Infrastructure Finance under the Framework of the Belt and Road Initiative (BRI)

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Infrastructure connectivity is one of the cooperation priorities of the Belt and Road Initiative (BRI). The construction and improvement of infrastructure means a large amount of investment as well as lots of risks. This study tries to gauge the funding needs for the countries along the Belt and Road for infrastructure investment to maintain a relatively rapid economic growth. To make it convenient for analysis, this study only projects the appropriate infrastructure investment demand of 65 countries along the Belt and Road that have relatively complete GDP statistics in recent years. And the projection result is the total appropriate infrastructure investment demand is expected to be about US$11.5 trillion between 2017 and 2021. To overcome the challenges and attract more funds to meet the large-scale infrastructure investment demand of the BRI countries, it is critical to improve the infrastructure investment environment in the region. Besides governments' functions of improving investment environment, the role of private investors is of equal importance as market rules and international norms are followed in the process of facilities connectivity construction of the BRI.

Keywords: the Belt and Road Initiative (BRI), facilities connectivity, infrastructure finance

1. Introduction

The building of the Silk Road Economic Belt and the 21st Century Maritime Silk Road, that is the Belt and Road Initiative (BRI), was first proposed by President Xi Jinping in 2013. As of early May of 2017, over 100 countries and international organizations have supported and got involved in the BRI. According to *Vision and*

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Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road issued by China in March 2015, the cooperation priorities include policy coordination, facilities connectivity, unimpeded trade, financial integration and people-to-people bonds, among which facilities connectivity is to improve the infrastructure in the region.

Infrastructure is a key dimension of economic and social development. The construction and improvement of infrastructure means a large amount of investment as well as lots of risks. The infrastructure connectivity under the BRI framework has identical features.

This study firstly tries to gauge the funding needs for the countries along the Belt and Road for infrastructure investment to maintain a relatively rapid economic growth. Before 2016, there was no estimation specifically made for infrastructure investment of the Belt and Road. The projection of Asian Development Bank (ADB) on the infrastructure investment demand of Asia's developing countries released in 2009 was often used to illustrate how large the infrastructure investment demand under the BRI was. But the ADB's projection covers only 32 of the 45 developing members of ADB, and seven of them are not the countries along the Belt and Road. To meet the infrastructure investment needs, all possible funding sources need to be exploited. Therefore the following second part of the paper focuses on analyzing what kind of funds can be used. The third part tries to identify the main risks involved in the infrastructure finance under the BRI framework. At last, strategic options for nations and private investors are proposed as conclusion.

2. Demand for Infrastructure Investment of the Countries along the Belt and Road

The BRI is open to any country that has the common ground with China on the principle of inclusive development, and is willing to involve in it. That means there is no definite frontier in terms of participant countries. To make it convenient for analysis, this study only projects the appropriate infrastructure investment[1] demand of 65 countries[2] along the Belt and Road that have relatively complete GDP statistics in

[1] Appropriate infrastructure investment is defined as the investment that could support relatively rapid economic growth in the region.

[2] Those countries are China, Singapore, Brunei, Israel, Saudi Arabia, Oman, the United Arab Emirates, Qatar, Kuwait, Bahrain, Greece, Cyprus, Poland, Lithuania, Estonia, Latvia, Czech Republic, Slovakia, Hungary, Slovenia, Croatia, Malaysia, Thailand, Iran, Iran, Turkey, Jordan, Lebanon, Maldives, Kazakhstan, Turkmenistan, Russia, Belarus, Georgia, Azerbaijan, Bosnia, Herzegovina, Montenegro, Albania, Romania, Bulgaria, Macedonia, Mongolia, Indonesia, Myanmar, Laos, Cambodia, Vietnam, Philippines, Syria, Yemen, India, Pakistan, Bangladesh, Sri Lanka, Bhutan, Uzbekistan, Tajikistan, Kyrgyzstan, Ukraine, Armenia, Moldova, West Bank and Gaza, Egypt, Afghanistan and Nepal. The scope is a little bit different from the study of 2016 with the BRI proceeding. Saudi Arabia and Egypt is covered in this study. And Syria is not included for lack of GDP statistics for recent years.

recent years. And the projection period covers 5 years between 2017 and 2021.

The projection is based on the following analysis.

