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Improving Israel-Jordan relations by using the “Valley Train” as a trade route

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Abstract

Our research proposes and examines a new trade route to and from Jordan through Israel. Jordan's main trade routes to Europe used to be by land through Syria, or by sea through the Suez Canal. The ongoing civil war in Syria eliminated the land option, leaving Jordan with only one expensive active trade route. This change led Jordanian and Turkish traders to seek an alternative, which eventually resulted in operating a low volume trucks' route between Haifa and Amman. This route operates under a restriction that goods may enter Jordan through the Sheikh Hussein crossing only if they are loaded in trucks and not in containers. This limitation was meant to preserve the special economic status of Aqaba port and prevent any competition. In 2016, a new railway was built in Israel, it is called "The Valley Railway" and it goes between Haifa and Bet-She'an.

Our research shows that there are significant savings for each container that passes through this route, a strong incentive for Jordanian traders to support it and use it as a main trade corridor. The difference made by using the train is \$800-\$900 per container, but it is still not cost-effective because the side which invests in infrastructure is not the one who enjoys most of the savings. The initial investments made by Israel must be from a strategic perspective that will justify it, and not as a genuine business opportunity. Each of the sides can cooperate with international companies in PPP agreements, so they will make a significant portion of the initial investment and afterward operate the route for revenues.

The two largest barriers which stand in the initiative's way are the containers prohibition and Jordanian public opinion. The public opinion is expected to oppose any upfront relations with Israel. Other joint initiatives between the two countries, such as the gas agreement and the Red Sea-Dead Sea Water Conveyance, show that when the Jordanian government has an economic incentive to cooperate with Israel, they are likely to do so. Overcoming the ban for containers is more complicated and will require a plan, first to create a precedent and afterward to pave the way for a change.

The implementation plan aims for long-term achievements that are based on short-term acts. Each step is meant to enable the progress for the next phase. We offer a three-stage plan for how to implement this initiative step by step. The plan considers all the geopolitical barriers and offers a way to overcome them.

The first phase focuses on breaking the containers barrier by allowing the entrance of only essential refrigerated goods. The next stage is to enable entrance of all kinds of containers. The final part is the connection of the Israeli rail to the Jordanian one, and basically from there to every Arab country in the region. A successful implementation will not only bring Jordan closer but will open opportunities for Israel to cooperate economically with Arab countries that it never had relations with. This policy paper shows that there is a real chance to take advantage of the chaos that is going through in the Middle East, and by an economic initiative to reshape the structure of relations in the region.

Introduction

Jordan's trade with Europe and North America is based on two trade routes, a land route and a naval route. The naval route goes through the Mediterranean Sea and the Suez Canal, and reaches Aqaba port in the southern part of Jordan, while the land route goes through Syria and Turkey. Since 2011, the civil war in Syria has blocked the land trade route, which used to be the main trade route for Jordan with Europe. Since then, Jordanian export and import shifts mostly through Aqaba port, a route which is longer and more expensive than the Syrian option (Libsker, 2015).

In 2016, Israel finished paving the "Valley Train", a railway which begins in the city of Haifa and ends in Bet-She'an, a city which is located only 70 km from Jordan's capital - Amman. Haifa port is a relatively large port; therefore, it creates an opportunity to establish a new trade route, which will answer Jordan's need for another more cost-effective trade route. Moreover, connecting the Israeli railway to the Jordanian one will connect Haifa port to every major city in Jordan. In the macro level, connected rails which spread throughout the Middle East can connect Israel's ports to the entire region and open up markets with much larger potential such as Saudi Arabia and the Gulf countries. An initiative which is first and foremost a gate to improve diplomatic relations with Jordan can eventually be beneficial both financially and regarding Israel's future in the Middle East.

Importance of the research

This research examines an opportunity to create a significant improvement in the relations between Israel and Jordan. Our research goal is to determine if the proposed initiative will be financially beneficial for both countries. If so, the chances of it being implemented might be greater. Today, there are about 1000 Jordanian trucks each month transporting agricultural goods and medicines between Jordan and Haifa port for import or export. This study aims to show that by using a railway from Jordan to Haifa, a much larger volume of goods can be transported at a lower cost. As the "Economic Peace Theory" proves, greater economic cooperation will lead to stronger diplomatic relations. When examining Jordan's current need for a less expensive trade route, and Israel's ability to provide one, the results demonstrate great potential for deepening the relations.

Research Question

Our research analyzes the political-economic costs and benefits of implementing the initiative to extend the Valley railway to Jordan and turn it into an additional trade route. The research question is ***"To what extent can the Valley Train improve Israeli-Jordanian political-economic relations, and how can this initiative be implemented?"***.

Literature Review

The literature review examines our underlying assumption that more trade between states will necessarily lead to better relations. We examine the Jordanian economy, its trade with other countries, and in particular the relations with Israel

Trade in the Middle East in the 21st Century

Turkey's trade route to its neighboring eastern markets (i.e. Iraq, Syria, Jordan, Kingdom of Saudi Arabia, and the Gulf States) is one of its busiest trade routes. This route was originally operated by trucks driving from Turkey's eastern border, through Syria, and finally to different destinations in the Middle East. Since the Syrian Civil War erupted in 2011, Turkish cargo transfer through Syria dropped by 90 percent in 2012, and by 2013, no Turkish trucks were passing through Syria. The main alternative used currently is sailing to Aqaba port and paying the Suez Canal crossing fees which can get up to 500,000\$ per direction. This route, however, is relatively expensive and long. An additional alternative is to board the transit trucks onto "roll-on-roll-off" ships (RORO), which sail from Turkey to Haifa, and from there continue to different destinations in Jordan (Source –ECF documents).

