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POLICY INSIGHT

On the road: Connectivity infrastructures in Southeast Asia

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ABSTRACT

This paper considers the problems surrounding the implementation of road infrastructure plans in a policy perspective. As the main pillar of regional connectivity, road networks provide the link across national markets, foster strong and sustainable economic growth, help meeting people's basic needs, and promote trade and competiveness. It is argued that planning, implementing, and managing good transportation infrastructures poses a series of challenges that require competence, good governance, and the availability of funds. Such problems become more complex when road projects encompass different states and become transnational. The regional dimension of connectivity involves both opportunities and risks; a cooperative attitude by all parties is viewed as the best ingredient to achieve a positive balance. Since most countries cannot still rely on domestic resources, the paper stresses the role of virtuous policies in directing capital flows from abroad towards the infrastructural projects of Southeast Asia.

Keywords*: ASEAN; road infrastructures; connectivity; regional integration*

"Nothing behind me, everything ahead of me,
as is ever so on the road."
- Jack Kerouac, On the road

1. Introduction

There is a widespread attitude among policymakers in advanced economies to consider infrastructure investment as a mere counter-cyclical device to be used in an economic downturn. As a consequence, in normal times, the priority of fiscal consolidation goals tends to narrow the room for investment expenditure, making national infrastructural endowment obsolete and dysfunctional. In front of a slow-paced economic activity, interest in infrastructure investment revives, and ambitious programs are implemented (Biven, 2014, p. 48).[1]

With a different mindset, development economists highlight the role of infrastructures as a way out from backwardness towards advanced stages of economic growth. They perceive that investment in infrastructures is crucially needed to meet the urgent demand for social services by the population; to boost productivity and thereby enhance

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1. There it is claimed that infrastructure spending, particularly if deficit-financed, is found to be among the most effective tools in pushing the U.S. economy back toward full employment.

growth, trade, and raise per-capita income; and to promote regional integration among emerging economies, and their global integration in the world economy.

The latter perspective suits well to the economies of the member countries of the Association of Southeast Asian Nations (ASEAN), particularly concerning the goal of enhancing connectivity infrastructures at the regional level. Such goal is widely acknowledged as representing a top priority in a region that, in spite of its striking economic performance, needs to remove bottlenecks which may hamper further progress (Association of Southeast Asian Nations, 2016).[2]

Roads are viewed in this paper as the main pillar of regional connectivity. Arguably, road networks provide the link across national markets, foster strong and sustainable economic growth, help meeting people's basic needs, and promote trade and competiveness. As the most ancient infrastructure in human history, roads allowed ancient civilizations to pursue their development by connecting to each other and exchanging products and culture.

In spite of the desirability of better road connectivity, planning, implementing, and managing good transportation infrastructures pose a series of challenges that require competence, good governance, and the availability of funds. Such problems become more complex when road projects encompass different states and become transnational. The regional dimension of connectivity involves both opportunities and risks; a cooperative attitude by all parties is viewed as the best ingredient to achieve a positive balance.

Moving from the above considerations, this paper aims at providing a discussion of the various problems that the policy-maker dealing with the implementation of road infrastructure plans may be faced with.

Section 2 opens the discussion by considering the entity of the problem. This is achieved by surveying alternative sources of quantitative estimates of infrastructural gaps. In spite of different assessments on the size of gaps, all analyses point to the common conclusion that the infrastructural financing need in Asia in general, and in Southeast Asia in particular, is big and urgent.

Section 3 provides a brief overview of recent infrastructural literature. The results reported reveal the great difficulty in univocally assessing the economic impact of infrastructural investment, and therefore in providing general policy guidelines. Results are more univocal when road infrastructures are considered, as the latter are found to have positive effects on trade and labor mobility.

Section 4 reviews alternative approaches base on the political economy of infrastructure building. By displaying the ability to map critical areas and detect the optimal responses, analyzing the political economy of the process may provide useful hints for the decision maker who is faced with the challenges of infrastructure policy planning.