2.1. Related Researches

In the late 1980's, to establish infrastructure financing solutions for serious infrastructure repair, rehabilitation and construction needs within the Commonwealth of Massachusetts, the Special Commission on Infrastructure Finance was established. The first step in the Commission's work was to identify the magnitude of the state's impending infrastructure needs by conducting a survey through interviews with, and review of information provided by and available from, key financial and other agencies in the state with infrastructure responsibilities, as well as from documents of public record and public hearings conducted by the commission. According to the survey, a total projected new need of about US$29 billion was found, of which from US$21.5~22.2 billion will be new state responsibility.

ADB projected in Infrastructure for a Seamless Asia (2009) that the total need for infrastructure investments in Asian developing countries would be US$8.28 trillion from 2010 to 2020. In early 2017, ADB published a new report of *Meeting Asia's Infrastructure Needs in 2017*. According to the report, developing Asia will need to invest US$26 trillion from 2016 to 2030, or US$1.7 trillion per year, if the region is to maintain its growth momentum, eradicate poverty, and respond to climate change (climate-adjusted estimation). The new annual estimate more than doubled the US$750 billion in the 2009 ADB estimation.[1] The infrastructure investment gap—the difference between investment needs and current investment levels—equals 2.4% of the projected GDP for the 5-year period from 2016 to 2020 when incorporating climate mitigation and adaptation costs. And without China, the gap will rise to 5% of the projected GDP.

According to *Infrastructure 2030* OECD study published in 2006/2007, government spending on infrastructure in OECD countries amounted to 2.2% of GNP between 1997 and 2002, compared with 2.6% in 1991–1997. According to estimates in the OECD study 2016/2017 and a 2013 report by McKinsey Global Institute, the need for infrastructure investments—including additions, renewals and upgrades – has increased so significantly at a global level that investments totaling some US$60 trillion will be required between 2013 and 2030, accounting for about 3.5% of global GDP annually. And according to estimates by the World Bank, the global investment shortfall in infrastructure is at least US$1 trillion per annum. The excess demand for

[1] The inclusion of climate-related investments is a major contributing factor. A more important factor is the continued rapid growth forecasted for the region, which generates new infrastructure demand. The inclusion of all 45 ADB member countries in developing Asia, compared to 32 in the 2009 report, and the use of 2015 prices versus 2008 prices also explain the increase.

new investments in infrastructure amounts to about 1.3% of global GNP (World Bank Database, 2015). Global operating and maintenance costs for the existing infrastructure assets amount to 1.2% of GDP (Weber, Staub-Bissang and Alfen, 2016).

In a report of *PPI Investments in IDA Countries 2011 to 2015* (World Bank, 2016), PPI investments in IDA countries[1] amounted to US$277 billion across 142 projects during 2011–2015. When looking at PPI investments as a percentage of GDP during the period, IDA countries as a group invested a higher percentage (0.65%) compared to non-IDA countries (0.53%). When considering the average for the period, the majority of investments in IDA countries were in energy projects (86%), followed by transport and water and sewage projects (14% and 0.5%, respectively).

2.2. Areas of Infrastructure

At present, the studies on infrastructure investment vary in the areas of infrastructure. The report to Massachusetts Special Commission on Infrastructure Finance covers six areas including transportation, environment, buildings and grounds, public housing, miscellaneous authorities and quasi-public organizations (independent authority). ADB's report defines infrastructure as transport, power, telecommunications, water supply and sanitation. The PPI Project Database focuses on sectors in infrastructure with high capital costs, which were traditionally provided by the public sector, and which continue to serve the public. These sectors are energy (including electricity generation, transmission, and distribution, and natural gas transmission and distribution), information and communications technology (including land based and submarine cables), transport (airport runways and terminals, railways, toll roads, bridges, highways, tunnels, port infrastructure, superstructures, terminals, and channels), and water and sewerage sectors (potable water generation and distribution, sewerage collection and treatment).

For the sake of the following analysis, this study covers energy, transport and municipal public utilities, where energy and transport are defined as World Bank's PPI Database, the municipal public utilities are defined as China's city public utilities including city water supply, gas supply and heating, paved roads, sewage pipes, public traffic, greening, environmental and sanitation.