Economic & Commercial Peace Theory

Following the horrors of WWI, several politicians and economists engaged in researching the causes and roots of war, with the purpose of finding the best solutions to avoid it. Economic interdependence is a principle directly affiliated with the amount of commercial trade between countries and is said to be, according to the liberals, the main restraint against violence. In fact, the economic, social and political consequences resulting from a war between two economically intertwined countries would become too severe for politicians to decide to engage in such escalation (Oneal and Russet, 1997). Dale Copeland introduces a new variable, the "trade expectation", and explains that it is not sufficient for states to trade to prevent war, but the perspective of positive trade expectations is also a necessity. Reversely, the apprehension of seeing commercial trade decline with a partner can encourage the use of force to acquire or protect the resources (Copeland, 1996).

The economic peace theory was proved successful in two case studies, Argentina and Brazil, and Afghanistan, India, and Pakistan. Argentina and Brazil's relations quickly improved after the signing of an agreement of economic and political cooperation in 1985 (Carasales, 1999). The same phenomenon applies to Afghanistan, India, and Pakistan with the building of transborder regional trade relations. Indeed, a treaty signed in 2010, the "Pak-Afghan Transit Agreement", facilitated maintaining peace and security in the region (Naseer, 2014).

Jordan's Economy

In 2014, Jordan exported 9.1 billion US dollars, marking an increased rate of 5.6% in exports since 2009. Its main export partners are the United States (\$1.31B), Iraq (\$1.28B), and Saudi Arabia (\$1.04B). However, in the same year, Jordan imported \$24.5B, marking an increased rate of 8.8% in imports since 2009. The top import origins are Saudi Arabia (\$4.2B), China (\$2.73B), and India (\$1.46B). (OEC, 2014).

What we can perceive from this data is that Jordan is continuously experiencing a negative trade balance. In the case of 2014, the negative balance of trade was \$15.3B. In the early 2000s, King Abdullah implemented some significant economic reforms in order to deal with the negative trade issue and with other economic challenges. Abdullah's efforts created a better growth average (8% in 2004 until 2008), however, the global slowdown trend of 2008 brought a much slower growth average (2.8% in between the years 2010 until 2014). (CIA factbook).

Israel & Jordan Trade Framework

Jordan's trade with Israel started in 1994, following the peace agreement that was signed by the two countries. In order to support peace, the United States initiated a Qualifying Industrial Zone (QIZ) that enabled Jordan and Egypt to export products to the US duty-free, as long as these products contained Israeli inputs (US Department of Commerce, "Summary of the U.S. - Jordan Free Trade Agreement"). Moreover, trade with Jordan is also beneficial to Israel, due to the fact that some of the goods that are being exported to Jordan are eventually transported to the Gulf States such as Qatar, Saudi Arabia, and Dubai. Therefore, both countries are making a profit by using each other as a transit station (Libsker, 2015).

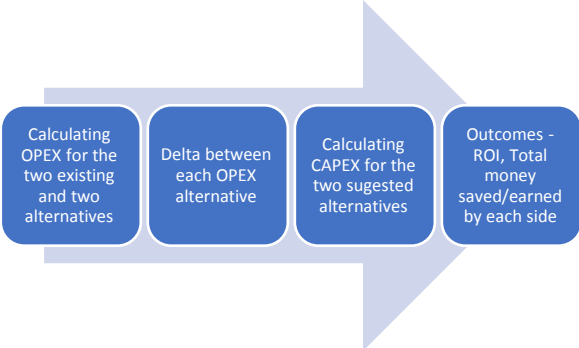
Trading with Trains

When comparing the two land trade freight models which exist, trucks and railways, rail transportation has several key advantages. 'Costs per ton-mile' would be lower in the railroad (2.7 cents) than in trucking (5.0 cents). Regarding safety, when analyzing fatalities per billion ton-miles, in railroad there are 0.61 fatalities while in trucking 1.45 deaths. Fuel consumption is much lower in the railroad (455 ton-miles per gallon) than in trucking (105 ton-miles per gallon). One advantage trucking has over railroad is the fact that trucking is a much more flexible freight model than the railroad. When analyzing the two land models, we can conclude that railroad has more advantages as a trade freight model. These advantages become even more concrete when there is no need for a flexible freight model, as in the case we are researching (Rodrigue et al, 2017).

Methodology

The research results will divide into an Economic model and a Geopolitical barriers analysis. The Economic model compares between four trade routes alternatives. The first two are the existing routes, both by sea to Aqaba without going through Israel and the current active trucks' route from Haifa to Amman. The other two routes are two levels of implementing this initiative. The first level examines the use of train only in the Israeli part, and the second level is a continuous train from Haifa to Amman. The model sums to sets of costs, operational and one-time investments. The operational expenses (OPEX) sums up the cost of all the vectors that structure each examined route. The capital expenses (CAPEX) represents the investments vectors needed to create each suggested alternative.

The calculation method is first to find the Delta between the sets of OPEXs, which is the savings of moving from one alternative to the other. Once we have the Deltas between the different OPEXs and the CAPEX of each suggested route, we can reach the final results. The results to ROI and the yearly savings for choosing any of the suggested options in the initiative.



Because the two suggested routes are theoretical and not an analysis of an existing infrastructure like in the first couple of routes, we asked the advice of various experts in all fields related to the project. We have conducted several Semi-Structured Interviews. For information about the trains and the railways, we interviewed Dr. Israel Tal-Saranga, the Spokesperson of Israel Railways, Mr. Katriel Moriah, CEO of Israel Rail Cargo Company, and Mr. Charles Solomon, Deputy Director General for Economics & Planning in the Ministry of Transportation. Information regarding maritime shipment was received in an interview with a representative from the financial department in a major shipment company, due to business secrecy the company asked not to be mentioned by its name in

this paper. General information about the border crossing and the current trucks' operation, was given to us in interviews with Mr. Zohar Agmon, Head of the Sheikh Hussein/Jordan River border crossing terminal in Israel Airport Authority, and Mr. Ron Shazberg, Former employee at the Economic Cooperation Fund, an NGO which promotes business initiatives in the Middle East.