Section 5 gets into the core of the potential benefits descending on ASEAN member countries from a cooperative approach to connectivity infrastructure planning. This is all the more true when roads are concerned. By facilitating regional connectivity, they help increase overall productivity by achieving cost reduction and regional group specialization. The increasing fragmentation of value

2. The removal of bottlenecks is among the main priorities in the "Master Plan on ASEAN Connectivity 2025".

chains emerging from this process is conducive to increases of trade flows in intermediate goods, especially in the manufacturing sector, thus favoring faster growth and integration (World Trade Organization, 2011, p. 30).[3]

Finally the issue of the financing of connectivity infrastructures is considered in Section 6, with a view of the scope and limits in member countries of ASEAN. Since most countries cannot still rely on domestic resources, virtuous policies aimed at enhancing the attractiveness of ASEAN connectivity investment for foreign investors are crucial to direct capital flows from abroad towards the infrastructural projects in Southeast Asia.

2. ASEAN and its infrastructural needs

ASEAN has experienced two decades of robust growth, and still today is the most dynamic among Asian sub-regions. Its overall size makes it the seventh largest economic entity in the world (McKinsey Global Institute, 2014).[4] Its labor force is the third biggest in the world, after China's and India's. ASEAN countries are mutually connected by long historical and cultural ties. The region has shown remarkable resilience to the 2008 global financial crisis, outperforming many advanced economies. This has proven particularly true for those countries endowed with better infrastructural capabilities.

The area's potential is indisputable. According to ANZ Economic Research (Maguire *et al.*, 2015), deepening ASEAN integration might achieve a regional GDP growth of 6%–8% per year for the next 10 years. Annual intra-regional trade could reach US$1 trillion and external trade could approach four times that amount.

The shift of a fast-growing labor force from agricultural to industrial economic activity has been the main factor behind the success of many economies in the area. However, most economies have not pursued further improvements within the leading industrial sectors. As a result, productivity has remained stagnant in many countries, thus threatening the perspective of continuing improvements of living standards. Many countries in the region are still coping with problems such as poverty and youth unemployment, aggravated by various categories of inequality. Keeping the economies on a fast-growth path appears the only effective way to enlarge policy options and therefore alleviate those problems.

It is a well-known stylized fact that the success of Asian production networks is heavily depended on its fast and reliable infrastructure connections. The picture is nonetheless very mixed. On one hand, some countries had made huge investments in infrastructure in the past decades and achieved impressive results in terms of growth and trade. On the other hand, in many regions and areas, including landlocked countries and distant islands, the economic potential remains largely unexploited. Relevant parts of the existing transport infrastructure are still very backward in those areas, in comparison with the very high level reached by other segments of the overall regional infrastructural endowment. This contributes to bottlenecks, which put constrains on growth, trade

3. Land-based transportation modes keep capital importance in Europe and North America. In 2008, for example, road and rail accounted for 45.9% and 10.8% respectively of total goods transported within the 27 countries of the European Union, while intra-maritime transport accounted for 36.6%.

4. According to McKinsey (2014), ASEAN's combined GDP of US$2.4 trillion was more than 25% larger than India's economy in 2013.

and competitiveness; and it gravely hampers the progress towards the much needed goal of poverty reduction. It is estimated that half of Asian roads are not paved; in some countries around 30%–40% of settlements have no all-weather road access; tens of millions people have no access to affordable and convenient transport services (Brooks and Go, 2011).

The lack of infrastructures is not an exclusive feature of Asian countries. On the contrary, the global economy is gravely affected by a broad gap between the supply and demand for infrastructures.

Overall, around US$2.5 trillion is invested yearly for infrastructure, whereas an average of $3.3 trillion per year (in constant 2015 prices) through 2030 would be required if the rate of growth of world's GDP is to maintain the trajectory set by current projections (McKinsey Global Institute, 2016). In cumulative terms, this corresponds to $49 trillion over the entire period, with a cumulative gap of around $5.2 trillion.

