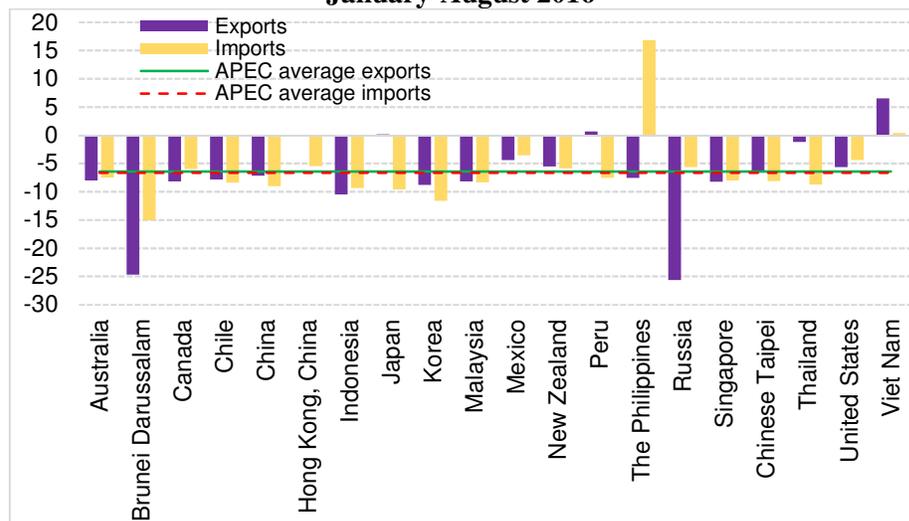
	Value		Growth
	Jan-Aug 2015	Jan-Aug 2016	
APEC			
Exports	5500204.6	5146706.2	-6.4
Imports	5519120.8	5152378.8	-6.6
Total Trade	11019325.4	10299085	-6.5
World			
Exports	10073000	9626000	-4.4
Imports	10219000	9723000	-4.9
Total Trade	20292000	19349000	-4.6
APEC's share of the world			
Exports	54.6	53.5	
Imports	54.0	53.0	
Total Trade	54.3	53.2	

Note: Value data are in current USD. Data not available for Papua New Guinea

Source: World Trade Organization (WTO), Brunei Darussalam Economic Planning and Development Office and APEC PSU staff calculations.

Viet Nam bucked the regional downward trend in export growth (Figure 2.4). A host of factors underpinned Viet Nam’s resilience, including the economy’s export diversification towards information and communication technology (ICT) equipment, a high value sector, and garment manufacturing; increased access of new major markets like the US and Europe for its agro-products, aside from China, its biggest trading partner; a combination of low operating costs and young workforce that attract manufacturing firms; and significant improvement in its openness to trade and FDI as shown by more liberalized policies as well as increased participation in free trade agreements; and stable macroeconomic fundamentals.

Figure 2.4. Growth in the Value of Merchandise Trade (y-o-y, in %), January-August 2016



Note: Data not available for Papua New Guinea
 Source: World Trade Organization (WTO), Brunei Darussalam Economic Planning and Development Office and APEC PSU staff calculations.

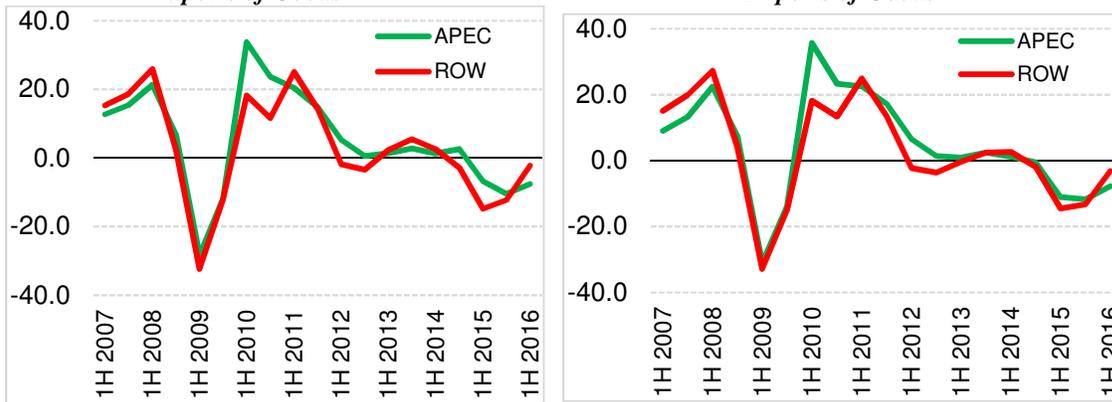
Meanwhile, the Philippines’ imports have also increased more than its APEC peers during the first eight months of 2016. Import payments went up for such capital goods as industrial machinery and equipment, transport equipment, and electronic products as the economy stepped up spending on infrastructure to modernize its seaports and airports.

