Transport Infrastructure and Regional Integration in the Middle East

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Abstract

The soft aspects of the infrastructure of regionalism in the Middle East have previously been studied, while the impact of hard infrastructure in the region, in particular transport infrastructure, has received little attention. This chapter contributes to the study of regionalism in the Middle East by investigating the relationship between hard infrastructure and economic integration. To do so, this chapter analyses whether the state of domestic and cross-border transport infrastructure in the Middle East promotes regional trade. This is done by addressing the following sub-questions: 1) What is the condition of domestic and cross-border transport infrastructure in the Middle East? 2) What is the relationship between domestic and cross-border transport infrastructure and regional trade? It is argued that regionalism relies on the development of domestic and cross-border transport infrastructure and where the latter is limited, regionalism cannot deepen. The chapter concludes that domestic and cross-border transport infrastructure performance is weak in several of the countries studied and that this weakness hinders regional economic integration regardless of the level of the region's soft infrastructure.

Key words: regionalism, infrastructure, economic integration, political cooperation, Middle East.

Introduction

A key challenge for studies of regionalism in the Middle East is explaining why policies designed and implemented in order to promote economic integration in the region have largely been unsuccessful. Palestini and Agostinis suggest that the problem lies in the incompatibility of European/Western theories of regional integration (which are used to both create and assess policies of regional integration) and the economic and political structures prevalent in developing regions.[2] Citing Gardini and Malamud[3] they argue that these non-region specific theories fail to consider "the conditions of

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[2] Stafano Palestini and Giovanni Agostinis, "Constructing Regionalism in South America: The cases of sectoral cooperation on transport infrastructure and energy," *Journal of International Relations and Development* 21(1) (2018): 46-74.

[3] Andres Malamud and Gian Luca Gardini, "Has Regionalism Peaked? The Latin American quagmire and its lessons," *The International Spectator: Italian Journal of International Affairs* 47(1) (2012): 116-133; Andres

economic interdependence and sovereignty pooling."[4] Others, however, have criticized the divide that has emerged between studies of European integration and comparative regionalism, instead advocating an eclectic approach.[5] Here, we can also argue that the narrow set of methodological approaches used is problematic. Studies tend to focus on international institutions (soft infrastructure) formed by governments in order to promote economic integration, such as the Greater Arab Free Trade Agreement (GAFTA). Likewise, regional and extra-regional actors seeking to promote economic integration also prioritise institution building. An eclectic approach to theorising regionalism should be combined with a methodology that allows us to study the impact of hard infrastructure to compliment analyses of soft infrastructure.

This chapter is concerned with the ability of states and private sector actors to deliver regional public goods. No initiatives to provide these in the Middle East have thus far been successful. Here, I investigate whether physical transport infrastructure (its condition within and between states in the region, and inter-governmental policy to support its development and maintenance) in the region offers any clues as to whether the answers lie here – in the hard features of the region's international relations. Two questions are addressed here: 1) What is the condition of domestic and cross-border transport infrastructure in the Middle East? 2) What is the relationship between domestic and cross-border transport infrastructure and regional trade there? I study the following states: Egypt, Iraq, Israel, Jordan, Lebanon, Palestine, Syria and Turkey.

This chapter defines infrastructure as physical structures and facilities (hard infrastructure); and intangible supporting features such as policy, regulation and institutional frameworks and mechanisms (soft infrastructure).[6] While the impact of *soft* aspects of regionalism in the Middle East, such as commercial institutions and regulatory regimes, has previously been studied,[7] the impact of *hard* aspects of regionalism in the region has received little attention. The focus of this chapter is on hard infrastructure linked to transport within and between countries in the region. The argument here is that regardless of the extent of the soft infrastructure put in place, where domestic and cross-border transport infrastructure is limited, trade and economic integration will be restricted.

Malamud, "Overlapping Regionalism, No Integration: Conceptual Issues and the Latin American Experiences," *EUI Working Papers* 2013/2020 (2013): 1-20.

[4] Palestini and Agostinis, "Constructing Regionalism in South America," 47.

[5] Fredrik Soderbaum, *Rethinking* Regionalism (London: Palgrave, 2016).

[6] Biswa Nath Bhattacharyay, "Infrastructure for ASEAN Connectivity and Integration," *ASEAN Economic Bulletin* 27(2) (2010): 201. doi: 10.1355/ae27-2d; Erik Davtyan, "The Role of Infrastructure in International Relations: The Case of South Caucasus", *International Journal of Social Sciences* 3(4) (2014): 23; Prabir De, "Trade, Infrastructure and Transaction Costs: The Imperatives for Asian Economic Cooperation," *Journal of Economic Integration* 21(4) (2006): 708-35. http://www.jstor.org/stable/23001134.

[7] See: Imad El-Anis, "Economic Integration and Security in the Middle East and North Africa: What Prospects for a 'Liberal' Peace?' *Journal of Developing Societies* 34(3) (2018): 233-263.doi:10.1177/0049085718784683.

To test this argument this chapter uses data from the World Economic Forum's Global Competitiveness Index (GCI) and the World Bank's Logistics Performance Index (LPI) to assess each state's domestic and cross-border infrastructure (CBI). It compares networks of hard infrastructure and trade through network visualizations[8] to ascertain how similar/dissimilar the two are.

Infrastructure and Integration in International Political Economy

The Importance of Infrastructure

In addition to domestic infrastructure, we can identify physical structures and facilities that constitute CBI. In terms of transport, CBI is infrastructure that directly connects two or more states (for example, a transnational road network) or national infrastructure that has a significant cross-border impact.[9] Indeed, national infrastructure are the building blocks of regional integration.[10] Hard infrastructure can be seen as the engine of economic growth, and the development of both domestic and international infrastructure can often have the support of key political actors.[11] We can argue that hard infrastructure, especially CBI such as sea, air, road and rail transport, is more influential in determining levels of trade than tariffs and quotas and other *soft* barriers to trade. This is because for many states, transaction costs associated with the transport of goods, resources and people, can be so high as to significantly deter trade even when policy barriers are removed.[12] This is a highly important consideration in the Middle East as the majority of the exports of these states are made up of goods (Israel is a slight exception as services also make up a significant amount of its export earnings).

Soft infrastructure projects such as the creation of commercial institutions[13] are often seen as essential for the facilitation of trade. However, infrastructure investment is required in order to support the liberalisation of trade and allow states to gain the maximum benefits of neoliberal economic policies and institutional integration/cooperation.[14] Trade requires improvements in CBI and domestic transport infrastructure in order to meet efficiency demands. Citing Jaramillo et al.,[15]

[8] Microsoft Power Bi is used to run the network visualisations.
[9] Bhattacharyay, "Infrastructure for ASEAN," 201.
[10] Prabir De, "Trade, Infrastructure and Transaction Costs: The Imperatives for Asian Economic Cooperation," *Journal of Economic Integration* 21(4) (2006): 720. http://www.jstor.org/stable/23001134.
[11] Francis Nguendi Ikome and Robert Tama Lisinge, "The Political Economy of Infrastructure Development in Africa: An assessment of the NEPAD Presidential Infrastructure Champion Initiative (PICI)," *Canadian Journal of African Studies* 50(2) (2016): 255-277, DOI: 10.1080/00083968.2016.1221768
[12] De, "Trade, Infrastructure and Transaction Costs," 730.
[13] The term 'commercial institution' refers to the following: free trade agreements, common markets, economic unions and monetary unions.
[14] Perry and Berry, "Central American Integration," 98.
[15] Carlos Felipe Jaramillo, Daniel Lederman, Maurizio Bussolo, David Gould and Andrew Mason, *Challenges for CAFTA: Maximizing the Benefits for Central America* (Washington, DC: World Bank, 2006).