A project that involves relations between an Arab country and Israel is comprised of potential political barriers which may increase the complexity and create difficulties in execution. The barriers we anticipated are mostly Jordanian domestic politics, such as the public opinion against Israel and the fact that Aqaba was announced as a national priority area for development by the king. Additional barriers are the response of other Arab or Muslim countries to the initiative, mainly because the conflict between Israel and the Palestinians remains unsolved, and an Egyptian resistance to the existence of a competitive trade route to the Suez Canal (Al O'ran, 2008).

The analysis process of these barriers was made following interviews with Dr. and former Ambassador Haim Koren, from the Ministry of Foreign Affairs, and Dr. Yossi Mann, an expert on the Middle East from Bar-Ilan University.

In order to determine the incentives to execute such a complex project, financially and politically, we will compare the possible savings to the political barriers and form recommendations which will enable the initiative to be implemented.

Unless been specified otherwise, all the information used to describe our results (The Economic Model and the Geopolitics and Barriers) and conclusions origin in the interviews we conducted.

The Economic Model

The economic model is built on numerous types of costs, each of those is dependent on different factors and has a unique structure. To simplify the model and the equations in it, the variables will be presented by vectors. Each vector represents a set of various costs and will be defined separately for its components.

Four possible trade route alternatives were examined, two of them exist today, and two others are offered as part of the researched initiative. The existing trade routes are the maritime route to Aqaba and the truck's route between Haifa and Amman. These routes already operate today and not require any investment. Therefore, they have only OPEX. For each of the two suggested alternatives, we will calculate both the CAPEX needed for its creation and the day to day OPEX.

The calculation method is first to find the Delta between the sets of OPEXs, which is the savings of moving from one alternative to the other. Once we have the Deltas between the different OPEXs and the CAPEX of each suggested route, we can reach the final results. The results will be presented in ROI and the yearly savings for choosing any of the suggested options in the initiative.

For simplicity, unless been mentioned otherwise, costs will be defined as cost per standard twenty-foot container. The common unit being used in trade and shipping is TEU, which stands for 'twenty-foot equivalent unit'.

Vectors and Variables definition

There are three general types of OPEX vectors, as specified below:

Maritime Transportation – Describes the variables which affect the costs of maritime shipment. According to the economies of scale, it is affected by the size of the ship as the price for each container lowers in bigger ships. Also, other factors are the global oil prices, the particular properties of each route, and the 'Baltic Exchange Dry Index & Freight Rates' (BDI), which is a global index based in 'London Stock Market' that represents the changes in maritime shipping costs according to current supply and demand. If a ship must go through the Suez Canal, then the crossing fee is divided and added to the container's cost.

Port Operating – Each port charges a fee for containers that are imported or exported through it. This fee includes docking and handling such as storing and loading/unloading. Port fees are affected by supply and demand in each specific port.

Land Transportation – Inland transportation of containers can be done either by trucks or by a cargo train. The costs cover fuel, manpower and an additional fee for the operation of the vehicle.

Border Operation – The "Sheikh Hussein" border crossing charges containers for handling, security, and loading. The crossing was not originally built to handle a large volume of goods, and therefore it is suffering from decreasing returns to scale.

Each of these cost elements will be specified to its different variations. Each variation shall be treated as a vector and defined throughout its various components.

A list of all OPEX vectors		
Type	Specification	Definition
Maritime	tur-aq	Includes the maritime transportation costs from Turkey to Aqaba plus the fee of crossing the Suez Canal. The crossing fee varies between 200,000\$-400,000\$ for a single pass, it changes according to the size of the ship in TEU
	tur-hai	Includes the maritime transportation costs from Turkey to Haifa
Port	aq	The fees paid in the port for operation per TEU, not including customs
	hai	The fees paid in the port for operation per TEU. Because a second port is being built in Haifa, the supply will increase and the future prices are expected to be lower than the current ones
Land	Trucks aqaba-amman	Trucks operation, driver's wage and fuel for the road between Aqaba and Amman
	Trucks IL	Trucks operation, driver's wage and fuel for the road between Haifa and Sheikh Hussein bridge
	Rail IL	Cargo train operation cost between Haifa and Sheikh Hussein bridge
	Trucks JR	Trucks operation, driver's wage and fuel for the road between Sheikh Hussein bridge and Amman
	Rail JR	Cargo train operation cost between Sheikh Hussein bridge and Amman
Border	0	Costs which include unloading containers, loading trucks, security expenses and border fees
	1	The costs of border 0 after an upgrade in the Sheikh Hussein bridge crossing. It includes a large-scale screening security machine and improvement in the facilities in order to allow higher volume in lower operational costs
	2	Once the crossing will be optimized to trains which cross from one country to the other. Costs such as unloading containers and loading trucks will be reduced

The CAPEX vectors divide into two types:

Rail – The cost of paving one kilometer of the railway, multiplied by each segment's length. The paving cost varies widely between standard terrain to steep inclines and tunnels.

Border – The border's infrastructure upgrade breaks down into two main components. The first is under security and refers to buying a large-scale screening machine which can screen a container as a whole without unpacking it. The second element is the general infrastructure of the border which determines the capacity of containers it can handle. One phase is enlarging the terminal itself, and the next one is adapting it to handle continuous train crossing.