Trade in APEC started to weaken in 2012, contracting in late 2014 onwards (Figure 2.5). APEC’s low trade growth in recent years mirrors the performance of the rest of the world, which could be due to a confluence of factors. The IMF is of the view that overall subdued investment spending accounted for three-fourths of the slowdown in trade, while other contributing factors include the moderating pace of liberalization matched by the uptick in protectionist policies as well as the slower expansion in global value chains.⁹

APEC’s low trade growth mirrors world trade, due to a combination of declining investments, slowing liberalization, and uptick in protectionist policies.

⁹ IMF, “Global Trade: What’s Behind the Slowdown?” Chapter 2 of the World Economic Outlook, October 2016.

Figure 2.5. Growth in the Value of Merchandise Trade (in %), 2007-2016
Exports of Goods *Imports of Goods*



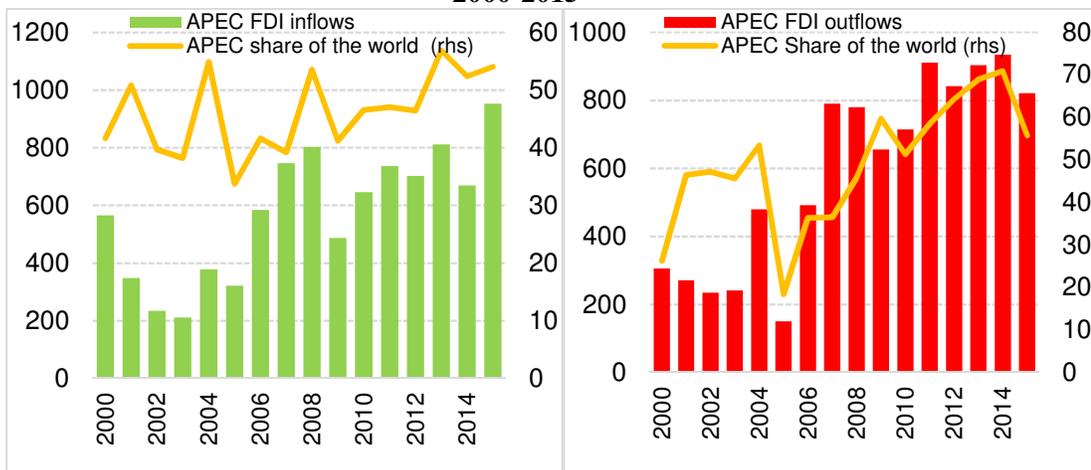
Note: ROW = Rest of the World
 Source: WTO and APEC PSU staff calculations.

Investment Trends

APEC economies attracted more than half of world FDI in 2015.

In 2015, the APEC region attracted USD 953 billion worth of foreign direct investments (FDI), equivalent to 54.1 percent of world FDI, higher than the APEC share in 2014 of 52.4 percent and the 15-year average share (covering the period 2000-2015) of 46.1 percent (Figure 2.6). In terms of growth, FDI inflows to APEC increased by 42.3 percent in 2015 compared to a year ago. The increase in FDI was owed largely to the upsurge in cross-border mergers and acquisitions (M&A) and corporate reconfigurations while greenfield investments declined.

Figure 2.6. FDI Flows (in USD billions) and APEC Share of World FDI (in %, rhs), 2000-2015



Note: rhs = right-hand side
 Source: United Nations Conference on Trade and Development (UNCTAD) and APEC PSU staff calculations.

Among the top 10 host economies of FDI flows in 2015, APEC economies occupied the top three largest recipient of inflows, including the United States at around USD 380 billion; Hong Kong, China with a new record of USD 175 billion; and China at USD 136 billion. Other APEC members that were in the top 20 FDI recipient economies in 2015 were Singapore (USD 65 billion); Canada (USD 49 billion); Mexico (USD 30 billion); and Chile (USD 20 billion).¹⁰

FDI inflows to the United States were characterized by significant acquisitions of assets in manufacturing and services, with total M&A sales at around USD 228 billion, the biggest volume of cross-border acquisitions since 2000. In Hong Kong, China, corporate reconfigurations partly drove its FDI inflows, while inward investments to the services sector formed a considerable chunk of China's FDI.