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[1] The review only focus on 3 sectors (energy, transport, water and sewage) and 56 countries that are IDA-eligible and exclude blend and inactive countries. Blend countries were excluded from IDA and non-IDA countries as they are in a pre-graduation phase. Blend countries are IDA-eligible but also creditworthy for IBRD borrowing. The list includes 19 countries: Bolivia, Cameroon, Cape Verde, the Republic of Congo, the Dominican Republic, India, Grenada, Moldova, Mongolia, Nigeria, Pakistan, Papua New Guinea, Sri Lanka, St. Lucia, St. Vincent and the Grenadines, Timor-Leste, Uzbekistan, Vietnam, and Zimbabwe. Inactive countries have no active IDA financing due to protracted non-accrual status. The list includes Eritrea, Somalia, and Sudan.

2.3. Ratio of Appropriate Infrastructure Investment to GDP

In practice, the amount of infrastructure investment needed by a country is closely related to its development levels and patterns. In order to make estimate as accurate as possible this study divides the countries along the Belt and Road into three categories, namely, countries accepting loans from the International Development Association (IDA),[1] non-IDA countries excluding China, and China.

To project the ratio of appropriate infrastructure investment to GDP in IDA countries and non-IDA countries, the average ratio of China's municipal public utilities investment to GDP during specific period and the World Bank's estimation on the average proportion of PPI investment in energy and transport to GDP between 2011 and 2015 are used to indicate the construction of infrastructure connectivity needs. This method aims to borrow from China's experience in developing municipal public utilities, as well as global experience in improving energy and transport conditions. For IDA countries, the proportion is the sum of the average ratio of China's city public utilities investment to GDP from 1993 to 2000[2] and the World Bank's estimation[3] on the average proportion of PPI (energy and transportation) to GDP in IDA countries from 2011 to 2015. The result ratio for IDA countries is around 2.2%. For non-IDA countries, the proportion is the sum of the average ratio of China's city public utilities investment to GDP from 2001 to 2008[4] and the World Bank's estimation of non-IDA countries, which is around 3.2%.

China's ratio of appropriate infrastructure investment to GDP is projected to be 15% based on China's infrastructure investment during the period of the 12th Five-Year Plan.[5]

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[1] According to the World Bank's data by Nov. 2017, 15 countries along the Belt and Road are IDA countries, including Cambodia, Laos, Mongolia, Myanmar, Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan, Moldova, Kyrgyzstan, Tajikistan, Uzbekistan and Yemen, among which Mongolia, Moldova, Pakistan, and Uzbekistan are Blend countries. Since blend countries are in a pre-graduation phase, those countries are treated as non-IDA countries here.

[2] From 1993 to 2000, China's GDP per capita is between US$300 to US$1000 in current US$. The average ratio of China's urban public utility investment to GDP during this period might be a good example for IDA counties.

[3] World Bank's estimates cover energy, transport, and water and sewage sectors. Water and sewage is normally part of municipal public utilities. To avoid overlap in calculation, this study adjust World Bank's estimates. But water and sewage only account for small proportion in PPI investment, the adjustment is very limited.

[4] From 2001 to 2008, China's GDP per capita is between US$1000 to US$3000 in current US$. The average ratio of China's urban public utilities investment to GDP during this period might be a good example for non-IDA counties.

[5] The average ratio of infrastructure investment to GDP of China was 16% from 2011 to 2015. According to China's statistics, the infrastructure includes postal industry. As no corresponding data can be found for the other two groups of countries, the ratio of China's is reduced by 1 percentage point. And the projection for infrastructure investment of China does not cover that of Hong Kong SAR, Macau SAR, and Taiwan province.

2.4. Projected GDP Growth Rate

To project the amount of infrastructure investment, the nominal GDP growth rate of the countries along the Belt and Road should be estimated at the same time. The projection of GDP growth for IDA and non-IDA countries is mainly based on their growth rate in the past 6 years.[1] Besides, there are three assumptions. The first is IDA and non-IDA countries will achieve faster growth owing to the infrastructure improvement in the region. The second is the growth rate of IDA countries will be a little higher than that of non-IDA countries for they have lower base in terms of GDP. The third is the inflation rate will be stable at 1% during the period. In this study, the nominal GDP growth rate from 2017 to 2021 is set to 6.5% for IDA countries and 5.5% for non-IDA countries. In accordance with target in the 13th Five-Year Plan, China's nominal GDP growth rate is set to 7.5%. The estimates of GDP between 2017 and 2021 are based on GDP of 2016[2] in constant 2010 US dollar to eliminate the impact of exchange rate fluctuation.