Perry and Berry state that poor hard infrastructure can reduce the impact on economic integration intended by commercial institutions.[16]

Despite occasional periods of tension, there has been a significant global decline in tariffs since the 1990s. However, barriers to trade both within regions and at the global level remain, with only some being *soft* and dealt with through bilateral and multilateral governmental trade negotiations (the Middle East has many FTAs). Hard barriers to trade cannot be dealt with solely through governmental dialogue but need to be overcome through the development and maintenance of hard infrastructure.

The Benefits of Infrastructure

Growth in transport infrastructure supports broader national economic growth, stimulates foreign direct investment (FDI) and promotes international trade. It can also reduce poverty, especially if previously marginalised communities are connected to traditional centres of economic activity.[17] In particular, infrastructure promotes welfare both directly (by distributing resources, capital, opportunities and services) and indirectly (by wider growth effects in the broader national economy).[18] On the other hand, De finds that poor transport infrastructure acts as a barrier to trade.[19] Douglas Brooks finds that both hard and soft infrastructure have been central to facilitating trade in East Asia which has largely driven economic growth in that region. Furthermore, he finds that the mechanism by which infrastructure facilitates trade is through reducing transaction costs, and that there is a direct relationship between economic growth, infrastructure investment, trade expansion, and regional integration.[20] There is no reason to think the Middle Eastern experience should differ from that of East Asia. Nordas and Piermartini[21] identify four ways in which infrastructure affects trade through transaction costs: direct monetary outlays; geography (which can hinder, slow down or even prevent the transport of goods, resources and people); potential for damage or loss (resulting in higher insurance costs); and opportunity costs associated with lack of access. Regional infrastructure plays a key role in economic integration because it helps to overcome these limitations and improves access

[16] Perry and Berry, "Central American Integration," 98.
[17] Bhattacharyay, "Infrastructure for ASEAN," 201.
[18] De, "Trade, Infrastructure and Transaction Costs," 709.
[19] De, "Trade, Infrastructure and Transaction Costs," 730.
[20] Douglas Brooks, "Regional Cooperation, Infrastructure, and Trade Costs in Asia," *IDEAS* 123 (2010): 1-21.
[21] Hildegunn Kyvik Nordas and Roberta Piermartini, *Infrastructure and Trade* (Geneva: World Trade Organisation Staff Working Paper, 2004).

to other markets, and in developing regions, in particular, states use regional integration to "improve their standing in global competition."[22]

Regional transport infrastructure development can help states to integrate, especially when coupled with institutional arrangements such as a FTA. In the context of the Middle East we can think of multilateral FTAs such as GAFTA (which includes Egypt, Iraq, Jordan, Lebanon, Palestine and Syria) and bilateral agreements such as the Jordan-Turkey FTA. De demonstrates that a "[f]ree trade area for a region cannot be functionally operational until and unless there is a rise in intra-regional trade",[23] that states trade more when they are open, and that CBI determines openness more than institutions. Transport CBI also offers states the chance to engage with the global economy as a block rather than as individual markets (which offers various benefits including the pooling of resources, the development of economies of scale, and lower transport times and costs).[24] This is especially important for states with relatively small economies that have significant structural limitations (for example, states like Jordan, Syria and Lebanon with an over-reliance on a small number of export goods, and few economies of scale).

The Challenges Facing Infrastructural Development

Nonetheless, developing CBI in the Middle East can be difficult due to the region's geographical size and national economic diversity.[25] The differences in the levels of economic development between these states, and the large areas of difficult terrain across the region, means that deepening infrastructural integration needs a regional institutional framework to support it.[26] This becomes problematic in the Middle East due to intense political conflicts and rivalries, for example, between Israel and its Arab neighbours.[27]

The need for regional organizations becomes problematic in the region due to the absence of a regional entity that includes all states – there is no combination of organisations that include all states in the region (Israel is excluded). This is compounded by the failure of existing organizations with limited regional membership (for example, the Arab League, which suspended Syria's

[22] Sebastian Krapohl and Simon Fink, "Different Paths of Regional Integration: Trade Networks and Regional Institution-Building in Europe, Southeast Asia and Southern Africa," *Journal of Common Market Studies* 51(3) (2013): 473.
[23] De, "Trade, Infrastructure and Transaction Costs," 724
[24] Denielle Perry and Kate Berry, "Central American Integration Through Infrastructure Development: A case study of Costa Rican hydropower," *Regions & Cohesion* 6(1) (2016): 96.
[25] Bhattacharyay, "Infrastructure for ASEAN," 202.
[26] Bhattacharyay, "Infrastructure for ASEAN," 202.
[27] Krapohl and Fink, "Different Paths of Regional Integration," 472.

involvement in 2011) to develop and maintain complex regimes of CBI. According to Ikome and Lisinge this results in the

> lack of capacity to prepare and package programmes; lack of capacity to operate and maintain existing assets; complex project financing deals; weak integration of national and regional plans; lack of capacity to develop bankable projects; and lack of funding for project development and implementation.[28]

In addition, Palestini and Agostinis demonstrate that regional cooperation in infrastructure development often needs the support of an actor with regional leadership attributes, including the ability to obtain the acquiescence of its neighbours.[29] Where no actor is able to act as a regional leader (as is the case in the Middle East, where we could argue that Egypt, Israel and Turkey possess the hard power capabilities to act as a regional leader, but none has the requisite soft power attributes, and each is opposed by the others) the development of regional CBI becomes problematic.

The Political Rationale for Regional Integration

A significant body of work investigates the relationship between trade-promoting policies taken by governments (including various commercial institutions) on the one hand and peace, stability and conflict on the other.[30] The underlying argument is that governments can facilitate trade by removing both tariff and non-tariff barriers to economic exchange which increases bilateral and multilateral trade at the regional and global levels. Over time, increased trade deepens economic integration and interdependence between states.[31] Executive level decision makers realize that economic interdependence raises the costs of defection from cooperative trading relationships and increases

[28] Ikome and Lisinge, "The Political Economy of Infrastructure Development," 268.
[29] Palestini and Agostinis, "Constructing Regionalism in South America," 50.
[30] See: Solomon Polachek, "Conflict and Trade: An Economics Approach to Political International Interactions." In *Economics of Arms Reduction and the Peace Process,* ed. Walter Isard and Charles Anderton (Amsterdam: North-Holland, 1992): 89-120; Rafael Reuveny, "Bilateral Import, Export, and Conflict/Cooperation Simultaneity," *International Studies Quarterly* 45(1) (2001): 131-158; David Bearce and Sawa Omori, "How Do Commercial Institutions Promote Peace?" *Journal of Peace Research* 42(6) (2005): 659-678; Benjamin Goldsmith, "International Trade and the Onset and Escalation of Interstate Conflict: More to Fight About, or More Reasons Not to Fight?" *Defence & Peace Economics* 24(6) (2013): 555-578; El-Anis, "Economic Integration and Security", 2018.
[31] See: Breet Benson and Emerson Niou, "Economic Interdependence and Peace: A Game-Theoretic Analysis," *Journal of East Asian Studies* 7(1) (2007): 35-59; Amichai Kilchevsky, Jeffrey Cason and Kirsten Wandschneider, "Peace and Economic Interdependence in the Middle East," *World Economy* 30(4) (2007): 647-664; Aysegul Aydin, "Choosing Sides: Economic Interdependence and Interstate Disputes," *The Journal of Politics* 70(4) (2008): 1098-1108.

the rewards of cooperation.[32] This results in embedded inter-state cooperation, international stability and peace.[33]

However, while a majority of the literature finds this thesis supported by empirical evidence, some studies call into question the effectiveness of institutional interactions in promoting trade, especially at the regional level. For example, Barbieri finds that institutions do not necessarily promote trade. Furthermore, even when trade is promoted, if the costs of trading are greater than the benefits, then conflict is more likely rather than peace, especially in asymmetric trading relationships.[34] Furthermore, El-Anis finds that the development of commercial institutions in the Middle East have not promoted trade in the region significantly and have not, therefore, had a pacifying effect on broader international relations in the region.[35] This raises questions about why (in some regions, like the Middle East) the institutional methods that have promoted trade elsewhere (in Europe and North America, for example) do not work. This chapter takes the view that institutional integration works in regions with advanced national economies which have well-developed transport and other CBI already in place. Facilitating trade through institutions does not necessarily work in less economically developed regions where CBI is not already well developed: "[a]s infrastructure investment facilitates regional economic integration through trade and investment expansion, it motivates regional cooperation, including cooperation in infrastructure development".[36]