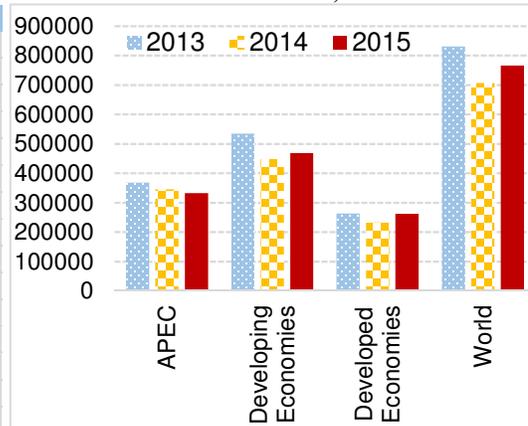
An important form of FDI is greenfield investment, which involves the creation of a subsidiary by non-resident investors from the ground up. This new venture, in turn, requires the construction of new facilities, new distribution hubs, offices, and living quarters, and therefore, translates into the creation of new jobs and transfer of competencies, among others.

Greenfield investment projects in the APEC region accounted for 43.4 percent of the world in 2015, reflecting a lower share compared to the level in 2014 (Table 2.2).

Table 2.2. Announced Greenfield Investment Project (as destination), 2014-2015

	2014	2015
APEC		
total, in million USD	345580	332559
y-o-y growth, in %	-6.0	-3.8
share of the world, in %	48.9	43.4
Developing economies		
total, in million USD	447951	468614
y-o-y growth, in %	-16.1	4.6
share of the world, in %	63.4	61.2
Developed economies		
total, in million USD	232808	261466
y-o-y growth, in %	-11.6	12.3
share of the world, in %	33.0	34.1
World		
total, in million USD	706049	765729
y-o-y growth, in %	-15.0	8.5

Figure 2.7. Value of Greenfield Investments, in USD millions, 2013-2015



Source: UNCTAD World Investment Report 2016 and APEC PSU staff calculations.

Greenfield investments in APEC contracted by 3.8% in 2015.

The total value of greenfield investments in APEC was also lower in 2015 as it contracted by 3.8 percent from its level in 2014, even as total greenfield projects increased for developing and developed economies as a whole during the same comparable years (Figure 2.7).

On the other hand, the APEC region's capital outflows as share of the world have gone down to 55.7 percent in 2015 from 70.9 percent in 2014.

¹⁰ UNCTAD World Investment Report 2016.

Trade and Investment Measures

APEC implemented more trade-restrictive measures than trade-facilitating measures in mid-October 2015 to mid-May 2016.

APEC economies implemented a total of 100 trade and trade-related measures during the period mid-October 2015 up to mid-May 2016 (Table 2.3 for the summary and Annex 1¹¹ for the specific measures). Of this aggregate, 31 measures had the effect of facilitating trade, with the termination of anti-dumping and countervailing investigation/duties accounting for the bulk followed by the reduction/elimination of export duties/import tariffs.

Table 2.3. Trade and Trade-Related Measures, mid-October 2015 to mid-May 2016

	Number of measures
Trade-restrictive measures	
Initiation of anti-dumping investigation	31
Initiation of countervailing investigation	17
Initiation of safeguard investigation	0
Increase/Imposition of import tariffs and export duties	8
Imposition of export/import requirements/quotas/restrictions	9
Imposition/Extension of import/export ban	4
Sub-total: Trade-restrictive measures	69
Trade-facilitating measures	
Termination of anti-dumping investigation/duties	14
Termination of countervailing investigation/duties	2
Streamlining of procedures	2
Reduction/elimination of export duties/import tariffs	10
Elimination of import/export ban	3
Sub-total: Trade-facilitating measures	31
Total: Trade and trade-related measures	100

Source: WTO Report on G20 Trade Measures dated 21 June 2016.

From October 2015-October 2016, there were more investment-friendly measures enacted in the APEC region compared to measures that discourage investments.

Meanwhile, 69 measures had the effect of discouraging trade mainly through the initiation of anti-dumping and countervailing investigations. Other measures applied such as the imposition of stricter import/export requirements as well as the imposition or extension of import/export bans of certain products also had the effect of restricting trade during the review period.

In terms of investment measures covering the period mid-October 2015 to mid-October 2016, more investment-friendly measures were enacted and/or implemented by APEC economies compared to measures that discourage investments (Table 2.4 for the summary and Annex 2¹² for specific measures).