As a result of the above analysis, the total appropriate infrastructure investment demand is expected to be about US$11.5 trillion during 2017 to 2021, of which about US$46 billion will be in 11 IDA countries and US$2.5 trillion will be in non-IDA countries, which totally account for more than one fifth of the projected appropriate demand for infrastructure investment along the Belt and Road.

3. Main Sources of Funds for Infrastructure Projects of the BRI

To meet the huge infrastructure investment demand along the Belt and Road requires a large amount of money, which makes it necessary for the construction of infrastructure connectivity in the region to take full advantages of all kinds of funds available. Those funds may be from private and public investors, from domestic and international institutions, in the form of bank loan, bond and equity.

Finnerty (2013) studied the main sources of funds for large projects between 1994 and 2002 and found that the typical project has 70 to 75 percent debt and 25 to 30 percent equity. Banks on average provide two-thirds. The rest is provided by public or private bonds, or multilateral development agencies provide the rest. He also discussed those funding sources by region and industry sector and pointed that project bank loans have been concentrated in Europe, the Middle East, and Africa, where most of the large projects have been located and in the transportation, as well

[1] Based on the statistics of the World Band, the average GDP (in 2010 constant US dollar) weighted growth rate of IDA countries from 2010 to 2016 is calculated as more than 5 percent, and that of non-IDA countries excluding China is about 4 percent.

[2] A few countries do not have 2016 GDP data yet up to 15 November 2017. For those counties, the GDP of 2015 is used as the base.

as oil and gas, and power industries, where most of the large projects have taken place (Finnerty, 2013). World Bank's report *PPI Investments in IDA Countries 2011 to 2015* (2016) found that out of US$2.5 billion invested across 12 projects in IDA countries in 2015, the majority (US$1.3 billion or 53%) were financed by development finance institutions, including both multilateral development banks (MDBs) and bilateral institutions. A total of US$1.1 billion (43%) was financed from private sources such as commercial banks and private sponsors, and US$110 million (4%) was financed from public sources, such as public banks and government sponsors. And of the total investment, 68% was financed by debt and 32% was financed by equity. Debt was mainly financed by bilateral institutions (45%), MDBs (28%), and commercial banks (27%). Most of the equity contributions came from private sponsors (73%) followed by public, Bilateral and MDBs at 13%, 13% and 1% respectively. The 2017 ADB report shows that MDBs have financed an estimated 2.5% of infrastructure investments in developing Asia. Excluding the PRC and India, MDBs' contributions rise above 10%.

Besides the above mentioned funding sources, for the infrastructure connectivity of the BRI, another important task is to consolidate the availability of both domestic and international financial resources for the BRI countries.

3.1. Domestic Financial Resources of the Countries

With a few exceptions in conflict-inflicted regions, almost all countries along the Belt and Road, regardless of the development level, have their own savings, loans, bonds, stocks. These domestic financial resources are reliable sources of funding for their domestic infrastructure projects. According to World Development Indicators, the total gross savings in the BRI countries ranged from 8.2 to 8.9 trillion in current US dollar between 2013 and 2015. The countries that their saving ratio exceeds the world's average account for 40%. In 2016, the median of domestic credit provided by financial sector as percentage of GDP is more than 65 percent among 55 countries with available statistics. And Table 1 also shows the total value of stocks traded and the value as percentage of GDP in some countries along the Belt and Road in 2016.

Table 1. Stocks traded in Some Countries along the Belt and Road in 2016

Country	Stocks traded, total value (current US$ billions)	Stocks traded, total value (% of GDP)
China*	18295.06	163.36
Singapore	188.05	63.32
Malaysia	98.29	33.16
Indonesia	90.41	9.70

Country	Stocks traded, total value (current US$ billions)	Stocks traded, total value (% of GDP)
Thailand	325.00	79.88
Vietnam	22.27	10.99
Philippines	35.85	11.76
Turkey	281.81	32.85
Jordan	2.59	6.69
Israel	51.82	16.26
West Bank and Gaza	0.45	3.33
Saudi Arabia	306.38	47.40
Oman	2.46	3.71
UAE	49.50	14.19
Qatar	18.96	12.43
Bahrain	0.33	1.04
Greece	12.22	6.28
Cyprus	0.07	0.37
Egypt, Arab Rep.	10.08	3.00
India	792.00	34.99
Sri Lanka	1.20	1.48
Kazakhstan	0.74	0.55
Russia	139.58	10.88
Poland	45.64	9.72
Hungary	7.81	6.28
Slovenia	0.31	0.70

Note: * The data of China does not include Hong Kong SAR, Macao SAR and Taiwan province.
Source: World Development Indicators of the World Bank.