Methodology

To measure trade-related infrastructure performance for each country I use two datasets. The World Economic Forum's GCI assessment of road, rail, sea and air transportation allows us to assess a state's physical transport infrastructure and practices to ascertain its competitiveness and productivity, and ability to carry out trade in manufactured goods and resources. The GCI data is published annually and is publicly available.[37] The World Bank's LPI assessment of customs; land, air and sea transportation infrastructure; international shipments; logistics quality and competence; tracking and tracing; and timeliness allows us to further assess hard transport infrastructure and the most important support

[32] Erik Gartzke, Quan Li and Charles Boehmer, "Investing in the Peace: Economic Interdependence and International Conflict," *International Organization* 55(2) (2001): 391-438.
[33] John Oneal, Bruce Russett and Michael Berbaum, "Causes of Peace: Democracy, Interdependence, and International Organizations, 1885-1992," *International Studies Quarterly* 47(3) (2003): 371-393; Hyung Min Kim and David L. Rousseau, "The Classical Liberals Were Half Right (or Half Wrong): New Tests of the 'Liberal Peace', 1960-88," *Journal of Peace Research* 42(5) (2005): 523-543.
[34] Katherine Barbieri, "Economic Interdependence: A path to peace or a source of interstate conflict?" *Journal of Peace Research* 33(1) (1996): pp. 29-49.
[35] El-Anis, "Economic Integration and Security", 2018.
[36] Brooks, "Regional Cooperation, Infrastructure," 3.
[37] https://www.weforum.org/reports/the-global-competitveness-report-2018

services.[38] The LPI data is published every two years (with the exception being three years between the first and second LPI reports) and is publicly available.[39] It is important to assess GCI and LPI because "[b]oth the quantity of infrastructure investment and the quality of infrastructure services influence trade performance".[40]

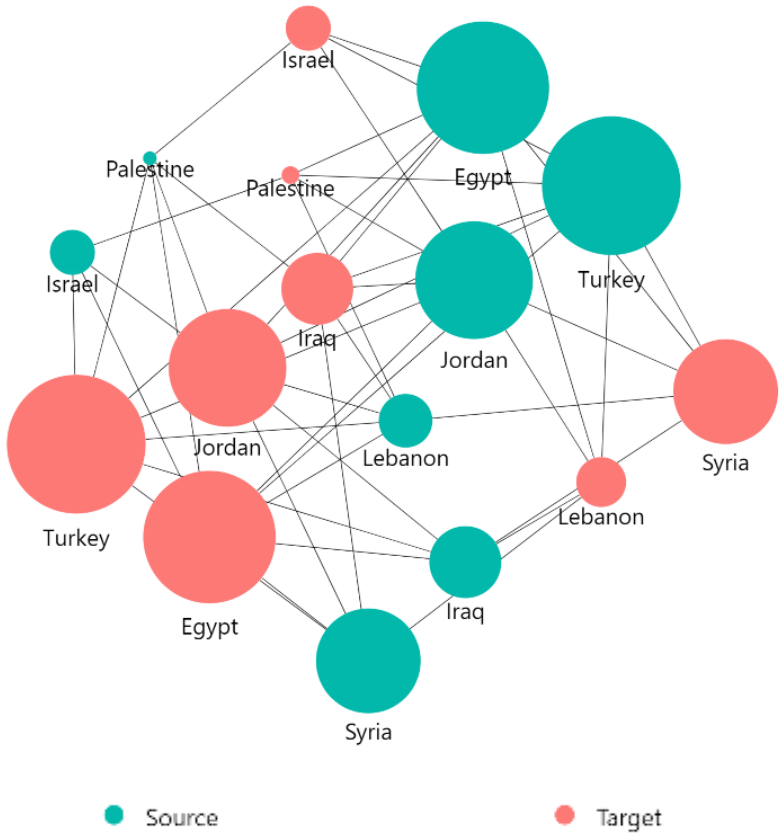
I use diachronic network visualizations[41] to conjointly analyse patterns in regional transport infrastructure connectivity and trade using data for 2007, 2013 and 2018.[42] By visualizing these networks, I am able to assess the relationship between transport infrastructure and trade volume. For each state, infrastructure and trade network connections with the other seven states studied here are plotted. Data on trade comes from the International Monetary Fund's (IMF) Direction of Trade Statistics database.[43] A dataset on cross-border transport infrastructure was created by coding the GCI and LPI data.[44] For each network visualization, the network connections (edges) reflect the trade relationships and cross-border transport infrastructure connectivity. For trade networks, arrows leading away from a given source node depict exports while arrows heading towards a given target node depict imports. The size of each node (each representing a state) reflects that state's cross-border transport infrastructure performance/connectivity and trade volume – larger nodes represent higher infrastructural capacity and greater trade volume, respectively.

Trends and Patterns in Transport Infrastructure and Trade in the Middle East

In this section, I explore the domestic and cross-border transport infrastructure profile for each country and assess how infrastructure networks and trade networks intersect over time. An analysis of the region's transport infrastructure reveals two key conclusions. Firstly, cross border transport infrastructure in the Middle Eastern sub-region studied here is underdeveloped and saw little development for the period of time analysed (2007-2018). This network is, overall, what we could term a disintegrated system and over the past decade or so there have been no indications that this is changing (see figures 1, 3 and 5 below).

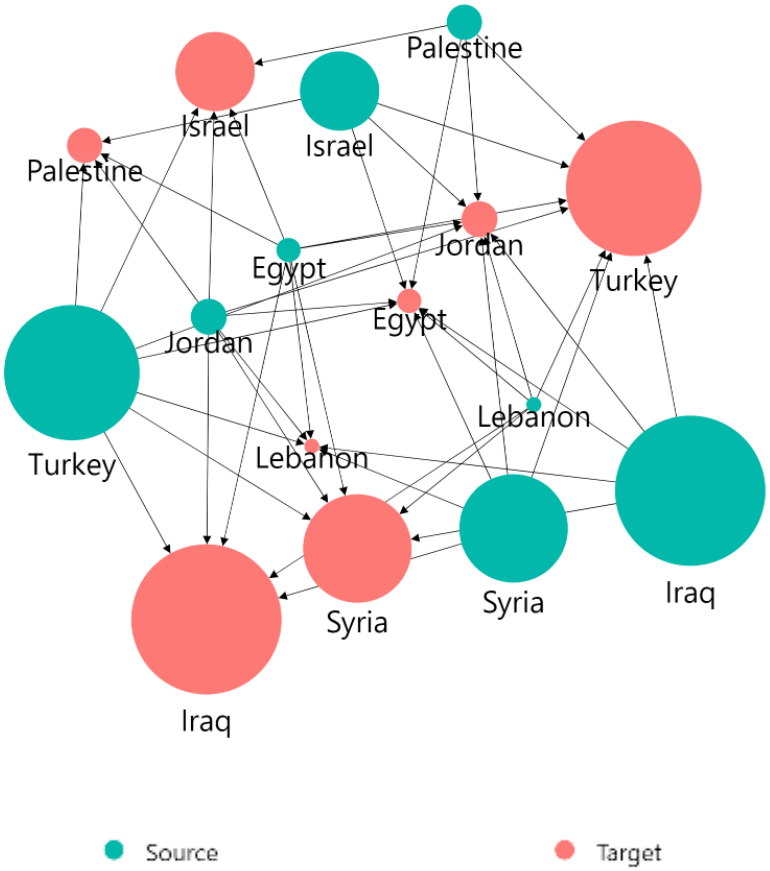
[38] For a similar approach see: Oksana Skorobogatova and Irina Kuzmina-Merlino, "Transport Infrastructure Development Performance," *Procedia Engineering* 178 (2017): 319-329.
[39] https://lpi.worldbank.org/
[40] Brooks, "Regional Cooperation, Infrastructure," 5.
[41] Ulrik Brandes, Patrick Kenis, Jorg Raab, Volker Schneider and Dorothea Wagner, "Explorations into the Visualization of Policy Networks," *Journal of Theoretical Politics* 11(1) (1999): 75–106. doi 10.1177/0951692899011001004; Krapohl and Fink, "Different Paths of regional Integration," 472-488.
[42] 2007 is the first year for which GCI and LPI data are available, and as infrastructure development takes significant time 5-6 year intervals allow us to assess change here.
[43] The IMF Direction of Trade Statistics database can be accessed here: https://www.imf.org/en/data#data
[44] It is important to note that, unfortunately, the WEF and WB do not include Palestine in their reporting, therefore, it is not possible to assess Palestine's transport infrastructure in detail here. Thus, I include an assessment of Palestine's position in the region's trade network and offer a limited assessment of its place in the region's infrastructure network.