¹¹ Annex 1 can be accessed here:

http://www.apec.org/~media/Files/AboutUs/PolicySupportUnit/APECRegionalTrendsAnalysis/Annex%201_Trade%20Measures_Oct%202015%20to%20May%202016.pdf.

¹² Annex 2 can be accessed here:

http://www.apec.org/~media/Files/AboutUs/PolicySupportUnit/APECRegionalTrendsAnalysis/Annex%202_Investment%20Measures_Oct%202015_Oct%202016.pdf.

To encourage the entry of FDI, some APEC economies simplified registration systems and procedures, while another economy liberalized rules on foreign ownership of real properties. Other measures that promoted investments include widening access to the foreign exchange and securities markets, relaxing requirements on offshore investments by domestic investors and onshore investments by foreigners, and introducing up-to-date macro-prudential systems to boost cross-border financing.

Table 2.4. Investment Measures, mid-October 2015 to mid-October 2016

	Number of measures
Encouraging FDI entry	
Relaxing restrictions on foreign investments	7
Streamlining systems and procedures	6
Other investment-friendly measures	
Increasing access to foreign exchange and securities markets	2
Relaxing rules on offshore and onshore investments	2
Updating systems and procedures	1
Sub-total: Measures promoting investments	18
Tightening of rules	
on FDI entry	8
on ownership information	1
Sub-total: Measures discouraging investments	9
Total: Investment measures	27

Source: Joint OECD-UNCTAD 15th Report on G-20 Investment Measures dated 21 June 2016 and UNCTAD Investment Policy Monitor (November 2016).

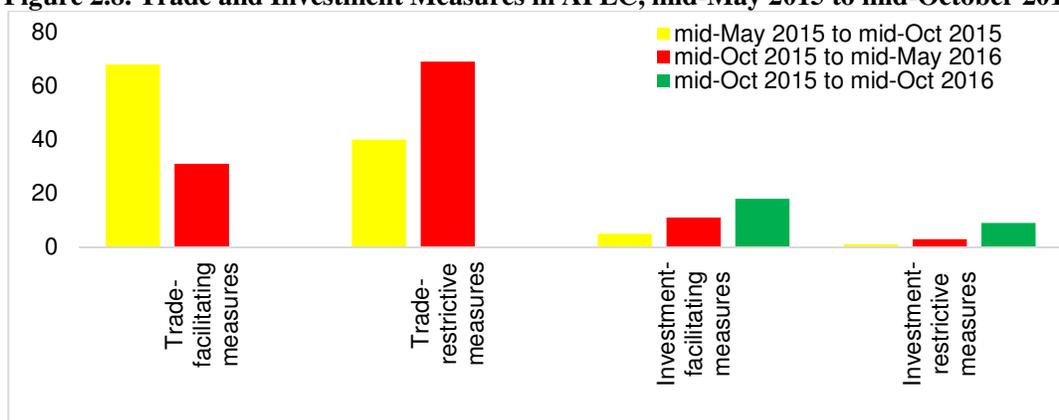
The application of trade-restrictive measures by some economies does not imply a general move towards protectionist policies for the APEC region as a whole.

It is important to note that trade-restrictive measures have increased while trade-facilitating measures have declined based on the latest 15th Report on G-20 Trade and Investment Measures covering the period mid-October 2015 to mid-May 2016 compared to the previous 14th Report covering the period mid-May 2015 to mid-October 2015 (Figure 2.8).¹³ Nonetheless, the higher number of trade-restrictive measures applied by some APEC economies during the covered period does not imply a general move towards trade protectionism for APEC as a whole.

In contrast, investment-friendly measures have gone up during the period October 2015-October 2016, although investment-restrictive measures were also slightly higher.

¹³ Data based on the UNCTAD-OECD-WTO Report on G-20 Trade and Investment Measures, which can be accessed here: [http://unctad.org/en/pages/publications/G-20-Trade-and-Investment-Measures-\(Series\).aspx](http://unctad.org/en/pages/publications/G-20-Trade-and-Investment-Measures-(Series).aspx). It is instructive to note that only nine of the 21 APEC member-economies belong to the G-20, including: Australia; Canada; China; Indonesia; Japan; Korea; Mexico; Russia; and the United States.

Figure 2.8. Trade and Investment Measures in APEC, mid-May 2015 to mid-October 2016



Note: Only nine of the 21 APEC member-economies belong to the G-20, including: Australia; Canada; China; Indonesia; Japan; Korea; Mexico; Russia; and the United States.

Source: UNCTAD-OECD-WTO Trade and Investment Measures.