3.2. Financial Resource Sharing along the Belt and Road

Among the 65 countries, there are 20 high income, 22 upper middle income, 21 lower middle income and 2 low income countries (see Table 2) defined by the World Bank. Funds are abundant in some countries but scarce in others. For example, China has the highest total domestic savings, accounting for more than half of the total savings in 65 countries. The ratio of domestic credit provided by financial sector to GDP in 2016 is the highest in Cyprus (269.4%) and the lowest in Afghanistan (-1.18%). This means resources sharing can be a good opportunity for many BRI countries.

Table 2. Category of the Countries along the Belt and Road in Terms of Income Level

Development level	Country
High income (20)	Singapore, Brunei, Israel, Saudi Arabia, Oman, the United Arab Emirates, Qatar, Kuwait, Bahrain, Greece, Cyprus, Poland, Lithuania, Estonia, Latvia, Czech Republic, Slovakia, Hungary, Slovenia and Croatia
Upper middle income (22)	China, Malaysia, Thailand, Iran, Iran, Turkey, Jordan, Lebanon, Maldives, Kazakhstan, Turkmenistan, Russia, Belarus, Georgia, Azerbaijan, Bosnia and Herzegovina, Montenegro, Serbia, Albania, Romania, Bulgaria and Macedonia
Lower middle income (21)	Mongolia, Indonesia, Myanmar, Laos, Cambodia, Vietnam, Philippines, Yemen, India, Pakistan, Bangladesh, Sri Lanka, Bhutan, Uzbekistan, Tajikistan, Kyrgyzstan, Ukraine, Armenia and Moldova, Egypt, West Bank and Gaza
Low income (2)	Afghanistan and Nepal

Source: The World Bank, November 15, 2017.

Since the BRI was proposed, the financial and investment institutions of China have been providing funds for related infrastructure projects. By the end of July 2016, China Development Bank (CDB) has provided loans of US$170 billion to the Belt and Road countries excluding China, accounting for 35% of the Bank's international business (CDB, 2016), in which more than 30% are used for infrastructure projects. From 2014 to June 2016, China Export-Import Bank(CEXIM) provided loans of more than RMB 4500 billion accumulatively for projects in 50 Belt and Road countries (CEXIM, 2016). The Silk Road Fund (SRF), established in December of 2014, has made US$4 billion of investment by April of 2017. In the future, China will scale up financing support for the BRI by contributing an additional RMB 100 billion to the SRF and will encourage financial institutions to conduct overseas RMB fund business with an estimated amount of about RMB 300 billion. The CDB and the CEXIM will set up special lending schemes respectively worth RMB 250 billion equivalent and RMB 130 billion equivalent to support Belt and Road cooperation on infrastructure, industrial capacity and financing (Xi Jinping, 2017).

3.3. International Financial Resources

Grants and loans from MDBs, such as the World Bank, ADB and Asian Infrastructure Investment Bank (AIIB) are the main international financial resources for the infrastructure development of developing economies. In the fiscal year of 2016, the World Bank committed nearly US$64.2 billion in loans, grants, equity investments and guarantees to its members and private business. And to support good decision making by policy makers on infrastructure projects, several tools were developed, including an 80-country survey on Public-Private Partnership (PPP) procurement, a country diagnostic tool, a tool developed with the IMF to assess the potential fiscal

impact of PPPs, a prioritization tool, a disclosure frame-work for PPPs, an analysis of how gender can be incorporated PPP contracts, and a French-language version of a PPP Massive Open Online Course (MOOC) (World Bank annual report 2016). In 2016, ADB approved loans and grants to its developing member countries totaling a record US$17.47 billion, in which more than 50 percent involved in infrastructure projects, including information and communication technology (ICT) (0.3%) , water and other urban infrastructure and services (9%), transport(22%), and energy(26%) (ADB, 2016). AIIB was formally established in December 2015. By April 2017, AIIB has provided US$1.7 billion of loans for 9 projects in Belt and Road participating countries (Xi Jinping, 2017).