In 2013, $1.15 trillion, or 46% of the overall infrastructure investment, went to the transport sector. For the gap for 2016–2030 to be filled, global transportation alone will require almost $19 trillion infrastructure investment globally.

It is assumed that, in perspective, 60% of global investment expenditure will need to be implemented in emerging economies. Emerging Asia's expenditure (less China and India)[5] will approach $6 trillion. By roughly assuming that the percentage of transport infrastructure over total expenditure is at the world's average level, $2.3 trillion, or $150 billion per year, will be needed to fulfill the development of transportation network in emerging Asia.

Goldman Sachs (2013) calculates that for ASEAN-4 (Malaysia, Indonesia, Thailand, and the Philippines), the projected need for infrastructure spending for the period 2013–2020 would amount to $540 billion.[6] McKinsey Global Institute (2014) and Association of Southeast Asian Nations (2016) assess the financing need to fill infrastructural gap of ASEAN in 2014–2030 at around $3.3 trillion. A popular estimate by the Asian Development Bank set at $8.5 trillion the needed amount for national infrastructure projects in Emerging Asia between 2010 and 2020 (Asian Development Bank, 2009).

While the projections above are hardly comparable due to different time horizons, country groupings and the definition of infrastructure itself, nevertheless they convey the common message that the size of the needed infrastructural investment in ASEAN countries is huge and goes well beyond the financing capabilities of most member countries.

This is in striking contrast with the current infrastructure investment patterns in ASEAN economies. Even a grouping of large and relatively advanced economies such as ASEAN-4 displays far lower spending levels than China and India, where infrastructure investment expenditure in recent years has been around 9% and 6% of domestic product, respectively. The equivalent figures

5. Includes Bangladesh, Indonesia, Malaysia, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand, and Vietnam.

6. Of which $128 billion is for roads, $119 billion for railways, $49 billion for ports and airports, $228 billion for power, and $26 billion for water and sanitation yearly. Stretching the time span to 2030 and including the other ASEAN, which account roughly for one quarter of the whole, this would bring the financing need to approximately $1.7 billion.

for ASEAN-4 in coming years will be below 3% in Indonesia, Malaysia, and Thailand, and 5% in Philippines, in the best-case scenario (Goldman Sachs, 2013).[7]

3. Why and how infrastructures matter

The role of infrastructures in the economic system has elicited in the past few decades a large number of theoretical debates and empirical investigations. Exhaustively surveying such attempts is beyond the purposes of this paper. Suffice to say that the main effects under investigation are, in most cases, those that infrastructures play on growth and trade. As might be expected, the role of connectivity infrastructures in found to be relatively bigger on trade, for their role in curbing transport costs, and therefore in enhancing competitiveness. The results of different studies are hardly comparable, because in most cases they rely on heterogeneous assumptions and conditions. These include the background economic theory chosen, the nature and quality of data, the different periods considered, and the different focus on various effects and interactions.

Infrastructures and growth

The interest of recent literature on the economic effects of infrastructural investment has been originally triggered by a seminal contribution by Aschauer (1989), who tried to investigate the connection between infrastructural investment and growth. Albeit broadly criticized for empirical and methodological flaws, the paper encouraged a broad stream of research. In an attempt to summarize the state of empirical work on the subject, Straub *et al.* (2008), have produced an extensive survey of empirical analyses investigating the linkage between infrastructure and growth. While different results are not strictly comparable, due to heterogeneous empirical specifications and time periods, the connection appears nonetheless positive and statistically significant in many cases. Similar conclusions are also drawn in a study by Estache and Fay (2007). Here again, results are variable and, by the authors' admission, it is difficult to draw specific conclusions, also in view of poor survey data from a general overview of the issue. Seethepalli *et al.* (2008), confirm in their analysis on East Asia infrastructural sectors that results are highly variable across sectors. In particular the impact of roads on growth appears to be low, differently that other infrastructures such as telecom and electricity.