Near-term Outlook and Risks

APEC economies are expected to continue to grow in the near-term, but at varying speeds of economic activity.

In the near-term, APEC economies are expected to continue along the path of growth, although the pace of economic activity is expected to be uneven across the region. In the next two years covering the period 2017-2018, all of the 21 APEC economies are anticipated to be in positive territory, which should help lift APEC's overall growth (Table 2.5).

Table 2.5. Near-term Real GDP Growth Projections

Real GDP Growth, in percent					
Actual vs Forecast					
	Actual		Forecasts		
	2014	2015	2016	2017	2018
Australia	2.69	2.44	2.87	2.67	2.89
Brunei Darussalam	-2.35	-0.55	0.38	3.95	1.71
Canada	2.47	1.08	1.16	1.90	1.91
Chile	1.83	2.30	1.70	1.99	2.70
China	7.30	6.90	6.59	6.17	6.03
Hong Kong, China	2.68	2.44	1.44	1.85	2.81
Indonesia	5.02	4.79	4.94	5.30	5.50
Japan	-0.03	0.54	0.51	0.56	0.45
Korea	3.34	2.61	2.72	3.04	3.06
Malaysia	6.01	4.97	4.30	4.60	4.70
Mexico	2.25	2.47	2.09	2.33	2.58
New Zealand	3.02	3.00	2.77	2.71	2.59
Papua New Guinea	7.35	6.62	2.54	2.95	2.49
Peru	2.39	3.28	3.75	4.12	3.58
The Philippines	6.22	5.91	6.40	6.70	6.80
Russia	0.71	-3.73	-0.76	1.07	1.20
Singapore	3.26	2.01	1.70	2.23	2.64
Chinese Taipei	3.93	0.65	0.97	1.67	1.94
Thailand	0.82	2.82	3.23	3.27	3.10
United States	2.37	2.60	1.58	2.20	2.08
Viet Nam	5.98	6.68	6.10	6.20	6.20

Source: IMF World Economic Outlook October 2016 database

Trade growth and FDI flows are expected to slow down in 2016 before picking up in 2017-2018.

Economic growth will continue to be affected by trade and investments. In its latest estimates, the WTO expects the volume of merchandise trade to grow at its slowest pace since the financial crisis at 1.7 percent. The WTO also revised downwards its forecast range for 2017 to 1.8-3.1 percent from 3.6 percent. The WTO further warned that this significant and sustained weakness in trade is of particular concern amid a growing anti-globalization sentiment which could result in policies that do not only stifle trade but also hold back job creation and thus, overall economic activity.¹⁴

The IMF also expects lower growth in the volume of world trade (including goods and services) in 2016 at 2.3 percent from the 2.6 percent growth in 2015, with a more optimistic outlook in 2017 at 3.8 percent.¹⁵

In terms of FDI, the UNCTAD expects a 10-15 percent decline in world FDI flows in 2016 with continued fragility in global demand, restrictions on tax inversion deals and a projected slump in the profits of multinational enterprises. Global FDI flows are anticipated to resume growth in 2017, and to surpass the 2015 record of USD 1.8 trillion by 2018 in tandem with a more upbeat global growth.¹⁶

GDP growth in the short-term will depend largely on the balance between upbeat factors and downside risks, while uncertainty and corresponding policy responses remain crucial determinants of the magnitude and direction of economic growth.

Upside potential for APEC growth could come from improvements in industrial production and commodity prices as well as sustained FDI inflows.

Upside potential for near-term growth in the APEC region could come from improvements seen in industrial production; the sustained inflow of FDI into APEC economies; and the recovery in commodity prices.

Latest available data for 19 APEC economies showed that, as of September 2016, industrial production grew in 13 economies, ranging from 0.3-13.6 percent. The remaining economies saw contractions in industrial production within the range of 0.2-2.0 percent (Figure 2.9). This development represents a significant improvement from the levels seen in June 2016 when only around 10 out of 19 APEC economies posted growth in industrial production while the rest were in negative territory.