4. Special Challenges of Infrastructure Investment of the BRI

Any investment, especially infrastructure investment, has risks. To make investment decision as smart as possible, investors need to assess the potential return as well as risks of an infrastructure project. *Infrastructure as an Asset Class* classifies all risks across sectors into two main categories: general risks and project/asset-specific risks. General risks include market risk, interest rate risk, exchange rate risk, environmental, social and governance risk, political, legal and regulatory risk, and force majeure. Project/asset-specific risks include planning, construction and completion risk, technical and performance risk, financial risk, syndication risk, contractual and counterparty risk, and realization risk. Besides, there are also sector-specific risks. By nature, the infrastructure investment of the BRI has all the above risks more or less.

The uneven economic development level is a particular factor affecting the financing capabilities for the infrastructure investment of the BRI. Capital's profit-seeking nature means investors favor the infrastructure projects with long-run and stable return expectations and low risks. In practice, investible infrastructure projects of the BRI mostly concentrate in high-income and a small number of upper middle income countries (including China). For these projects, it is normally much easier to attract funding from market domestically and internationally. Whereas the other countries that need to realize their development potentials by improving infrastructure often meet troubles in fund raising for lack of good-quality projects.

4.1. Big Gap of Development Environment among the BRI Countries

The countries along the Belt and Road vary a lot in terms of the political system, economic and social system and development level, legal and policy system, culture and religion. Those differences make it very difficult to coordinate between countries, especially difficult to provide effective and legal protection for the investment.

Moreover, the foreign investors need to spend a lot of money, time and energy on getting familiar with the host country's investment environment, making them hesitant to involve in the infrastructure projects along the Belt and Road. Even if fully prepared, some investors also have difficulties in adapting to the local situations after investing. These issues are particularly evident in less developed countries with political instability and weak legal protection systems.

4.2. Lack of Reliable and Stable Return Model in Some Regions

In practice, the return of an infrastructure project mainly comes from: (i) user charges depending on sustainable market development, (ii) payments made by fiscal revenue possibly and indirectly increased by infrastructure improvement, (iii) sales of commodities that host country is plenty of, (iv) land appreciation of the surrounding area. Some regions along the Belt and Road lack these sources because their market development might be lower than expectation, they maintain serious fiscal deficits and high debt default rate, world's commodity price is unstable, and infrastructure investors could not obtain rights to develop surrounding land. Due to private land ownership system, the surrounding land is not necessarily available to the infrastructure operators and the benefits of third-party development are not necessarily shared.

4.3. Relatively High Geopolitical Risk

Some countries in the Belt and Road region have unique natural resources and geographic location, thus being the arena for super powers' competing influences. The vying super powers can disturb the political and economic stability in those countries. Despite the common desire to improve infrastructure and achieve better development, many countries along the Belt and Road may also have political, military and economic interests deeply related to other interest groups, which brings uncertainty to the infrastructure connectivity of the BRI.

5. Conclusion

In order to overcome the above challenges and attract more funds to meet the large-scale infrastructure investment demand of the BRI countries, it is critical to improve the infrastructure investment environment in the region. The improvement of investment environment will make infrastructure projects along the Belt and Road more investible and attractive to public or private fund, thus creating a virtuous circle of "improved investment environment → more investible projects → easier fund-raising → rapid economic development → further improved investment environment". Firstly, on the basis of mutually respecting, countries along the Belt and Road should

improve the connectivity of their infrastructure construction plans and technical standard systems by strengthening multilateral and bilateral communication and consultation. Secondly, countries should implement investment friendly policies and promote financial deepening to attract external funds and channel local savings into infrastructure projects. ADB emphasizes the functions of public–private partnership (PPP) in infrastructure development and suggests that countries should implement reforms such as enacting PPP laws, streamlining PPP procurement and bidding processes, introducing dispute resolution mechanisms, and establishing independent PPP government units. Thirdly, an information exchanging platform should be built to bridge investment demand of infrastructure projects and fund supply of investors to realize benefit sharing. If possible, a special commission could be formed to conduct researches on infrastructure finance issues, including identifying infrastructure needs, establishing project pool, proposing finance solution, etc. Fourthly, to make infrastructure projects more sustainable, countries should work together to deal with infrastructure investment risks by designing and tracking risk indicators, and taking proper measures.