A list of all CAPEX vectors		
Type	Specification	Definition
Land	Rail IL	Paving the railroad from Bet-She'an to the border. Although the distance is short (8 km), the steep incline requires a very expensive paving method
	Rail JR	Paving the railroad from the border to Al-Mafraq (70 km) and from there to Amaan (67 km). The first part near the Israeli border has a steep incline that requires a very expensive paving method. The rest of the route is under standard costs
Border	1	The costs of upgrading the border's infrastructure. It includes a large-scale screening security machine and improvement in the facilities in order to allow higher container volume and allow a continuous crossing of a train

Data

Following the interviews we have conducted, we have received the required data for the model. The list below will review the relevant sources for each costs category.

Maritime Transportation and Port Fees – The main source for data was a major maritime shipment company (Asked not to be specified by name due to business secrecy considerations). An additional source is IS-LINE, an Israeli company which specializes in import and export services for clients around the world. The final source is the "Aqaba Port vessel charges and terminal service charges list".

Land Transportation and Border – Our list of sources in the field of land transportation includes Israel Railways corporate, the Israel Airport Authority, the Ministry of Transportation, ECF, and the major maritime shipment company. Information regarding costs in the Border was received by the Israel Airport Authority.

All the costs in specifics, divided to OPEX and CAPEX vectors can be found in Appendix A.

The volume of trade in containers was received by the maritime shipping company; it is divided to import and export as presented in the following table:

Import TEU / Week			
NEU	US	Other	Total
1,480	460	1,610	3,550
Export TEU / Week			
NEU	US	Other	Total
110	220	520	850

*NEU stands for Northern Europe.

According to this information, the annual trade with Europe and the US is 118,040 TEU. This number represents the potential volume which is relevant to use the suggested route, only referring to Jordanian trade. Due to political considerations regarding maintaining the status of Aqaba port, we are referring to only 50% of the trade volume as the relevant potential of the initiative (59,020 TEU Annual).

OPEX

There are two sets of equations to calculate the operational expenses; the first is for existing trade routes and the second for the suggested ones. Under the suggested trade routes, the one marked with '1' refers to the extension of the rail only in the Israeli part, so that the land transportation in Israel is only by train and in Jordan only by trucks. The option marked with '2' calculates the costs of a continuous train route from Haifa into Jordan until Amman. The existing routes refer both to the one that Israel is not part of, and goes through the Suez Canal, and the truck's route from Haifa to Amman.

Existing transportation frameworks between Jordan and Europe (through Turkey):

$$(1) OPEX_{0AQ} = Maritime_{Tur-AQ} + Port_{AQ} + Land_{Trucks,Aqaba-Amman}$$

$$(2) OPEX_{0IL} = Maritime_{Tur-Hai} + Port_{Hai} + Land_{Trucks,IL} + Border_0 + Land_{Trucks JR}$$

Suggested new frameworks:

$$(3) OPEX_1 = Maritime_{Tur-Hai} + Port_{Hai} + Land_{Rail IL} + Border_1 + Land_{Trucks JR}$$

$$(4) OPEX_2 = Maritime_{Tur-Hai} + Port_{Hai} + Land_{Rail IL} + Border_2 + Land_{Rail JR}$$

For simplicity, let us assume that the maritime costs between Turkey and Haifa and the Port costs at Haifa remain the same through the various models. In practice, the economy of scale considerations could create minor variations between the expenses.

Hence, calculating the difference in operating expenses by the various alternatives could be done as follows:

$$(5) \Delta OPEX_{0AQ-0IL} = Maritime_{Tur-AQ} - Maritime_{Tur-Hai} + Port_{AQ} - Port_{Hai} + Land_{Trucks,Aqaba-Amman} - (Land_{Trucks,IL} + Border_0 + Land_{Trucks,JR})$$

The delta of equations (1) and (2). The expenses difference between the two existing routes, the route to Aqaba and the trucks route through Israel.

$$(6) \Delta OPEX_{0IL-1} = Land_{Trucks,IL} - Land_{Rail,IL} + Border_0 - Border_1$$

The delta of equations (2) and (3). The operational benefits of implementing the change between trucks and trains between Haifa and the border.

$$(7) \Delta OPEX_{0IL-2} = (Land_{Trucks,IL} + Land_{Trucks,JR}) - (Land_{Rail,IL} + Land_{Rail,JR}) + Border_0 - Border_2$$

The delta of equations (2) and (4). The operational benefits of upgrading the truck's route between Haifa and Amman to a railway on both country's side.

CAPEX

The capital expenses associated with creating a new international trade route contains the following elements:

- Border control – Upgrading the infrastructure in Sheikh Hussein bridge to allow more cost-effective handling of the containers and more efficient security procedure using a large-scale screening machine.
- Rail (two segments – within Israel and Jordan) – Paving 8 km of railway in Israel between Beit-She'an Station and Sheikh Hussein bridge. Paving 137 km of railway in Jordan, between the border and Amman through Al-Mafraq.

Hence, to move to suggested trade routes #1 or #2, the following CAPEX will need to be taken into account:

$$(8) CAPEX_1 = Border + Rail_{IL}$$

$$(9) CAPEX_2 = Border + Rail_{IL} + Rail_{JR}$$

Measuring the economic viability of the new trade routes will require the following ROI calculation:

From the existing Israeli route

$$(10) \quad ROI_1 = \frac{CAPEX_1}{\Delta OPEX_{0 IL-1}}$$

$$(11) \quad ROI_2 = \frac{CAPEX_2}{\Delta OPEX_{0 IL-2}}$$

From the existing Aqaba route

$$(12) \quad ROI_3 = \frac{CAPEX_1}{\Delta OPEX_{0 AQ-0 IL} + \Delta OPEX_{0 IL-1}}$$

$$(13) \quad ROI_4 = \frac{CAPEX_2}{\Delta OPEX_{0 AQ-0 IL} + \Delta OPEX_{0 IL-2}}$$

Another interesting way to examine the viability is through the political landscape – will the delta OPEX be high enough to justify the political downsides of operating such trade routes.