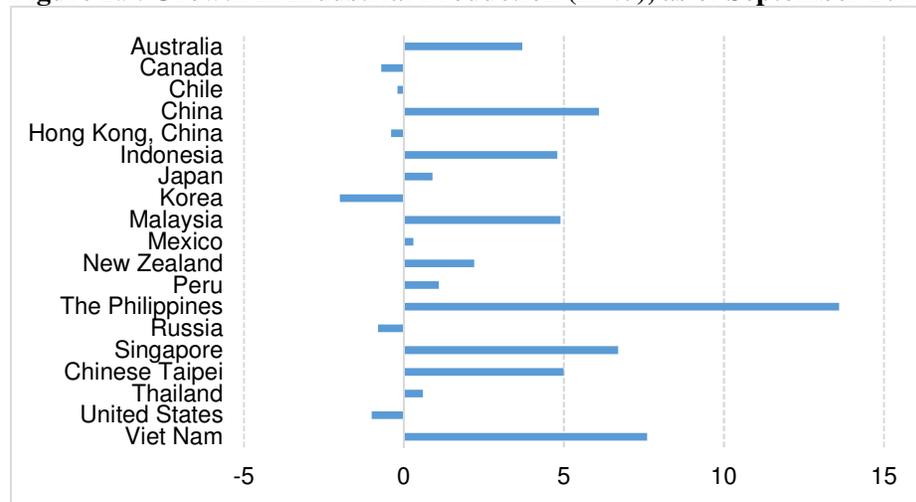
An increase in industrial production reflects higher output from such major industry groups as manufacturing, mining, and utilities, which, in turn, signals a strengthening economic activity.

¹⁴ WTO Trade Statistics and Outlook, "Trade in 2016 to grow at slowest pace since the financial crisis", Press/779 dated 27 September 2016, at https://www.wto.org/english/news_e/pres16_e/pr779_e.htm.

¹⁵ IMF WEO October 2016.

¹⁶ UNCTAD World Investment Report 2016.

Figure 2.9. Growth in Industrial Production (in %), as of September 2016



Note: Data as of September 2016, except for Indonesia; Malaysia; Mexico; and The Philippines (August 2016); Canada; and Peru (July 2016); and Australia; Hong Kong; and New Zealand (as of Q2 2016). Data not available for Brunei Darussalam and Papua New Guinea.

Source: The Economist Economic and Financial Indicators.

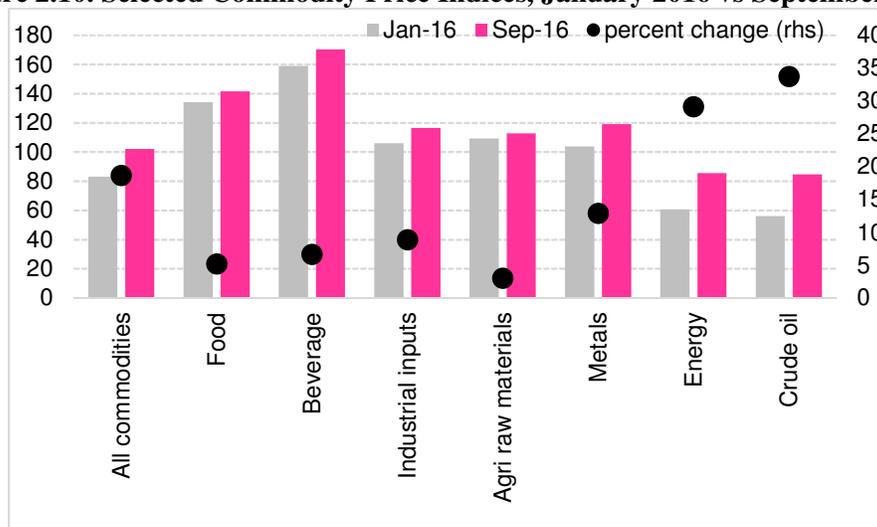
The continued flow of FDI bodes well for the APEC region as a whole, indicating investor optimism about the region’s economic fundamentals and policy directions. According to an UNCTAD business survey among executives of multinational enterprises (MNE), nine out of 21 APEC economies¹⁷ are among the prospective top destinations for 2016-2018.

Meanwhile, the rally in commodity prices could also be a cause for optimism since several APEC member-economies are commodity exporters of oil, metals, and agricultural products.

As of September 2016, the IMF’s measure of the all-commodity price index has gone up by 18.7 percent compared to the level posted in January 2016, with the biggest increase seen in crude oil prices at 33.8 percent even as the prices of metals and agricultural raw materials also went up (Figure 2.10).

¹⁷ The top prospective host economies for 2016-2018 according to UNCTAD’s MNE survey are: Australia; China; Japan; Indonesia; Malaysia; Mexico; The Philippines; United States; and Viet Nam.