Figure 1: Transport Infrastructure Network, 2007



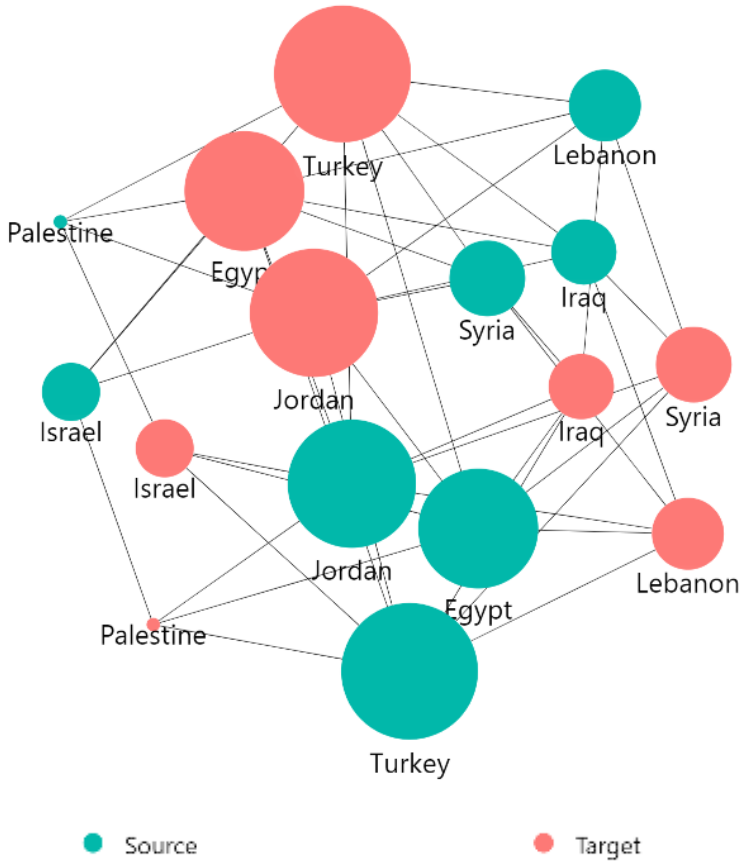
Source, Author's own diagram. Data from GCI and LPI sources.

Figure 2: Trade Network, 2007



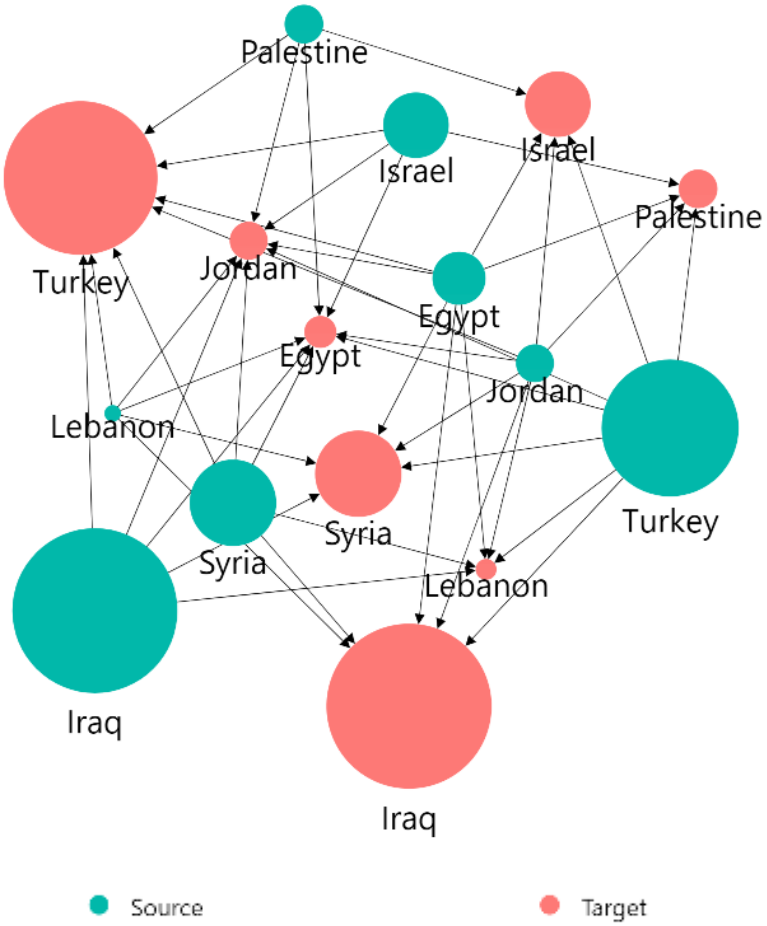
Source, Author's own diagram. Data from IMF Direction of Trade Statistics, 2019.

Figure 3: Transport Infrastructure Network, 2013



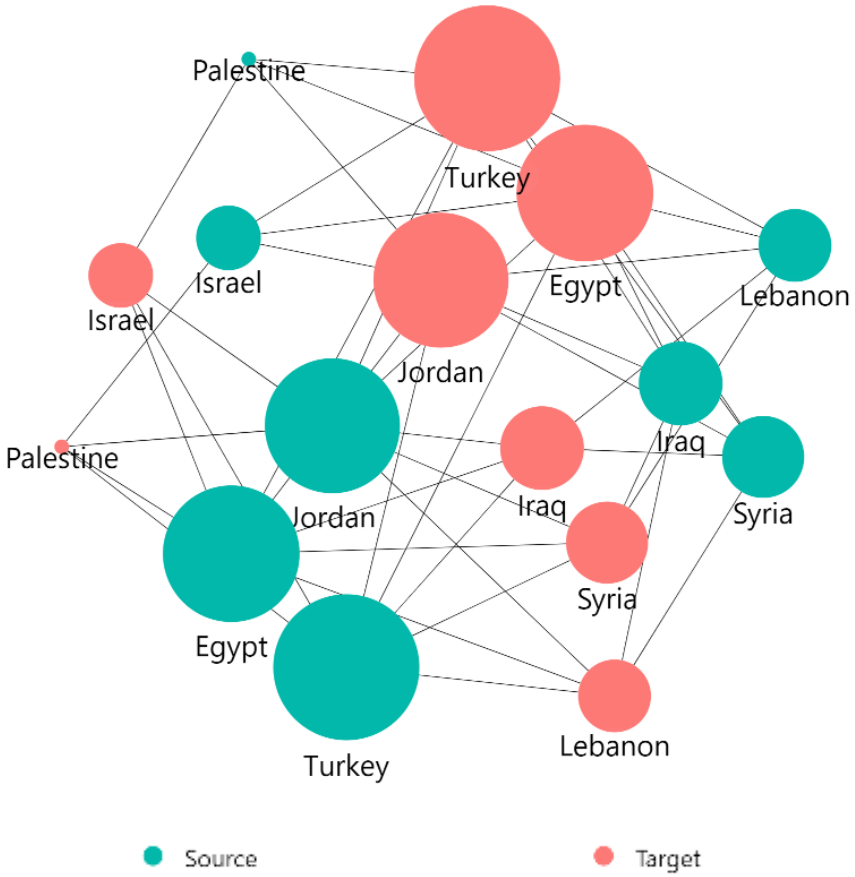
Source, Author's own diagram. Data from GCI and LPI sources.