A common feature of some other studies is that the returns of infrastructural investment in terms of growth are usually higher in low income economies. This result is confirmed in Garsous (2012), who provides an explanation to this empirical finding by suggesting that in a less developed economic environment the effect of bottlenecks, diseconomies of scale, network effects, and other adverse factors is more pronounced. By removing such obstacles, new infrastructures would be able to unleash the full, unexploited potential of the economy. This conclusion provides an economic rationale to the empirical finding of Égert *et al.* (2009) that the relationship between infrastructures and growth would be intrinsically non-linear. Indeed, both views consistently provide indication that the higher the income, the lower the impact of infrastructural investment on growth.

7. Figures projected for 2020 by Goldman Sachs (2013). The actual figures in the report for 2012 range from 1.5% of GDP in Indonesia, to 2% in Thailand and the Philippines, and to 3.5% in Malaysia.

Other works, more focused on transport infrastructures, emphasize the weight of positive factors such as the reduction of input costs for firms, and the consequent benefit in terms of higher productivity. They also suggest that, in the longer term, lower costs induced by better infrastructures may yield positive scale effect and foster sectorial competition, thus favoring a natural selection process in favor of the most efficient firms (Nocke, 2006; Baldwin and Okubo, 2006; Melitz and Ottaviano, 2008).

Lastly, transport infrastructures may trigger what in spatial economy had been defined as "agglomeration effects", consisting in the benefits for firms and workers from being located in an economically active area, nearby an adequate number of other firms. The mutual beneficial effect from agglomeration externalities may significantly impacts on overall productivity and efficiency (Eberts and McMillen, 1999; Graham, 2007).

Infrastructures and trade

A different strand of literature focuses on the role of infrastructures in curbing costs and margins of intermediations, thus positively affecting international competitive advantage, and therefore trade. This effect, which can make a substantial contribution to market integration at the national and regional level, is particularly strong when transport infrastructures are considered.

The impact of transport costs on trade assumes greater relevance in view of the high weight of transport costs in international trade. These are found to correspond to a 170% ad-valorem tax for industrial economies (Anderson and Van Wincoop, 2004). A cost-reducing improvement of road infrastructures may therefore play a very relevant role in improving price competitiveness of traded goods produced in the countries where the infrastructures are located.

Ismail and Mahyideen (2015) find that transport cost reduction matters significantly in the way road infrastructures affect trade. Road infrastructures are also found to score better than other factors aimed at facilitating trade, such as information and communication technology, border and transport efficiency, and business and regulatory environment.

Conversely, Hoekman and Nicita (2008) find that poor infrastructures negatively affect trade. This is consistent with the finding that differences in transport costs among countries are able to affect their performance in competing on international markets (Bougheas *et al*., 1999). Such differences are found to vary between coastal and landlocked countries, and are affected by the quality of the roads (Limão and Venables, 2001). The quality of roads, ports, and airports is also found by Nordås and Piermartini (2004), based on a gravity model, to significantly affect trade performance in some sectors such as clothing, automotive, and textiles. The study highlight, among other factors, the benefits of good transport infrastructures in terms of lower failure risk of delivery, better timeliness, easier access to broader markets, and therefore to better trading opportunities.

Finally, a strand of literature which departs from mainstream research embraces the new economic geography paradigm, which emphasizes the role of transport costs as a location factor in the context of imperfect competition and interregional labor mobility. In this approach, the dynamics of agglomeration and dispersion may add complexity to the infrastructure planning (Fujita *et al.*, 1999; Fujita and Thisse, 2002). As a matter of fact, this paradigm highlights the extreme complexity of handling decisions for transport infrastructure investment, particularly in a fast-changing

environment. According to recent findings, an exercise in optimal spatial planning of infrastructure investment might even prove impossible in the conditions of rapid growth and structural change that characterize Asia (Rimmer and Dick, 2012, p. 219).