Figure 2.10. Selected Commodity Price Indices, January 2016 vs September 2016



Note: rhs = right-hand side
Source: IMF Primary Commodity Prices

Futures markets reveal a modestly rising path for commodity prices, with a higher likelihood for the following prices to increase: the benchmark WTI and Brent oil prices above USD 60 per barrel; copper prices above USD 2.5 per pound; and soybean prices above USD 13 per bushel.¹⁸ Moreover, on 28 September 2016, the OPEC agreed to the outline of a deal that will effectively cut oil production for the first time in 8 years, limiting production to a range of 32.5 to 33 million barrels a day (equivalent to a drop of nearly 750,000 barrels a day). Although a target for the said production cut has yet to be set, oil prices in the spot market have jumped by more than 5 percent after ministers announced the deal.

Downside risks could emanate from China's rebalancing, uncertainty in US interest rates, medium-term impact of Brexit and other developments, and rising trade protectionism.

Downside risks continue to pose major challenges to economic growth and sustainability.

First, China's economic rebalancing away from trade and investments and towards consumption and services could impact on the overall trade growth of the APEC region since China remains a major trade partner of APEC economies. As of May 2016, China's share in APEC's total exports reached 26.8 percent while its share in APEC's total imports stood at 19.4 percent. This was followed by the US, with a 15.5 percent share in APEC's total exports and 27 percent share in APEC's total imports.¹⁹

Second, a further and larger hike in US interest rates could trigger capital outflows from emerging and developing economies. In 2015, this group of economies recorded a lower GDP growth of 4.0 percent compared to 4.6 percent in 2014 and projected output growth of 4.2 percent in 2016.²⁰ Weaker growth feeds into investor perception

¹⁸ Based on the IMF Commodity Price Outlook and Risks dated 13 October 2016, by the IMF Research Department, Commodities Unit. The report can be accessed here:

<http://www.imf.org/external/np/res/commmod/pdf/cpor/2016/cpor1016.pdf>.

¹⁹ Data from the IMF Direction of Trade Statistics.

²⁰ Source: IMF World Economic Outlook, July 2016 Update and October 2016.

of economic fundamentals. Weak investor sentiment in emerging markets combined with higher interest rates for US instruments could shift capital towards the US economy. Boosting this possible shift away from assets of emerging and developing economies, which are perceived as riskier compared to the safer haven of US investment vehicles, is a strengthening US economy on the back of solid private consumption and increasing employment.

Large capital outflows have implications on macroeconomic stability. For one, significant and sustained outflow of capital introduces liquidity problems in the banking sector, feeding into the real economy via credit constraints. Moreover, currency depreciations could also be expected with large capital outflows. Marked local currency depreciations, in turn, give rise to such concerns as currency mismatches and higher value of US-denominated debts, which could threaten economies' fiscal capacity and financial stability. These adverse repercussions that come with significant capital outflows could impact on demand and spending, reinforce negative investor sentiment, and further drag down economic growth.

Third, the knee-jerk reaction of financial markets worldwide to Brexit appeared to be transitory, so that short-term implications on the APEC region seemed manageable. However, it is difficult to assess the medium-term and long-term impact of Brexit on APEC. Moreover, the Brexit vote has increased uncertainty in all fronts—economic, financial, and political—which could take a toll on consumption and investment, possibly resulting in sizeable macroeconomic consequences if left unmitigated by swift and adequate policy responses such as a combination of monetary policy and fiscal stimulus measures to support growth requirements.

Aside from the unexpected Brexit result, other developments such as the results of the US presidential elections, could add to global uncertainty, causing volatility in financial markets in the short-run. In the medium-term, the future policy direction of the US in terms of trade and investments may have an impact on the economic outlook of the APEC region.

Last and of particular concern to APEC's trade and investment liberalization efforts is the observation that anti-globalization sentiments and policy actions seem to be gaining traction worldwide, which could be a formidable obstacle against the free flow of trade and investments across borders, likely dragging down overall regional growth. Hufbauer and Jung (2016)²¹ and Evenett and Fritz (2016)²² argued that the slowdown in the pace of liberalization together with the onset of protectionist policies are major contributors to the sluggish performance of trade and investment.

²¹ Gary Clyde Hufbauer and Euijin Jung, "Why Has Trade Stopped Growing? Not Much Liberalization and Lots of Micro-protection", Peterson Institute for International Economics, March 2016.

²² Simon J. Evenett and Johannes Fritz, "Global Trade Plateaus", The 19th Global Trade Alert Report, Centre for Economic Policy Research, 2016.

The balance of risks is tilted to the downside as trade remained in negative territory while uncertainties increase.