Figure 4: Trade Network, 2013



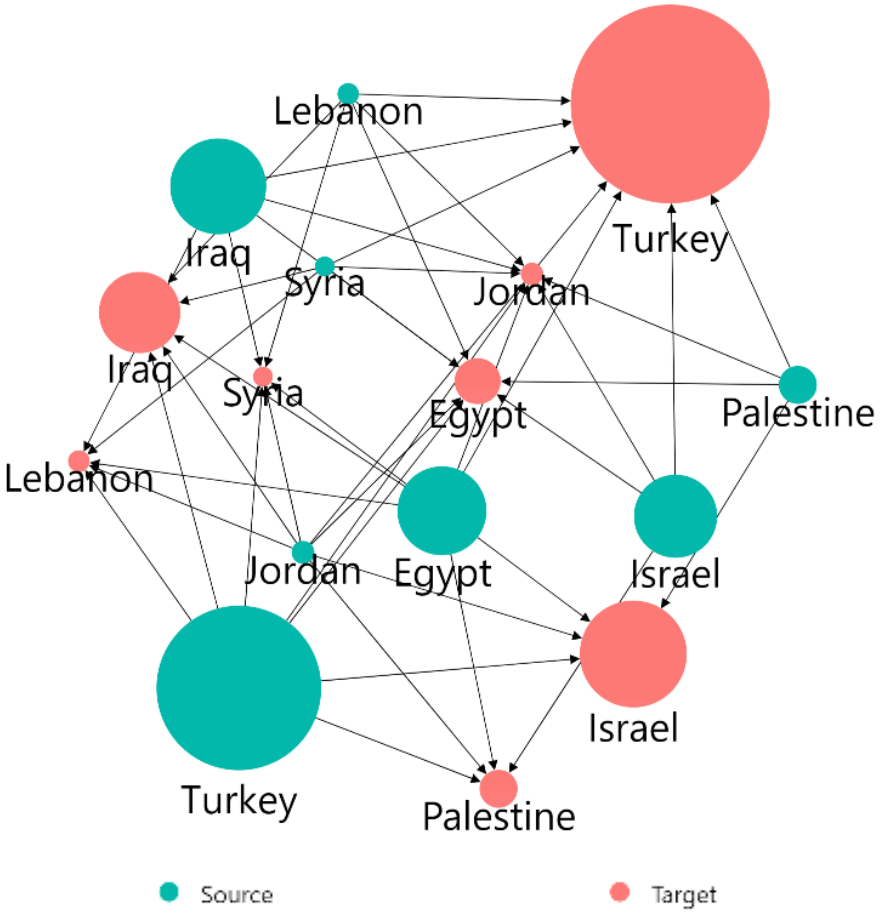
Source, Author's own diagram. Data from IMF Direction of Trade Statistics, 2019.

Figure 5: Transport Infrastructure Network, 2018



Source, Author's own diagram. Data from GCI and LPI sources.

Figure 6: Trade Network, 2018



Source, Author's own diagram. Data from IMF Direction of Trade Statistics, 2019.

The second key observation is that there is significant asymmetry in the experiences of states in the region. Some benefit from good domestic and cross-border transport infrastructure and solid links with other states. Egypt, Jordan and Turkey have maintained good transport infrastructure performance and regional connections and have been at the centre of the region's transport network for the past decade-plus. However, since 2011 Jordan has been hindered in its connections with the region as it is negatively impacted by the conflicts in neighbouring countries that hinder CBI with them. Likewise, while Turkey's transport infrastructure is the second most advanced in the region, its land-based transport infrastructure with the region is hindered by the problems associated with domestic infrastructure in Iraq and Syria and political divide due to conflicts in the latter two. This is compounded by Turkey's economic policies which have focused on relationships with the global economy more broadly (especially with Europe, North America and East Asia) and has until the past decade or so largely ignored the Middle East. Since 2007, Egypt has been perhaps the most consistently well-connected state in the region. This is in part due to the quality of its own domestic and cross-border transport infrastructure, its geographic location, and its political relationships with its neighbours.

On the other hand, some states suffer from both weak domestic infrastructure and/or limited links with other states. Israel is the least connected state in the region even though its own infrastructure is the most advanced of the states studied here due to its political isolation (Iraq, Lebanon and Syria do not recognise Israel and direct connections, therefore, do not exist). Furthermore, this has not changed over recent decades and given the now-moribund peace process, there is no reason to predict Israel will integrate with the region in the short- to medium-term future. Indeed, the only significant change in the regional transport network is the degradation of hard infrastructure due to recent conflicts in Syria and Iraq. Prior to 2011, Syria's transport infrastructure was of a reasonable standard and it had solid connections with neighbouring states, although its infrastructure had suffered from a lack of investment since the 1980s. Overall, by 2018 transport infrastructure performance was weakened in Iraq, Lebanon and Syria, all of which do not have good connects with the rest of the region. This is largely due to war damage and lack of investment, and in the case of Syria, long periods of closure of its borders with Jordan and Turkey and its suspension from the Arab League. Of course, Palestine suffers from a lack of investment, intermittent conflict damage, and the fundamental challenges posed by occupation and remains not particularly well-connected with the rest of the region (it does have good links with Israel).

Considering the limitations in the region's transport infrastructure network, we would expect regional trade to be limited. Bilateral trade should be zero between Israel on the one hand and Iraq, Lebanon and Syria on the other, of course. But, we should also see limited bilateral trade between states on the periphery of the infrastructure network over the past decade or so. At the same time, however, Egypt Jordan and Turkey should be central to the region's trade network and should experience higher levels of overall trade, plus deeper bilateral connections than the other states in the region. In terms of economic integration, we can form several conclusions from the network visualisation tests. Firstly, economic interdependence in the region is low as states do not have strong trade relationships with each other as a whole and the network is quite disintegrated with little clustering of states. No state has strong bilateral trade relationships with all others in the region. Only Turkey appears to have a solid bilateral trade relationship with the other states in the region. The majority of states in the region are economically isolated from each other. Israel and Palestine (outside of trade with each other – which mostly consists of exports from the former to the latter), Iraq (outside of hydrocarbon exports to Turkey) and Lebanon have been peripheral to the region's trade network.

As with the region's transport infrastructure network, there has been some change over the past decade or so in the region's economic links due to conflict. While Syria used to be quite well-integrated with the region (largely through trade with Turkey and Iraq) prior to 2007, the civil war there has had a negative effect on trade. Syria is now economically isolated from the region due to

war damage, economic recession, political isolation and the closure of its borders with Turkey and Jordan. Iraq has also seen its level of economic integration with the region decline significantly since 2013 which coincides with decline in its transport infrastructure, but is also accounted for by the decline in global hydrocarbon prices (as most of Iraq's trade with the region over the past decade or two has consisted of hydrocarbon exports to Turkey).

On the whole, however, there has been little change in regional trade flows over the period of time studied. Turkey remains the most consistently 'central' state in the region's economy, while economic integration remains lacking for other states. Over the past decade or more Egypt, Jordan, Lebanon and Palestine have failed to develop trade links with each other and the rest of the region – which is expected for Palestine and Lebanon given their weak transport infrastructure connections, but is surprising for Jordan and Egypt due to their stronger infrastructure performance. Likewise, Israel has consistently been *politically* isolated from much of the regional economy even though its Middle Eastern trade volume is larger than for any other state except Turkey (this is due to trade with Palestine which is largely in the form of exports to this still-captured market, and trade with Turkey).