4. The political economy of connectivity

The above section has highlighted that empirical analysis is challenged by the complexity of interactions that the process of planning, building, and managing infrastructures involve. This is particularly relevant when the empirical analysis is faced with the challenge to draw general policy conclusions.

An improvement in this direction is represented by recent studies trying to consider the impact of connectivity infrastructure in a context of general equilibrium, that is, analyzing the spillovers of the infrastructure investment not only on the areas meant to benefit from the infrastructure itself, but also on neighboring areas. This means trying to answer the question of how connectivity infrastructures, such as roads or railroads, would impact on the neighboring areas geographically located outside the network system.

Faber (2014) suggests that the construction of the national trunk highway system of the People's Republic of China would have led to a loss in output growth among neighboring counties not touched by the highway. On the grounds of historical data from the colonial period in India, Donaldson (2014) finds that railroad increased the income of areas directly connected to the infrastructure, but had negative effects on the income of areas excluded from railroad access (Yoshino and Abidhadjaev, 2015).

In a microeconomic study, Yoshino and Pontines (2015) find out that the STAR highway located in Batangas province, Philippines, has a robust and statistically significant impact on a series of indicators of fiscal performance used as proxies for overall economic performance. Differently than the two other studies cited above, the results also support the hypothesis of positive spillover effects across the territory, showing that the positive impact of infrastructure provision extends to neighboring regions. Similar results are achieved in a study on the economic impact of the Tashguzar–Boysun–Kumkurgon railway line in Uzbekistan (Yoshino and Abidhadjaev, 2015).

The above attempts, while based on a case-by-case approach, are particularly interesting for their focus on the interactions between different parts of the economic system involved by the infrastructures. This suggests that looking at the political economy of the process may offer an interesting direction for research meant to provide guidelines for optimal policy design.

In this context, Mcloughlin and Batley (2012) have mapped a number of factors such as incentives, agents' behavior and institutional features that may affect the outcomes of policy. Such a paradigm turns particularly helpful when constraints imposed by conflicting interests of agents involved are taken into account.

By extending the two authors' analysis, Wales and Wild (2012) have provided helpful insights on why, due to the influence of different constraints and opportunities, that road infrastructures may yield very different outcomes in different circumstances. For example, they report how Rafiqui (2003) finds out that in Laos, the intense utilization of roads by heavy vehicles in timber industry made

them unusable for other type of vehicles, thus generating forms of rivalry between users. Similarly, according to Abbas (2004) the absence of flow regulation following the completion of a road is documented to have created peak traffic flows and heavy congestion in Alexandria, Egypt.

Problems associated to rivalry are not the only ones which would call for a better design or regulatory mechanisms and for a coordination of agents' behavior via optimal rules. Difficulties may also arise associated to other paradigms, such as excludability, which indicates to what extent it is possible to prevent access to infrastructures, or to condition their use through a system of checkpoints or tolls. Rafiqui (2003) describes the problems which hampered the ability of some Laotian local communities to exclude the access of locally built road by non-local users. Further problems may arise with respect to market imperfections emerging in some instances of road construction and management. For example, rural roads typically display stronger monopoly characteristics than urban roads, where the option of choosing alternate routes is far higher. This feature entails a number of complex implications, positive and negative, which makes sometimes complex drawing a balance. Road rehabilitation and improvements in rural areas will increase the ability to travel, transport agricultural products, and improve access to markets as well as to school and hospitals. At the same time, they may be found to favor some categories of users, such as richer versus poorer (the latter having less chance to travel) or male versus female (the latter having more safety problems in some contexts). In this context, Estache and Fay (2007) confirmed that access to intraregional infrastructure is highly skewed toward the richest, reflecting differences in physical access and affordability.

