

## RAIL TRANSPORTATION AND CORE-PERIPHERY RELIANCE IN ISRAEL

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**Abstract:** Many policy makers suggest that rail is the solution for the development of the periphery, often conceived as a space suffering from under-development and lack of accessibility to the core. However, this policy, promoted around the world, does not consider core-periphery reliance as one of the rail investments' impacts. This study will examine the question: to what extent does the peripheral city, connected to the rail service, has a larger reliance on the core city? This study is a cross-sectional study that focuses on the passenger rail of an existing line to the periphery and of a planned line. The research reveals that rail does not necessarily induce the local development of the periphery but it induces larger reliance on the core.

**Key Words:** *rail, policy, periphery, development, commuting, accessibility*

### Introduction

In geography, regions are often divided into "cores" and "periphery", the one being defined by the other. The core, as a concept, is a focus of economic dynamism, containing a solid pool of skilled personnel, with access to the wide world. The core is the place where enterprises and creativity take place, and from which ideas and attitudes defuse to wider national and international regions. The periphery, as a concept, is considered the exact opposite; it is not an important factor for the national or international economy, and it has a relatively low economic dynamism (Clout 1981). In reality, however, the definition is not as conclusive, and several degrees of "peripherality" exist. Regions are often defined as peripheral by those in the core areas. Therefore, periphery could be defined by its spatial location or by its level of connectivity to the core (Herschel 2011). The European Union also addresses the definition of periphery from an economic perspective. It defines peripheries as regions of below average gross domestic product, emphasizing the idea that periphery is not only determined by the distance to a center (Naumann and Reichert-Schick 2013).

Therefore, there is also logic in discussing the "peripheral development". The definition of peripheral development is not conclusive; different researchers define it in various ways. Mabogunje (1981) sums up several approaches, and he describes peripheral development as a process in which changes take place in a certain region in order to deal with the needs of the local population. This is defined considering the periphery's unique characteristics and by using the local resources (human, material, cultural, etc.) of the region. According to this definition, the primary goal of these changes is the accumulation of capital and its distribution according to the rules of social justice, while decreasing the socio-economic gaps. Another goal is the modernization of the region, as expressed by internalizing the market rules by the local population and by creating local enterprises. This definition places the local population at the focus of regional development, and thereby the local population's feelings and perspectives are

of major importance. However, development itself is achieved by objective means, such as increasing the pool of available workplaces, their diversity and quality, which brings about a multiplier effect that increases the demand for products and services manufactured in or supplied by the region (Lipshitz 1998). Another objective means is encouraging the migration of new, strong populations, which will often change their workplaces to the peripheral region. Giuliano (2004) states that a growing local economy is necessary but not sufficient for influencing land values; supportive zoning and development policies must exist as well. In Israel, for example, supportive development policies often include investments in transport infrastructures, including railways.

The primary way transport contributes to the development of the periphery, is by providing improvements in accessibility. Accessibility provides measures of the degree to which people can reach activities, goods and services, but with an emphasis on the potential capability rather than on the actual behaviour (Jones and Lucas 2012). In general, accessibility is measured in reference to an activity or activities that can be undertaken in a specific location (Martínez Sánchez-Mateos and Givoni 2012). Therefore, accessibility to a place consists of two components: 1. the ease of movement to/from a place (which can be measured by its costs, in terms of time or money), and 2. its attractiveness (which can be measured by its range of opportunities and activities). One may note that while the first component is of a mutual nature (the ease of movement from A to B generally equals the ease of movement from B to A), the second is not (the range of opportunities in A is not necessarily equal to the range of opportunities in B). This implies that increasing the accessibility of the core residents to the residents of the periphery (by, for example, opening a railway between core and periphery), might not, at the same ratio, increase the accessibility of the periphery to the residents of the core.

Improvements in accessibility are important to regional development since they increase the amount of economic interactions and activities in that region. This contributes to its development, and again, to its accessibility, as a snowball effect. These improvements can also help increase salaries by saving travel costs (Giuliano 2004). An increase in transport accessibility can improve workforce accessibility and thus induces economic development (Rietveld 1994, Rietveld and Bruinsma 1998). In addition, this might encourage expansion or relocation of economic activities and population (which, again, might increase accessibility). Nevertheless, one must remember that improvements in a region's accessibility may affect its development, if its primary goal was the improvement of other regions' affinity towards it. This can be demonstrated by intensifying commuting, another way in which transport contributes to regional development.