Regional trade patterns largely follow transport infrastructure patterns in the region. The lack of hard transport connectivity corresponds to the region's economic disintegration. On-going and recent conflicts in Iraq, Lebanon, Palestine and Syria, and Israel's political marginalisation hinder the physical integration of the region's national economies. This is reinforced by poorly maintained infrastructure and a lack of investment in the region's more stable states. Overall, the region's transport infrastructure problems prohibit greater economic integration, interdependence and cooperation. We can find exceptions in the cases of Egypt and Jordan, however. These two states are well-connected with the region through hard infrastructure yet remain economically peripheral in the regional economy.

I now turn to a more detailed state-by-state exploration of why transport infrastructure in the region has underperformed and undermined regional economic integration.

Egypt

Egypt's domestic transport infrastructure is solid (see tables 1-6 in the appendix) and offers it some advantages over several of its neighbours. Egypt's road network is large (c.48,000km fully paved),[45] is generally of good quality, and is well-integrated with the Mashreq sub-region through the Arab Mashreq International Road Network (which connects Egypt via land with Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, the UAE and Yemen). Part of the road network also goes through Israel (which is not a signatory to the agreement). The Egyptian National Railways

[45] "Egypt," August 20, 2019, https://www.cia.gov/library/publications/the-world-factbook/geos/eg.html

(ENR) network is one of the largest in the broader region at approximately 5,000km long and is all standard gauge, which makes it compatible with most of its neighbours. It is one of the world's busiest networks in terms of passenger traffic density (c.32 billion passenger-km a year (roughly half of the French network but at one sixth of the size)).[46] However, it does not contribute significantly to Egypt's trade, primarily because it largely serves passenger traffic rather than freight and connectivity to Egypt's seaports is limited. A further challenge is that integrating with the Middle East via rail requires Egypt's rail network to integrate with Israel's first (something that remains problematic due to their peaceful, but tense and cold relationship).

Egypt's air transport infrastructure also largely serves passengers rather than cargo. Annual passenger traffic on registered air carriers is approximately 10.1 million, while annual freight traffic is only c.397 million mt-km.[47] The problems of ignoring airfreight have been all too clear since the Arab Spring in 2011 and the subsequent decline in the tourism sector. Furthermore, even though Egypt has 72 airports, Cairo International Airport handles virtually all of Egypt's air cargo. On the other hand, Egypt's seaports focus on freight transport, but are not as well integrated into its domestic road, rail and air transport infrastructure as they could be. Of Egypt's five major seaports (Alexandria, Damietta, El Dekheila, Port Said and Suez) only two (Alexandria and Suez) are main container ports, processing 1.61 million and 2.97 million twenty-foot equivalent units (TEU) annually, respectively.[48]

One of the main challenges facing the development of Egypt's transport infrastructure is a large financing gap estimated at $180 billion over the next 20 years.[49] If Egypt is unable to finance further investment in its transport infrastructure in the next two decades its trade potential will decline, hindering its ability to integrate with the region. The potential to be a regional hub, however, is there given the advantages presented by the Suez Canal and Egypt's geographic location at the centre of the Middle East and North Africa which means that all land-based trade between the Mashreq and the Maghreb must transit through Egypt.

Iraq

Over four decades of conflict have massively damaged Iraq's transport infrastructure and have hindered investment. Its infrastructure has become among the worst in the region (see tables 1-6 in the appendix). Overall, Iraq faces significant disadvantages in transport and other trade-related infrastructure compared to its neighbours. While quite extensive at 59,623km and connecting all

[46] World Bank, *Egypt: Enabling private investment and commercial financing in infrastructure* (Washington, DC: World Bank, 2018), 30.
[47] "Egypt."
[48] "Egypt."
[49] World Bank, *Egypt: Enabling private investment*.

settled areas relatively well,[50] its road network has suffered from a drastic lack of investment over the last three decades. Only around 30% of its road network is designed for high-volume traffic and much of the overall network is poorly maintained. Furthermore, for several decades under Saddam Hussein, Iraq's road network was constructed with military objectives rather than economic necessity in mind. As a result, the major first-class roads run from Baghdad to Jordan and Syria, while no first-class roads run to either Turkey or Iran, which hinders road-based trade to these states.[51]

Iraq's railway network has also suffered extreme damage and lack of investment since the early 1980s. It is quite large (at 2,272km of standard gauge track – again, making it suitable to integrate with most of the states in the Middle East[52]) but it largely focuses on passengers not freight. While some sections are of a high standard, some sections are substandard and suffer from outdated and poorly maintained rolling stock and communication systems.[53] Furthermore, during the 2003 invasion and subsequent years of occupation and insurgency, Iraq's rail services were largely suspended. It cannot currently play a significant role in international trade. Iraq has three main seaports (Basrah, Khawr az Zubayr, and Umm Qasr – which also acts as its main container port). These ports are relatively well-connected to Iraq's road network but as mentioned above, this has its limitations. Other problems limiting the expansion of seaborne transport have arisen from past conflicts and include restoring navigation channels by removing wrecked vessels, restoring inland facilities like bridges, dredging channels, and upgrading port facilities – all at significant costs.[54]

Air transport infrastructure also cannot play a significant role in international trade in its current state. This infrastructure is quite expansive (with over 70 airports capable of accommodating large passenger and cargo aircraft) but the prolonged period of conflict the country has faced has left many airports with severe damage. The lack of sufficient investment since the 1980s means that passenger (approximately half a million per year) and freight traffic is low (c.10.8 million mt-km a year). Perhaps the biggest challenge is the development of a modern air traffic control system – one of the main targets of the 2003 military campaign was Iraq's air infrastructure, with control systems and human capital largely destroyed.[55] Overall, reconstruction following decades of both conflict and a lack of investment remains very slow.

Israel

[50] "Iraq, » August 20, 2019, https://www.cia.gov/library/publications/the-world-factbook/geos/iz.html
[51] Frank R. Gunter, *The Political Economy of Iraq: Restoring balance in a post-conflict society* (Cheltenham: Edward Elgar, 2013), 219.
[52] "Iraq."
[53] Gunter, *The Political Economy of Iraq,* 224.
[54] Gunter, *The Political Economy of Iraq,* 222.
[55] Gunter, *The Political Economy of Iraq,* 221.

Rather unsurprisingly, Israel has the best overall transport infrastructure of the states studied here (see tables 1-6 in the appendix), with a particularly good road network which is extensive (18,566km) for a small country and is of a very high standard, able to service high-volume traffic including heavy goods transport. It also connects all areas of settlement together, and is deeply integrated into the country's rail, air and sea transportation infrastructure helping Israel to have a holistic approach to transport infrastructure which connects it well with the global economy as a whole. However, its international shipments performance is surprisingly low – largely due to security and safety considerations that slow down customs and inventory checks. Israel's railway network is quite large in relative terms (1,250km) and could easily integrate with other systems in the region as it is made up of standard gauge lines.[56] Israel has five major ports (Ashdod, Harera, Haifa, Elat and Ashdod – its main container port) that offer a strong physical connection to the outside world. Its small geographic size, high levels of investment in its overall transport infrastructure, and holistic institutional approach mean Israel's seaports are well-connected with its road, rail and air infrastructure. Israel has a highly developed air transport infrastructure with 29 airports with paved runways capable of carrying larger passenger and cargo aircraft. Air transport serves largely passenger traffic (c.6 million per year) but also carries quite a lot of freight traffic (c.758.6 million mt-km per year[57]).

However, the state of conflict between Israel and Lebanon, Syria and Iraq, prohibits any direct connections, of course, and the cold peace/lack of normalisation with Egypt and Jordan discourages physical integration. Regardless of the quality of its infrastructure and supporting services, Israel will continue to be excluded/disintegrated from the region as a whole while political recognition and the normalisation of relations with its neighbours remain elusive.