Again in a context of political economy, the World Bank (2007) displays evidence of asymmetrical information in relevant issues such as in the case of how the operational implementation of roads by contractors is monitored. Asymmetric information may give origin to cases of over-engineering, due to rent-seeking by contractors, or under-engineering, because contractors get an illicit profit by using sub-standard materials. The category of problems associated with the difficulties of countries to effectively monitor the maintenance and administration of roads is highlighted also by Zhang (2015). In particular, the difficulty to implement well-functioning road asset management systems, which is at least in part associated with the difficulty to predict traffic flows and the consequent deterioration of the infrastructure, is particularly relevant for its negatively affecting maintenance spending. This and other problems obviously call for larger financing and better policy.

5. Connectivity and regional integration

While roads are sometimes viewed as an in-border device, whose utilization is strictly limited to national territory, still the potential range of roads can go far beyond the national boundaries and become a transnational device. This is the case, in particular, of relatively small, neighboring countries tied by common interest and by strict economic and commercial relations. Kuroda *et al.* (2007) highlight the importance of regional cooperation of cross-country infrastructures as a means to reinforce regional competitiveness.

It may nonetheless prove hard to draw univocal conclusions on the impacts of regional infrastructural projects. Empirical evidence is sometimes unreliable and hardly supported by adequate statistical information. This proves particularly true for roads. While there is a neat perception of the

low road density in developing countries vis-à-vis developed economies, and it is also felt that the situation is particularly bad in the poorest countries, however, available data do not provide detailed parameters on the actual quality of infrastructures; this clearly makes it hard to assess and compare the state of infrastructures in different countries and the results of infrastructural projects (Asian Development Bank, 2009).[8]

Bhattacharyay (2010) has suggested a series of criteria which may help define regional infrastructures. The most obvious is that the specific infrastructure, be it a road, a bridge, or a tunnel, should be "located on or largely on the territory of a country near the border and is necessary to link the country to the network of a neighboring country or a third country". Clearly, the infrastructure should be the result of a cooperative and coordinated effort of the countries involved.

For the benefits from regional integration to materialize, a number of conditions are required. Growing integration, both at the regional and at the global level, will involve investing a large amount of resources in connectivity. The contribution of better roads and other connectivity devices can be particularly relevant to the end of trade growth and a serious bottleneck when they are poor or lacking.

Promoting regional integration can thus be viewed as a particularly effective strategy to boost growth, trade, and employment. In an area characterized by geographic proximity, cultural similarity, and common goals, removing barriers, enhancing connectivity, favoring the free movement of factors, will result into broader exchange flows, bigger markets, larger economies of scale, and more efficient value chains.

Intra-trade flows in Southeast Asia as a share of group's total world trade have increased from 17% in 1990 to 24% in 2014 (Organisation for Economic Co-operation and Development, 2016). In spite of its significant increase, this is still a small share as compared to other integrated entities such as ASEAN+3 (37%), NAFTA (45%), or the European Union (60%). The promotion of free flow of goods, services, investment, and skilled labor among ASEAN member states that the ASEAN Economic Community (AEC) would bring about could give a strong impulse to intra-regional trade in ASEAN (Association of Southeast Asian Nations, 2016. p. 31). Sub-regional groupings might emerge, providing the opportunity to better exploit the comparative advantage that specialization and a fast and effective communication infrastructure may provide.[9]

ASEAN member countries are trying to provide the most appropriate response to the need to better connect their economies. The Vientiane Declaration on the adoption of the Master Plan on ASEAN Connectivity 2025 lays out the key strategies and essential actions required to connect the region with enhanced physical infrastructure. Road infrastructure, in particular, is being developed through the ASEAN Highway Network Programme, which aims to establish efficient, integrated, safe, and environmentally sustainable regional land transport corridors linking all ASEAN member

8. "The same weight is given to a one-lane rural road as to a 12-lane ring road. This makes it hard to gauge the economic and social benefits of road improvements" (Asian Development Bank, 2009).