Findings

The values of each variable and vector appear in Appendix A, along with a detailed list of sources and equations. Below is a table of the results. The SUM column describes the value of OPEX and CAPEX equations in dollars. ROI sum refers to the number of containers needed to return the investment. The Aggregate column describes the delta under a trade volume of 59,020 which is 50% of the trade that goes through this route. ROI Aggregate is the number of years needed to return the investment under the same volume.

Equation's results			
Equation	Name	Sum	Aggregate
1	OPEX 0 AQ	2,317	-
2	OPEX 0 IL	1,544	-
3	OPEX 1	1,454	-
4	OPEX 2	1,444	-
5	OPEX 0 AQ - OPEX 0 IL	773	45,609,813
6	OPEX 0 IL - OPEX 1	91	5,353,957
7	OPEX 0 IL - OPEX 2	101	5,944,157
8	CAPEX 1	585,714,286	-
9	CAPEX 2	1,244,828,571	-
10	ROI 1	6,456,693	109
11	ROI 2	12,360,000	209
12	ROI 3	678,303	11
13	ROI 4	1,425,104	24

The table of results shows that there are significant savings in using the route through Israel and no through Aqaba, almost 800\$ per container in the current status without using cargo trains. This creates a strong incentive for Jordanian Businessmen to pressure for using this route more and prefer it over the use of Aqaba port. In the perspective of the Jordanian economy, the aggregate savings per year of using the current route through Israel sums up to over 45 million dollars. In an economic point of view, it is not considered as an amount of money that can make a difference, but it is important to remember that due to the importance of Aqaba we are only looking at 50% of the trade volume which is relevant to use this route. We have managed to prove that there is a clear incentive for each importer or exporter in Jordan who deals with Europe or the US, to ship their goods through Israel.

Upgrading the route to options #1 and #2 does not provide the same scale of savings, and the investment to create them is very high. ROI shows how long will it take to return these investments if made. The SUM column refers to the number of containers needed to pass through the route to return the investment, and the Aggregate column relates to the number of years, under the assumption that the overall volume will remain as today and 50% of it will pass through this route. It is important to remember that at the trucks' route suffers from decreasing returns to scale, which means it will not remain efficient and cost-effective as the trade volume increase. Another anecdote is that the trucks' route has a certain maximum capacity, caused by the density of trucks' driving the roads between Haifa and the border, and the border's infrastructures limited abilities to handle containers in their current status. Therefore, upgrading to alternative #1 by paving the

railway from Bet-She'an to the border, and the expansion of the Sheikh Hussein crossing, has greater implications than the 5.3 million dollars annual savings. An ROI of 11 years proves high cost-effective ratio, but in this case, the investments are made only by Israel, and most of the savings are Jordanian.

An upgrade of the route to alternative #2 requires additional investments from Jordan or an international company that will operate it as PPP (Public Private Partnership), same as road 6 in Israel. The savings under this alternative are also not significant, almost 6 million dollars annually, but on top of the benefits mentioned in alternative #1, it offers tremendous potential. If this suggestion of the initiative will be implemented, the Middle East will be covered in connected rails, allowing this trade corridor to serve not only Jordan's small income but much more. Inserting Iraq's, the Gulf countries', and Saudi Arabia's trade potential into the calculation can dramatically change the results and turn Israel into a trade hub between Europe and the Arab world.

Geopolitics and Barriers

In our interview with the Ministry of Transportation we spoke about the announcement of Aqaba as a national priority area for development. It led to the creation of a new port which is exclusivity operated by MAERSK, a foreign leading transportation company origin in Denmark. These actions were accompanied by a decision made by the king himself to prohibit the entrance of containers to Jordan from anywhere but Aqaba. The goal of this decision was to provide MAERSK the incentive of operating the port, even though the scope of Jordanian trade is relatively small. Some goods, mostly ones who are refrigerated, cannot do the long way to from Europe to Aqaba, so the Israeli route was a good alternative for them. As we heard from Israel Airport Authority, this prohibition causes the containers that are currently shipped through Israel using trucks, to be unpacked at the border and deployed over Jordanian trucks. The process is very expensive, takes much time and causes sensitive products such as agricultural goods or medicine to be damaged during the process and return to their owner without reaching their final destination. As long as this decision stays in power, there cannot be a justification for paving and connecting a train between the two countries, because it will not be able to go continuously loaded with containers. The existence of this prohibition was supposed to demolish the trucks' route passing through Israel, but the fact that it still operates provides a ray of light for future progress. The goods that are mostly transferred

to this route are products with limited shelf lives. This definition includes agricultural goods and pharmaceutical products, both are shipped in cooling containers and are very sensitive to the shipment time. Experts argue that the decision to prohibit the entrance of containers can be reversed if there will be a strong enough economic incentive for the king, and perhaps if certain compensations will be involved as part of the negotiation.

All the geopolitical experts we discussed agree that the public opinion in Jordan is not in favor of any cooperation with Israel and will probably create intense pressure against such relations. Despite that, reality proves that the king has an ability to control internal restlessness and lower the flames. Projects such as the natural gas, the Red Sea–Dead Sea Water Conveyance, and the Jordan Gate project (Joint industrial zone) shows that this barrier exists but it can be controlled if the incentive to do so is strong enough. Following Jordan's poor economic status, the experts we have interviewed believe that this initiative is a powerful incentive.