Besides governments' functions of improving investment environment, the role of private investors is of equal importance as market rules and international norms are followed in the process of facilities connectivity construction of the BRI. Therefore the infrastructure projects should still follow the basic market discipline (Stern School of Business at NYU, 2016). Those private investors who are interested in infrastructure projects of the BRI, no matter in or out of the region, should play a dominate role in fundraising for most infrastructure projects. Private investors should be well prepared by collecting as much information possible and make investment decisions based on careful analysis of return and risks. To increase the sustainability of return and control the risk level, private investors could assist host countries' government to improve investment environment by providing instructive proposals for host countries' policy making. And a variety of financing tools should be applied, including credit, bonds, equity, MDBs' funds, project financing, asset securitization, equipment leasing, commodity financing, etc. In addition, investors should manage risks by using modern financial engineering (Finnerty, 2013).

It should be noted that decades of hard working and tremendous amount of future infrastructure investment are required to achieve the inclusive development among Belt and Road countries. It might not be realistic to see the immediate effect, or even to accurately evaluate the BRI's impact at present. Although Rome was not built over night, the persistent efforts in the right direction might see Rome being gradually built eventually.

References

ADB. (2016). ADB Annual Report. https://www.adb.org/sites/default/files/institutional-document/237881/adb-annual-report-2016.pdf, accessed 12 November 2017.

ADB. (2017). Meeting Asia's Infrastructure Needs. https://www.adb.org/sites/default/files/publication/227496/special-report-infrastructure-highlights.pdf, accessed 18 October 2017.

Cassis, Y., De Luca, G., & Florio, M. (2016). *Infrastructure Finance in Europe: Insights into the History of Water, Transport, and Telecommunications*. Oxford Scholarship Online.

CDB. (2016). China Development Bank Granting an Accumulative Total of Loans of $162.1 Billion for the Belt and Road Initiative. http://www.cdb.com.cn/xwzx/mtjj/201609/t20160902_3623.html, accessed 5 December 2016.

CEXIM. (2016). From Vision to Action—The Export-Import Bank of China Renders Support to the Belt and Road Initiative. http://www.eximbank.gov.cn/tm/Newlist/index_343_29578.html, accessed 5 December 2016.

Finnerty, J. D. (2013). *Project Financing: Asset-Based Financial Engineering (Third edition)*. New Jersey: John Wiley & Sons, Ltd.

Massachusetts Special Commission on Infrastructure Finance. (1989). *A Survey of Massachusetts Infrastructure Needs for the 1990s*. Boston: Trainor and Company.

PIDG. (2016). PIDG Annual Report. http://www.pidg.org/resource-library/annual-reports, accessed 18 October 2017.

PPIAF of the World Bank Group. (2016). The State of PPPs: Infrastructure Public-Private Partnerships in Emerging Markets & Developing Economies 1991-2015. https://ppiaf.org/documents/3551/download, accessed 18 October 2017.

Stern School of Business and New York University. (2016). *The Infrastructure Finance Challenge*. http://www.jstor.org/stable/j.ctt1sq5v21.6, accessed 16 October 2017.

Weber, B., Staub-Bisang, M., & Alfen, H. W. (2016). *Infrastructure as an Asset Class: Investment Strategy, Project Finance and PPP (Second Edition)*. New Jersey: John Wiley & Sons, Ltd.

World Bank. (2016). PPI Investments in IDA Countries, 2011 to 2015. https://ppi.worldbank.org/~/media/GIAWB/PPI/Documents/Data-Notes/PPI-in-IDA-Countries-2011-2015.pdf, accessed 18 October 2017.

World Bank. (2016). World Bank Annual Report. https://openknowledge.worldbank.org/bitstream/handle/10986/24985/9781464808524.pdf, accessed 12 November 2017.

Xi, J. P. (2017). Work Together to Build the Silk Road Economic Belt and The 21st Century Maritime Silk Road. Speech by President Xi Jinping at the Opening Ceremony of The Belt and Road Forum for International Cooperation on 14 May 2017, http://news.xinhuanet.com/english/2017-05/14/c_136282982.htm, accessed 10 November 2017.