The direction of economic growth in the short- and medium-run will depend on the balance between upside opportunities and downside risks, especially the degree and likelihood of these risks coming into fruition and offsetting the other. As of this report, the balance is tilted to the downside as trade languished in negative territory while uncertainties that could weigh down consumer and investor confidence overwhelm upbeat factors.

Conclusion

As global headwinds persist, APEC economies need to fortify their resilience in order to continue to grow amid adverse external developments. An appropriate policy mix that addresses short-term growth requirements and medium-term prospects remains the key toward higher and more sustainable growth trajectory.

In the short-term, domestic sources of growth should be ably-supported by accommodative monetary and fiscal policies. This translates into the maintenance of low interest rates along with the implementation of fiscal support mechanisms to fuel domestic demand and investments.

In cases of financial turbulence, economies must respond swiftly using available monetary and fiscal tools to bring financial and exchange rate markets back to orderly market conditions, because such vulnerabilities do not only affect financial stability, but could also have spillover effects on the real economy.

Improving medium-term growth prospects by instituting structural reforms also need to be in the priority list of economies to strengthen the line of defense against external shocks. Structural reforms could encompass efforts that boost labor market participation, support entrepreneurship, and promote innovation.

APEC has achieved important strides toward the implementation of meaningful reforms that have translated into more competitive markets and deeper economic participation of all segments of society. This emphasis on structural reforms strengthened with the Leaders' Agenda to Implement Structural Reform (LAISR, 2004-2010)²³, continued on with the APEC New Strategy for Structural Reform (ANSSR, 2010-2015),²⁴ and most recently, the Renewed APEC Agenda for Structural Reform (RAASR, 2016-2020).

An appropriate policy mix of short-term and medium-term measures supports higher and more sustainable growth.

²³ The LAISR covered five areas for structural policy reform: regulatory reform, competition policy, public sector governance, corporate governance, and strengthening economic and legal infrastructure.

²⁴ Building on the priority areas of LAISR and recognizing the need for a more comprehensive long-term growth strategy in light of the 2008 global financial crisis, the ANSSR promoted more open, well-functioning, transparent and competitive markets; better functioning and effectively regulated financial markets; labor market opportunities, training and education; sustained SME development and enhanced opportunities for women and for vulnerable populations; and effective and fiscally sustainable social safety net programs.

The RAASR is geared toward reducing inequality, stimulating growth in APEC economies, and contributing to APEC's overarching goal to promote balanced, inclusive, sustainable, innovative and secure growth, through structural reforms that are consistent with the following pillars: 1) more open, well-functioning, transparent and competitive markets; 2) deeper participation in those markets by all segments of society, including micro, small and medium enterprises (MSMEs), women, youth, older workers and people with disabilities; and sustainable social policies that promote the above mentioned objectives, enhance economic resiliency, and are well-targeted, effective and non-discriminatory. The RAASR is on track in its first year of implementation, with workshops conducted to assist economies in their work programs.²⁵ Moreover, APEC economies, together with the APEC Policy Support Unit (PSU) have generated a list of external quantitative indicators to help monitor APEC-wide progress on RAASR commitments.²⁶

Meanwhile, trade protectionism is increasingly gaining traction, potentially reversing many of the economic gains during the past three decades.

Policymakers need to refocus both discussions and actions towards trade liberalization and economic integration to address rising trade protectionism. On a more positive note, the landmark Canada-Europe trade pact called the Comprehensive Economic and Trade Agreement (CETA), signed on 30 October 2016, would suggest that policymakers are well-aware of the far-reaching effects of free trade, especially creating jobs and increasing outputs, which, in turn, impact on growth inclusiveness and sustainability.

Parallel to appropriate policy responses are well-targeted social initiatives to support those adversely affected by globalization. These initiatives could facilitate skills development and education upgrading to allow re-entry and/or continued participation in the labor market amid a dynamic environment.

As a region, APEC needs to strengthen its commitment to move forward and more decisively with a policy agenda that ensures sustainable, equitable, and inclusive growth. This could mean reinforcing efforts towards supporting MSMEs, improving the quality of and access to education and skills training.

APEC needs to act more decisively to institute a policy agenda towards sustainable, equitable, and inclusive growth.

²⁵ Source: APEC Economic Committee (EC), including the Report by the EC Chair dated 27-28 August 2016, available here: http://www.apec.org/~media/Files/Groups/EC/16_ec2_summary.pdf.

²⁶ The report on the RAASR external quantitative indicators has been published and can be accessed here: http://publications.apec.org/publication-detail.php?pub_id=1768.

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