In the regional perspective, two Sunni superpowers set the rules - Egypt and Saudi Arabia. For many years, Egypt was the most dominant country in the region, affecting almost every decision and shaping the relations. Since the Arab Spring erupted, Egypt lost much of its stability and its economy is currently very bad. The Egyptians are expected to oppose the promotion of this initiative, because every ship that will dock in Haifa and not go through the Canal is a loss of a significant amount of money. In practice, the Egyptian cannot do much to stop the initiative and they do not have the ability to impose any sanctions over Israel or Jordan. Saudi Arabia is currently the most dominant country in the Middle East, and it is the leader of the Sunni countries. For a lot of years, the Arab and Muslim world was united against Israel, but lately the attention shifted to three sides fight between the Radical Islam, the Shia countries led by Iran, and the Moderate Sunni countries. In such a reality, Israel is a potential strong ally for the moderate Sunnis. Saudi Arabia does not support publicly in any relations of an Arab country with Israel, as long as the occupation and the conflict with the Palestinians exist. Behind the scenes, thanks to American support, economic relations are beginning to be created (Binyon and Carlstrom, 2017). It is not likely to expect a Saudi support for the initiative any time soon, but it is reasonable to claim that they will not oppose it, and maybe even take part of it in the future.

Conclusions and Recommendations

The economic model shows that the initiative is viable, it is more cost-effective for Jordanian businessmen to trade using Israel as a transit country. Moreover, any suggested upgrade to the route is likely to make it cheaper and increase the trade volume. These findings prove that there is economic viability in passing Jordan's trade with Europe and the US through Israel. A potential solution to overcome the expensive investments needed is exposing the potential of thriving Middle Eastern trade to foreign companies which will invest in infrastructure and proceed to operate the route. We can see a live example today in Israel when the Chinese are operating the new private port in Haifa. The EU's commission has made a large-scale transportation feasibility research of the Middle East, and there are many other countries who will be willing to contribute money for a project that is likely to change the entire region.

Savings of about 50 million dollars per year are not much for a country that its annual overall trade exceeds 30 billion dollars. In a broad perspective, choosing this trade route over Aqaba port will not dramatically change Jordan's economy. By looking at the local industry, lower transportation costs can boost the export and make Jordanian goods competitive in markets that they were not before. Regarding import, even a minor decrease in prices of goods can be very significant for the poor Jordanian public. Cheaper imports can ease hunger and poverty, two common phenomena in a country that its population is less than 8 million and recently absorbed over one million Syrian refugees. Israel perceives its relations with neighbor countries as a strategic asset with immense potential. Due to the occupation and the ongoing conflict with the Palestinians, the Arab League boycotts Israel and preventing it from developing relations with countries in the region. To change this Status-Quo, Israel is willing to promote initiatives that are not cost-effective, just for the chance of having economic ties and by that promoting the Economic Peace Theory. The researched initiative requires an expensive investment in infrastructures, which is not going to return shortly. By looking at the initial investment as a political act, it is possible to focus only on the operational expenses and the potential savings.

The most extensive barrier stands in front of executing this initiative is Jordan's king's prohibition of entering containers through the Sheikh Hussein border crossing. As long as

it exists, there is no future for a more successful trade route. To overcome this, we offer a three-stage plan:

1. Diplomatic negotiations with Jordan over the entrance of only refrigerated containers. These containers cannot go through Aqaba port because of the short shelf life of the products. Simultaneously, Israel will invest in paving the railway to the border and will initiate the infrastructures renovation in the crossing. By doing so, this route becomes more attractive for Jordan importers who are likely to pressure the government to assist them. The goal of this stage is to crack the prohibition and set the grounds for the future.
2. After a period of time of time, in which the Jordanian market enjoys cheaper imports, and the prohibition gets weaker, the second stage can get on its way. Israel will diplomatically negotiate over enabling the entrance of all kinds of containers. This stage is the massive breakthrough, and it can only happen after a success of the previous stage.
3. By this stage, the relations between the countries will be concrete. Now international players will be able to see the potential and will want to invest in the Jordanian side. At this period, a connection to Jordan's rails will also lead to Saudi Arabia and the Gulf countries. After the first two stages, the profitability of using the Israel-Jordan train will be clear to all the countries in the region. This will lead Israel to establish commercial negotiations with countries we have never cooperated before, and that hopefully will be followed by diplomatic relations.

This initiative aims for the long-term and the transition between each of the steps is likely to take several years. Unfortunately, there are no shortcuts, and the only way of overcoming the large barriers is by patiently working in stages. We hope that the institutionalization of the ties with Jordan would give other Arab countries the legitimacy to break the "glass ceiling" and to turn Israel into their trade corridor and an ally.

Future research can focus the third stage of the project and show the economic benefits of cooperation with Saudi Arabia and the Gulf countries. Such research can reveal the full potential of the initiative and be used in the future as a valuable tool for Israeli diplomats negotiating with Arab nations over using Haifa port.