Jordan

While solid overall, Jordan's transport infrastructure performance is mixed (see tables 1-6 in the appendix). In particular, the kingdom lags quite far behind other states in the region in terms of rail transport. It does, however, have a solid road transport network and its sea and air transport infrastructures are quite efficient. Even though it is not one of the most advanced economies in the region, Jordan's road network (7,203km long[58]) is of a relatively high standard and has played a key role in both its own economic development and reconstruction efforts in Iraq (while Iraq's own ports were inoperable after the 1991 Gulf War and 2003 Iraq War, Aqaba was used as the main seaport for Iraqi imports and exports). However, the key challenge is managing the increasing number of passenger and freight vehicles and expanding high-volume roads – the government has struggled to

[56] "Israel," August 20, 2019, https://www.cia.gov/library/publications/the-world-factbook/geos/is.html
[57] "Israel."
[58] "Jordan," August 20, 2019, https://www.cia.gov/library/publications/the-world-factbook/geos/jo.html

attract sufficient investment over the past decade to achieve this goal, largely due to low investor confidence caused by instability in neighbouring states.

Furthermore, Jordan has one of the least developed rail systems in the region with only 509km of rail lines, which are also of limited use in terms of foreign trade as they consist of narrow-gauge tracks only[59] and cannot be directly integrated with neighbouring systems. This rail network primarily serves the export of phosphates by linking quarries with the port at Aqaba. On the other hand, Jordan's only port (Aqaba) has seen significant investment and has been seen as a more secure entry point than those on Jordan's western, northern and eastern borders. It acts as Jordan's passenger, industrial and container ports (it is the second busiest container port on the Red Sea with an annual capacity of 1.3 million TEUs).[60] The port is well connected to Jordan's road network, and has an airport that serves domestic and international flights. Jordan's air transport infrastructure is effective but not as developed as other small states in the region. It has 16 airports with paved runways (with most being able to service large passenger and cargo aircraft),[61] but these focus more on passenger (8.4 million per year) than cargo traffic (169.1 million mt-km).[62]

Without greater foreign and domestic investment in its infrastructure, Jordan's ability to integrate with the broader region will remain somewhat limited. While the standards of its transport infrastructure are relatively solid, significant upgrading and expansion is needed. Yet instability in Syria, Iraq and in Israel-Palestine continue to undermine Jordan's ability to utilise its infrastructure to integrate more deeply with the region.

Lebanon

Lebanon's transport infrastructure is the least effective out of the states considered here (see tables 1-6 in the appendix). The standard of Lebanon's rail and road networks, in particular, is quite problematic and while its sea and air transport infrastructure are more effective, they are still the weakest of the states studied here except Palestine. Lebanon's road network (c.21,705km of (mostly) paved road[63]) suffered immense damage and lack of investment in the 1975-1990 period and then subsequent damage again in the 2006 34 Days War. With some investment since 2006, however, Lebanon's main roads can carry relatively high-volume and heavy freight traffic. Along with Jordan, Lebanon has an underdeveloped rail network (401km total and only 319km of standard gauge track[64])

[59] "Jordan."
[60] "Jordan."

[61] "Jordan."
[62] "Jordan."
[63] "Lebanon," August 20, 2019, https://www.cia.gov/library/publications/the-world-factbook/geos/le.html
[64] "Lebanon."

limiting its potential connectivity with its neighbours' systems. Furthermore, this network is largely unusable due to damage sustained in the 1975-1990 and 2006 conflicts with insufficient subsequent investment. Its role in the Lebanese economy and in regional trade, therefore, has been negligible. Lebanon has two main seaports with only that at Beirut being a container port. This port is Lebanon's main connection to the global economy (moving approximately 1.3 million TEUs annually).[65] Since the Syrian civil war began in 2011, it has also become more important for Lebanon's regional trade due to the disruption of overland transport through Syria, which is Lebanon's only land bridge to the rest of the world (Lebanon's border with Israel, of course, is closed). Lebanon's air transport infrastructure is also quite underdeveloped (only three airports can service larger passenger and cargo aircraft) and does not play a significant role in international trade – serving only 2.6 million passengers per year and limited cargo (53.9 million mt-km per year[66]).

A lack of investment and periodic degradation of Lebanon's hard infrastructure due to conflict since the start of the Lebanese civil war in 1975 are the main causes of its poor performance. Compounding this are the on-going domestic and regional political tensions (primarily the civil war in Syria, the state of conflict between Lebanon and Israel, and internal political paralysis in Lebanon). Improving these situations will have to precede improvements in Lebanon's ability to integrate with the broader region.

Syria

Syria has the geographic advantage of being at the centre of the Mashreq and it should, therefore, be well placed to be a central hub of the regional infrastructure and trade networks. Its road network is large (63,060km of paved roads) and connects the major population, industrial and agricultural centres, including by high-volume capable roads.[67] It also has good road links with Jordan, Lebanon and Turkey. Furthermore, unlike its smaller neighbours, Syria has a relatively developed rail network (2,052km of track – 1,801km of which is standard gauge[68]) and, therefore, has potential to integrate into a regional system. However, years of conflict and subsequent economic decline have resulted in material damage to Syria's road and rail networks, insufficient investment, disintegration of the system (due to different factions controlling different territories), the loss of human capital, and the closure of borders negating the value of any infrastructure that does exist.

[65] "Lebanon."
[66] "Lebanon."
[67] "Syria," August 20, 2019, https://www.cia.gov/library/publications/the-world-factbook/geos/sy.html
[68] "Syria."

Syria has three main seaports (Baniyas, Latakia and Tartus (the latter also hosts a Russian naval base)). Latakia acts as Syria's container port but only handles a comparatively small amount of cargo (c.400,000 TEUs annually[69]) for a country of its size – this represents firstly, the importance of road-based transport in Syria; and secondly, the economic decline seen since 2011. Syria's air transport infrastructure is quite extensive, although in recent years it has suffered from material damage and a lack of investment due to civil war. It has 21 airports with paved runways (most of which can service large passenger and cargo aircraft). But given the conflict and the problems of air transport there, Syrian air traffic is very limited (half a million passengers annually and c.1.5 million mt-km of cargo annually[70]). The civil war has devastated much of the country's infrastructure and severely hinders its ability to integrate with the broader region via transport infrastructure. Obviously, there can be little improvement in this area without a peaceful solution to the conflict.

Turkey

Turkey's transport infrastructure is amongst the best in the Middle East with the exception being the efficiency of its rail transport, which is not as good as might be expected (see tables 1-6 in the appendix). Its road, sea and air transport infrastructure and related services are all in very good condition and have received significant investment since the AKP came to power in 2002. As Turkey's strong economic growth since the early 2000s has been driven largely by the export of manufactured goods, the state of its road, sea and rail infrastructure, in particular, is very important – especially as they pertain to extra-regional trade.

Its road network has historically been the most important trade-related CBI but since 2011, the civil war in Syria has at times cut off much of Turkey's access to land transport infrastructure to the south, which has had a significant impact on Turkey's ability to trade with the rest of the region. Nonetheless, Turkey has the most advanced and expansive road network of any of the states studied here (with 24,082km of paved roads (2,159km of which are expressways)) and it is able to carry high-volumes of passenger and freight traffic.[71] Significant investment has gone into Turkey's railway network in recent decades and it now has the largest network in the Middle East (and 21st largest globally) with 12,710km of standard gauge tracks.[72] It is compatible with other networks in the region, although its standards and institutional framework are more advanced than its counterparts in Iraq, Jordan, Lebanon and Syria making it hard for these states to satisfy Turkish requirements.

[69] "Syria."
[70] "Syria."
[71] "Turkey," August 20, 2019, https://www.cia.gov/library/publications/the-world-factbook/geos/tu.html
[72] "Turkey."