9. Sub-regional grouping are likely to emerge in ASEAN in coming years. Myanmar, Cambodia, and Laos as sources of industrial work force; Thailand, Vietnam, Indonesia and the Philippines as competitive manufacturing centers; Singapore and Malaysia as finance, technology and design hubs.

states and neighboring countries. However, more remains to be done to upgrade roads to a high-quality level (Organisation for Economic Co-operation and Development, 2016).[10]

For its trans-national character, regional or cross-border infrastructure requires an ingredient that is absent from national infrastructure. This ingredient, that may be broadly and perhaps imprecisely labeled coordination, embeds a huge variety of aspects.

A central aspect is the political dimension. The decision to implement a physical infrastructure is certainly complex at national level, for its requiring convergence of views at different administrative levels. Establishing a cross-border infrastructure may bring that complexity to expand exponentially. Successfully coping with that complexity requires a good deal of mutual trust among governments involved, a cooperative attitude and display of ability to work in team by technical experts, and effective institutional agreements to be discussed and endorsed transparently. Costs and benefits need to be agreed upon by all parties, and the balance drawn with the goal of a fair distribution of payoffs among participants.

The list of requirements of a "good" arrangement cross-border is extensive, maybe endless if one enters into tiny details. Overall, for its requiring strong planning and coordination, cross border infrastructure implementation needs to be supported by a systematic institutionalized arrangement (Kuroda *et al.*, 2007).[11] The Master Plan on ASEAN Connectivity 2025 explicitly addresses the need to help ensure effective coordination of initiatives that cut across multiple working groups to maximize the likelihood of successful implementation. It is no surprise, in the light of the above, that coordination issues are reported as the hardest challenge to a successful implementation of infrastructure projects in ASEAN (Association of Southeast Asian Nations, 2016, p. 26).[12]

6. Financing constraints to infrastructure building

The financing channels for funding infrastructural investment in the region can be broadly categorized as domestic, that is, own financial resources; government funded; partly government and partly private; and exclusively private sources. The intermediation of private capital markets is relevant in intermediating and channeling the funds. Until now the sources of financing to ASEAN infrastructure investment projects have been for the largest part extra-regional, in spite of the high potential for intra-ASEAN flows of funds. Given the very large size of international financial markets, particularly in the long-term segment (pension funds, insurance funds, and sovereign wealth funds), there would be a broad potential for financing from abroad.

However, potential financial resources for the ASEAN member states feature different situations on overall infrastructure policy, on the channels of financing for infrastructure investment, and on the ability of countries to finance themselves with national resources. The richest and most advanced economies, Singapore and Brunei, are endowed with modern and well-functioning financial markets, and they also have plenty of domestic resources for their infrastructural plans. Large economies

10. The Singapore-Kunming Rail Link, a long-running project to enhance rail connectivity, remains stalled in several places. The Thailand-Cambodia link is scheduled for completion in 2016.

11. Kuroda *et al.* (2007, p. 252) pointed out that ad-hoc or informal arrangements have a high rate of failure and long lead times. This would raise transaction costs and make collaboration unfeasible.

12. For example, it is not uncommon for over 15 distinct decision-making entities to be involved in a typical transport infrastructure project, with limited accountability and mechanisms to attain consensus.

with low domestic financial resources but advanced financial markets, such as Indonesia, Malaysia, the Philippines, and Thailand, are successfully adopting Public-Private partnership (PPP) programs to meet their financing needs, while in Cambodia and Vietnam private international capital is now assuming growing importance. For the lack of fiscal resources, the absence of a financial regulatory framework, and for being affected by a problem of fiscal sustainability, Laos and Myanmar are still facing difficulties in funding their relevant infrastructural gaps (Zen and Regan, 2014).