Appendix A

OPEX vectors' values				
Type	Specification	Value (\$)	Source	Details
Maritime	tur-aq	1915	IS-LINE Shipment company	The price is per TEU, for a Dry Van container imported from Turkey to Aqaba plus the fee of crossing the Suez Canal.
	tur-hai	960	Maritime shipment company	The price is per TEU, for a Dry Van container imported from Northern Europe. Average Price for the last year.
Port	aq	164	Aqaba Port vessel charges and terminal service charges list	Includes the port handling fee. Due to the complexity of the port's cost portfolio, the value is presented at its most general form. Includes VGM
	hai	213	Maritime shipment company	Includes the port handling fee and VGM charge. Due to the complexity of the port's cost portfolio, the value is presented at its most general form
Land	Trucks aqaba-amman	238	An assumption based over the trucks' cost between the border and Amman	334 km, 3.3 times the route between The border to Amman.
	Trucks IL	140	Maritime shipment company	Payment to the truck's driver
	Rail IL	94	Israel Railways	The price is structured by a 15,000 NIS cost back and forth for a train ride, divided by 30 containers per train with an additional cost for loading and unloading.
	Trucks JR	72	Maritime shipment company	Payment to the truck's driver
	Rail JR	100	Based on Israel Railways data	An assumption for the ride's cost. The distance is double than the Valley Train but the cost reduces as a function of the distance. Therefore, the reference cost is 70% of the Israeli equivalent, adjusted to the number of km. No additional loading/unloading fee was considered because the Rail IL already contains both.
Border	0	159	Israel Airport Authority	Includes handling in the Hussein Bridge, Truck fee, and customs commission
	1	114	Israel Airport Authority	No Truck crossing fee, no need for unpacking containers
	2	76	Israel Airport Authority	Once the crossing will be optimized to trains which cross from one country to the other. Costs such as unloading containers and loading trucks will be reduced
CAPEX vectors' values				
Type	Specification	Value	Source	Details
Land	Rail IL	514,285,714	Israel Railways	Paving the railroad from Bet-She'an to the border. Although the distance is short (Aerial 8 km), the steep incline requires a very expensive paving method
	Rail JR	659,114,286	Assumption based on Israel Railways costs data	Paving from the border to Al-Mafraq (70 km) and from there to Amaan (67 km). The part near the border has a steep incline and will be priced as the Israeli part, the rest of the route is standard and will cost 3.7M NIS per km
Border	1	71,428,571	Israel Airport Authority	The costs of upgrading the border's infrastructure. It includes a large-scale screening security machine and improvement in the facilities in order to allow higher container volume and allow a continuous crossing of a train

OPEX and Delta OPEX Vectors calculation:

$$(1) OPEX_{0AQ} = Maritime_{Tur-AQ} + Port_{AQ} + Land_{Trucks,Aqaba-Amman} = 2317$$

$$(2) OPEX_{0IL} = Maritime_{Tur-Hai} + Port_{Hai} + Land_{Trucks,IL} + Border_0 + Land_{Trucks_JR} = 1544$$

$$(3) OPEX_1 = Maritime_{Tur-Hai} + Port_{Hai} + Land_{Rail IL} + Border_1 + Land_{Trucks_JR} = 1454$$

$$(4) OPEX_2 = Maritime_{Tur-Hai} + Port_{Hai} + Land_{Rail IL} + Border_2 + Land_{Rail_JR} = 1444$$

$$(5) \Delta OPEX_{0AQ-0IL} = Maritime_{Tur-AQ} - Maritime_{Tur-Hai} + Port_{AQ} - Port_{Hai} + Land_{Trucks,Aqaba-Amman} - (Land_{Trucks,IL} + Border_0 + Land_{TrucksJR}) = 773$$

$$(6) \Delta OPEX_{0IL-1} = Land_{TrucksIL} - Land_{RailIL} + Border_0 - Border_1 = 91$$

$$(7) \Delta OPEX_{0IL-2} = (Land_{TrucksIL} + Land_{TrucksJR}) - (Land_{RailIL} + Land_{RailJR}) + Border_0 - Border_2 = 101$$

CAPEX Vectors calculation:

$$(8) CAPEX_1 = Border + Rail_{IL} = 585,714,286$$

$$(9) CAPEX_2 = Border + Rail_{IL} + Rail_{JR} = 1,244,828,571$$

ROI calculation:

$$(10) ROI_1 = \frac{CAPEX_1}{\Delta OPEX_{0IL-1}} = 109$$

$$(11) ROI_2 = \frac{CAPEX_2}{\Delta OPEX_{0IL-2}} = 209$$

$$(12) ROI_3 = \frac{CAPEX_1}{\Delta OPEX_{0AQ-0IL} + \Delta OPEX_{0IL-1}} = 11$$

$$(13) ROI_4 = \frac{CAPEX_2}{\Delta OPEX_{0AQ-0IL} + \Delta OPEX_{0IL-2}} = 24$$

Appendix B

Document of information received by the maritime shipment company:

Jordan trade – commercial data

(לא כפוף לסודיות בהתאם להסכם הסודיות)

Introduction

1. This document contains commercial data regarding the Jordanian container market.
2. The purpose is to provide aggregated data which will assist IDC's representatives in their economic study on the matter.

Import

3. The table below contains data regarding the price of shipping a container into Jordan.
4. Data represents the total **revenue** paid by the customer to the ocean carrier for shipping each container type.
5. The data calculated as weighted average per trading area; NEU represents index of North European countries, N. Am. Represents North American countries (US, Canada, Mexico).
6. Also, data divided between DV/HC containers, and Reefer containers.
7. Data presented as Revenue per TEU (20'). Note that for 40' number should be doubled.

a. DV / HC:

Type	Size	POL Area	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
DRY	20	Europe	\$980	\$1,000	\$980	\$970	\$1,000	\$980	\$970	\$980	\$980	\$930	\$880	\$930	\$960
		N. Am.	\$1,500	\$1,550	\$1,500	\$1,610	\$1,310	\$1,420	\$1,490	\$1,390	\$1,440	\$1,400	\$1,470	\$1,540	\$1,470
VAN	40	Europe	\$720	\$720	\$730	\$740	\$7,500	\$770	\$740	\$740	\$750	\$710	\$680	\$680	\$730
		N. Am.	\$960	\$860	\$810	\$910	\$930	\$920	\$870	\$890	\$930	\$820	\$830	\$850	\$880

b. Reefers:

Type	Size	POL Area	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
REEFER	20	Europe	\$2,070	\$2,570	\$2,650	\$2,160	\$2,150	\$2,140	\$2,170	\$2,190	\$1,940	\$2,040	\$1,940	\$1,940	\$2,230
		N. Am.	\$2,740	\$2,900	\$3,740	\$2,740	\$2,720	\$2,740	\$3,050	\$1,370	\$3,590	\$3,740	\$3,740	\$3,590	\$2,980
	40	Europe	\$1,290	\$1,370	\$1,260	\$1,210	\$1,220	\$1,180	\$1,220	\$1,190	\$1,230	\$1,220	\$1,140	\$1,060	\$1,220
		N. Am.	\$1,860	\$1,860	\$2,040	\$1,870	\$1,980	\$1,990	\$1,830	\$1,980	\$2,000	\$2,080	\$1,950	\$1,770	\$1,910

Export

8. The table below contains data regarding the price of shipping a container from Jordan.
9. Data represents the total **revenue** paid by the customer to the ocean carrier for shipping each container type.
10. The data calculated as weighted average per trading area; NEU represents index of North European countries, N. Am. Represents North American countries (US, Canada, Mexico).
11. Also, data divided between DV/HC containers, and Reefer containers.
12. Data presented as Revenue per TEU. Note that for 40' container, the price represents

a. DV / HC

Type	Size	POD Area	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
DRY	20	Europe	\$810	\$860	\$810	\$810	\$810	\$850	\$820	\$830	\$970	\$880	\$830	\$1,060	\$860
		N. Am	\$2,170	\$2,270	\$2,150	\$2,140	\$2,040	\$2,190	\$2,290	\$2,270	\$2,340	\$2,340	\$2,380	\$2,180	\$2,230
VAN	40	Europe	\$610	\$640	\$640	\$590	\$570	\$610	\$570	\$590	\$580	\$560	\$550	\$540	\$590
		N. Am	\$1,090	\$1,080	\$1,090	\$1,080	\$1,120	\$1,070	\$1,040	\$1,030	\$1,080	\$1,060	\$1,120	\$1,110	\$1,080

b. Reefers:

Type	Size	POD Area	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
REEFER	20	Europe	\$1,920	\$2,230	\$1,850	\$1,730	\$1,810	\$1,810	\$1,830	\$1,820	\$1,740	\$1,810	\$1,750	\$1,780	\$1,840
		N. Am	\$2,050	\$2,050	\$2,050	\$2,050	\$2,090	\$2,090	\$1,840	\$2,870	\$2,870	\$1,460	\$1,460	\$1,460	\$2,000
	40	Europe	\$1,100	\$1,030	\$1,100	\$1,100	\$1,030	\$1,100	\$1,030	\$990	\$970	\$960	\$950	\$1,030	\$1,040
		N. Am	\$1,990	\$1,950	\$1,880	\$1,870	\$1,950	\$1,820	\$1,780	\$1,910	\$1,910	\$1,790	\$1,930	\$1,940	\$1,900

Market size

13. The table below contains an **estimation** of market size for **import** of containers into Jordan.
14. Data presented as TEU / week. Note that mix of containers' size or type is not included:

Import TEU / Week			
NEU	US	Other	Total
1,480	460	1,610	3,550

15. The table below contains an **estimation** of market size for **export** of containers into Jordan.
16. Data presented as TEU / week. Note that mix of containers' size or type is not included:

Export TEU / Week			
NEU	US	Other	Total
110	220	520	850

Variable costs - export

17. The table details the cost involved in exporting a container from Jordan via port of Haifa (prices in NIS):

		<u>20DV</u>	<u>40DV/HC</u>
MTY HFA-IHS		NIS	NIS
חיפה - גשר שיח חוסיין			
Land transportation	לנהג המשאית	430	430
bridge charges		315	475
Commision	לעמיל המכס	50	50
		<u>795</u>	<u>955</u>
MTY IHS-QMN			
מהגשר לעמאן			
Land transportation	לנהג המשאית	130	230
FULL QMN-JOIHS			
מעמאן לגשר			
Land transportation	לנהג המשאית	375	375
FULL IHS-HFA			
מהגשר לחיפה			
Land transportation	לנהג המשאית	550	1050
Handling bridge		200	300
TRUCK FEE	אגרת משאית	205	205
unforseen		260	260
Commision	לעמיל המכס	85	85
Handling port	בנמל	705	937
VGM charge	הצהרת משקל	40	40
		<u>2045</u>	<u>2877</u>
Total		3,345	4,437

Appendix C

Information received by IS-LINE, regarding import costs from Turkey to Aqaba.

POL: AMBARLI

POD: AQABA

OCEAN FREIGHT: USD 1465 / 20' DC – USD 1740 / 40' DC&HC

ORIGIN LOCAL CHARGES: USD 400/per cntr

VGM: USD 50/per cntr

B/L: USD 50/bl

Handling 50 / bl

VALIDITY: END OF JULY

*Above rates are exclusive of origin&destination customs clearance fees, pre-carriage fee, destination local charges and on-carriage fee.

*Advance payment should be done.

*Base on O/F prepaid term only FCL/FCL.

*Commodity - FAK (Non-Haz).

*DG (Haz), subject to IA.

*Rates are including O/F, BAF, CAF, prmg..etc surcharges, but subject to any changes on them or any new GRI application.

*Custom clearance expenses at POL are EXCLUDED and will be on shipper's/cnee's account and risk.

*Loading expenses are EXCLUDED and will be collected from the shipper.

*Any kind of FUMIGATION or LASHING or STUFFING expenses will be on shipper's account and risk.

*The above rates are subjected to space & equipment availability of the carrier.

*Please check with us for weight restriction and OWS before booking.

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