Seaborne trade is also very important to the Turkish economy. There are nine major seaports, with the two main container ports (Ambarli – c.3.1 million TEUs annually; and Mersin – c.1.6 million TEUs annually).[73] It also has two onshore regasification terminals for liquefied natural gas (LNG) imports (Marmara Ereglisi and Izmir Aliaga) and two offshore floating storage and regasification terminals (Egagaz Aliaga and Botas Dortyol). All of Turkey's seaports, container terminals and LNG terminals are well connected to its domestic transport infrastructure via road and rail. Turkey's air transport infrastructure is also well developed and has benefitted from significant investment since the 1990s. It has 91 airports with paved runways (all but 20 of which are able to serve large aircraft) that handle a very high volume of passenger (96 million annually) and freight traffic (2.9 billion mt-km annually[74]). Furthermore, Turkey's airports have a wide geographic spread allowing all regions of the country to be connected domestically and internationally, making Turkey one of the most important aviation hubs in the world.

As stated above, Turkey's ability to integrate with the Middle East has been hindered by the conflicts in Syria and Iraq in recent years. Nevertheless, its advanced infrastructure and services, as well as its growing role in the region's economy mean that it is well-placed to emerge as perhaps the most important state in an integrated Middle East as and when Syria and Iraq stabilise.

Conclusions

This chapter has assessed the condition of domestic and cross-border transport infrastructure in the Middle East, in particular looking at states in the Mashreq, and analysed how this performance affects trade in the region. This discussion was informed by the assumption that higher levels of trade lead to economic integration, which in turn creates interdependent relationships between states. This interdependence leads to political cooperation and stability, which benefit individuals and societies through greater economic dividends. However, rather than assuming that trade liberalization (soft infrastructure) creates the conditions necessary for trade to grow, this chapter has investigated the impact of hard infrastructure.

One prominent result from this analysis is that trade relationships largely mirror domestic and cross-border transport infrastructure performance. Where transport infrastructure performance is low and cross-border connections are limited, bilateral trade is suppressed. Conversely, where transport infrastructure is relatively well-developed and cross-border links are solid, higher levels of bilateral trade takes place. A second finding is that the Mashreq suffers from a somewhat disintegrated regional infrastructure network with several states under-performing. Israel is

[73] "Turkey."
[74] "Turkey."

marginalised due to its political relationships, or lack thereof, with other states in the region (notably Iraq, Lebanon and Syria). While others have suffered physical damage, and a lack of investment and maintenance from years of conflict and occupation (Iraq, Lebanon, Palestine and Syria). Correspondingly, trade in the region is also limited with low levels of bilateral trade, and a weak regional trade network. Only Turkey is prominent in the regional economy, but even it experiences significant asymmetries in bilateral trade with other states in the region. The region remains economically disintegrated.

The lesson for theoretical and policy debate is that even when trade liberalization takes place, the exchange of goods and resources (which make up most of the exports of the state's considered here) cannot take place without sufficient hard domestic and cross-border infrastructure in place. At the same time, however, the development of a strong regional transport infrastructure network cannot take place where political instability, conflict and insecurity are prevalent features of the political and economic landscape.

This study is not without its limitations and there are areas which can be further investigated. It might be useful, for example, to conduct an analysis of each state's infrastructural connections and trade with their main extra-regional partners and compare this to the regional data studied here. This could be done to test the validity of the conclusions drawn from examining regional data. Likewise, future studies could investigate two other variables that might prove useful. Firstly, domestic transport efficiency and its correlation with national economic growth could be compared between the states studied here to learn more about the relationship between hard infrastructure and domestic economic activity. Secondly, scholars could examine which domestic economic sectors are attracting investment and the extent to which this affects investment in hard infrastructure – again, this would tell us more about the correlation between infrastructure and domestic economic activity.

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Appendix

Table 1: GCI Performance for Transportation Infrastructure, 2018

Country	Road connectivity index	Efficiency of train services	Efficiency of seaport services	Efficiency of air transport services
Egypt	71.6	3.6	4.6	5.1
Iraq[75]	68.6	2.03	2.03	2.03
Israel	83.5	4.1	4.6	5.4
Jordan	71.6	2.4	4.2	5.2
Lebanon	48.7	1.7	3.2	4
Syria[76]	62.4	2.9	3.4	3.2
Turkey	80.9	3.3	4.5	5.3

Sources: World Economic Forum – The Global Competitiveness Report 2018

Table 2: National Logistics Performance and Global Ranking, 2018

Country	Score	Customs	Infrastructure	Int. Shipments	Logistics Competence	Tracking and Tracing	Timelines
Egypt	2.82	2.60	2.82	2.79	2.82	2.72	3.19
Iraq	2.18	1.84	2.03	2.32	1.91	2.19	2.72
Israel	3.31	3.32	3.33	2.78	3.39	3.50	3.59
Jordan	2.69	2.49	2.72	2.44	2.55	2.77	3.18
Lebanon	2.72	2.38	2.64	2.80	2.47	2.80	3.18

[75] Iraq has not been included in any GCI reports, so composite scores were given by considering LPI and other data on Iraq's infrastructure in-line with the GCI methodology.

[76] Syria has not been included in a GCI report since 2011, so this latest data was taken here.

Syria	2.30	1.82	2.51	2.37	2.29	2.37	2.44
Turkey	3.15	2.71	3.21	3.06	3.05	3.23	3.63

Sources: World Bank – Logistics Performance Index, Global Rankings 2018

Table 3: GCI Performance for Transportation Infrastructure, 2013

Country	Road connectivity index	Efficiency of train services	Efficiency of seaport services	Efficiency of air transport services
Egypt	2.7	2.7	4.1	4.8
Iraq	3.75	2.03	2.03	2.03
Israel	5	3.2	3.8	5
Jordan	4.8	2	4.5	5.5
Lebanon	2.7	0	4.3	4.9
Syria	3.69	2.9	3.4	3.2
Turkey	4.9	3.1	4.3	5.5

Sources: World Economic Forum – The Global Competitiveness Report 2013

Table 4: National Logistics Performance and Global Ranking, 2012

Country	Score	Customs	Infrastructure	Int. Shipments	Logistics Competence	Tracking and Tracing	Timelines
Egypt	2.98	2.60	3.07	3.00	2.95	2.86	3.39
Iraq	2.16	1.75	1.92	2.38	2.19	1.86	2.77
Israel[77]	3.41	3.12	3.60	3.17	3.50	3.39	3.77
Jordan	2.56	2.27	2.48	2.88	2.17	2.55	2.92
Lebanon	2.58	2.21	2.41	2.71	2.38	2.61	3.11
Syria	2.6	2.33	2.54	2.62	2.48	2.35	3.26
Turkey	3.51	3.16	3.62	3.38	3.52	3.54	3.87

Sources: World Bank – Logistics Performance Index, Global Rankings 2012

Table 5: GCI Performance for Transportation Infrastructure, 2008

[77] Israel was not included in the 2012 report so the 2010 data is taken here.

Country	Road connectivity index	Efficiency of train services	Efficiency of seaport services	Efficiency of air transport services
Egypt	74	54	69	52
Iraq	68.6	30.45	30.45	30.45
Israel	45	40	53	39
Jordan	38	91	46	31
Lebanon	21.3	0	25.8	17.4
Syria[78]	65	49	97	90
Turkey	54	69	88	55

Sources: World Economic Forum – The Global Competitiveness Report 2008

Table 6: National Logistics Performance and Global Ranking, 2007

Country	Score	Customs	Infrastructure	Int. Shipments	Logistics Competence	Tracking and Tracing	Timelines
Egypt	2.37	2.08	2.00	2.33	2.38	2.62	2.83
Iraq[79]	2.11	2.07	1.73	2.20	2.10	1.96	2.49
Israel	3.21	2.73	3.00	3.27	3.23	3.46	2.17
Jordan	2.89	2.62	2.62	3.08	3.00	2.85	2.92
Lebanon	2.37	2.17	2.14	2.50	2.40	2.33	3.40
Syria	2.74	2.37	2.45	2.87	2.59	2.63	3.45
Turkey	3.22	2.82	3.08	3.15	3.23	3.09	3.94

Sources: World Bank – Logistics Performance Index, Global Rankings 2007

[78] Syria has not been included in a GCI report since 2011, so this latest data was taken here.

[79] Iraq was not included in the report, so the 2010 data has been taken here.