An analysis in Association of Southeast Asian Nations (2016) thoroughly analyzes the 15 prioritized projects in MPAC 2010 to assess the major barriers and common challenges they faced. On the financial side, some of the projects met problems deriving from low returns, which discourage private investors, in spite of the potential high returns in perspective. Other projects were perceived by foreign investors as too risky, in spite of an overall high rate of return.

For some countries, fiscal capacity may represent a serious constraint to infrastructure investment, in the face of the need to pursuing fiscal consolidation. This may pose difficult choices on the priorities to be assigned to longer term infrastructure investment, and welfare support such as schooling, healthcare, and social services.

Domestic fiscal constraints may make it necessary to tap alternative sources of financing, such as multilateral funds, pension funds, bond markets, other governments, or the private sector. Accessing private capital is nonetheless a limited option for most countries, with the exception of Singapore, Thailand, and Malaysia.

Other categories of barriers include the way policymakers perceive the relevance of projects and therefore assign priorities, inconsistent or conflicting views among different stakeholders, inter-agency coordination and delegation of authority issues, and information asymmetries. The latter arise when only some stakeholders involved in a decision have access to information, while the remaining stakeholders are excluded. Such a situation can create imbalances between stakeholders and loss of trust (Wales and Wild, 2012, p. 6). This might prove particularly damaging when a lack of available and accurate information may bring investors to overestimate project cost and risk premiums than it would be otherwise, and therefore reject the project.

Lastly, an important category of barriers is represented by the lack of the needed professional skills, either at the planning stages or at the implementation level; the lack of regulatory structures to support implementation (Association of Southeast Asian Nations, 2016, p. 26)[13]; and coordination problems which arise from the lack of alignment of views, technical standards, or implementation procedures.

7. Conclusions

This paper has provided an overview of issues surrounding the planning, implementation, and management of road infrastructure in Southeast Asia.

13. For example, a major issue preventing infrastructure development is the need for a clear process for securing regulatory approvals in many ASEAN member states. In contrast, legislations in Malaysia and Singapore allow government to acquire land for projects that are deemed to be in the public interest, and the government assumes responsibility for acquiring the land.

Connectivity in the member countries of ASEAN is viewed as a major achievement to be pursued fast, for a number of reasons. Among them, a closer integration among Southeast Asian economies can be viewed as the most relevant. The outlook for the world economy appears unpredictable under many respects, and an excessive reliance of ASEAN on world demand and trade might involve risks that the member economies in the region might not want to be faced with.

The process of financial integration in Southeast Asia was started in the aftermath of Asian financial crisis with the aim to make the region more resilient to external shocks, and better prepared to weather a financial crisis with regional resources. Following the success achieved in the field of monetary and financial cooperation, further integration will require enlarging the regional markets and actively cooperating to better exploit the comparative advantage of each country to boost productivity and pursue growing competitiveness in the global market.

Connectivity is the key to such achievements. For their being the most basic physical infrastructure, roads are a crucial area wherein to focus resources and policy effort.

This paper has shown that the limits of empirical analysis on infrastructure investment are not discouraging the effort to get better insights in the matter. The multitude attempts across the research playfield lend support to the expectation that new and more insightful research is to come.

Connectivity investment, particularly roads, is not to be implemented in a vacuum. Common projects among neighboring countries should be pursued in a spirit of cooperation and with common goals in mind. Initiatives such as the Master Plan on ASEAN Connectivity 2025, which lay out strategies and actions to connect the region with enhanced physical infrastructure, display the large amount of effort and good will that countries are investing in crucial cooperative goals.

While connectivity goals may meet financial constraints, one should remember that world capital market is huge. The adoption of international standards of transparency, the use of regulatory structures to support implementation, good governance, and accountability are all factors which can prove crucial to capital markets when making investment decisions in infrastructural projects in the region.

Declaration

The opinions expressed are those of the author and do not necessarily reflect of the views of the Bank of Italy or of the Eurosystem. All errors are my own.

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