Commuting can be divided into two different phenomena: commuting *to* a peripheral region and commuting *from* a peripheral region. The preferred direction of commuting is determined by the asymmetrical compound of the accessibility, that is – by the attractiveness of the peripheral region, compared to the core region. In the UK for example, the main impact of the regional services on the regional high-speed Javelin services on HS1 appears to be an increase in commuting towards London, reinforcing existing patterns of activity rather than creating new business activity in more peripheral areas (Vickerman 2014, Garmendia et al. 2012). Improvement in accessibility will bring about an intensification of commuting. The reason why it is associated with regional development is that commuting causes multiplier effects, and it suggests the existence of wider work-related activity spaces. Mobility is considered as a key element of human capital in regional growth terms, in response to the economic opportunity. Mobility enables the Human capital accumulation. Therefore it may affect the productivity of the individual worker and also that of the regional economy as a whole (Felsenstein 2013).

Moreover, in small states such as Israel, long-range commuting can even substitute migration (Felsenstein and Portnov 2005). Thus, commuting *to* the periphery is generally conceived as contributing to the development of the periphery, to reduce core-periphery reliance, although it is not often treated in the literature. Perhaps this is due to the standard urban-economic theory, which implies that the existence of commuting-inducing workplaces in the periphery will eventually make commuters migrate, due to low land-costs relative to the core. However, the theory does not take into account other factors, mainly other factors than land costs, that may influence the individuals willingness to migrate (Giuliano 2004). Consequently, in reality, long-term commuting to the periphery may take place. Commuting *from* the periphery (to the core) can be seen both as contributing to the development of the periphery, and as increasing the core-periphery reliance (by increasing residents' salaries, accessibility to a wider pool of workplaces, and by increasing taxes available to local government), and as detrimental to it (for the same reasons which make commuting to the periphery beneficial). One must also remember that, in a way, commuting in both directions does not use the region's resources for development, and so it does not fit to our definition of periphery development (although in small states commuting can substitute migration).

In general, a transport system includes three main components: transport infrastructure, mode of transport and institutional elements. These components serve as key factors in affecting accessibility and hence, also commuting. Infrastructure can be viewed as stationary capital goods, such as railroad tracks, paved roads, transit stations and more. According to Rietveld (1994), its supply, price and quality are under governmental control; therefore, they have the potential to alter the periphery development. It is important to stress that the economic influence may be a short term, temporary one, during the construction phase. It may also have long term, more permanent, effects. A secondary type of effects may influence the regional economy due to better accessibility to the region, and it may also affect the region-related travel patterns (Giuliano 2004).

Similar to infrastructure, the mode of transport may also affect regional development and core-periphery reliance, through accessibility in general and through ease of travel in particular. Overall there is a differentiation between public transport and private means of travel, namely, the private car. Ease of travel is commonly measured in terms of time and/or cost. For periphery residents with low income, public transportation mostly represents low-cost options in comparison to the private car (Leck et al. 2008, Ernste et al. 2012). Various studies have highlighted the connection between transport and social exclusion (Van Wee and Geurs 2011, Stanley and Lucas 2008, Lucas 2012). For example, the dominance of the private vehicle and the lack of good public transportation in the United States and in various countries in Europe exclude various social groups (Pickup and Giuliano 2005). This indicates that public transportation may reduce economic inequalities by enabling lower income sectors' accessibility to activities. Where cost of time is concerned, private modes of transport have an advantage over public transportation. This results from longer out of vehicle travel time for the use of public transportation, as well as often longer in-vehicle travel time due to stops or/and longer and non-direct routes. However, longer travel time does not always refer to "wasted" time since commuting time can be used for other purposes, when the commuter is not actively driving (Lyons et al. 2007).

This manuscript will focus on rail as a mode of transport which is considered to affect the core-periphery reliance and peripheral development. In Israel, similar to many other countries, it is generally believed that there is a strong link between the two. Railways are usually faster (better at inducting better accessibility) than private automobiles and buses, and commuting by rail is considered cheaper than commuting by private automobile, as it depends on rail pricing

(and its subsidy) as well as on the automobile use prices and the number of passengers in the private automobile. This makes rail more relevant to the residents of the periphery than the private automobile. In addition, the fact that the travel cost is also influenced by the service level (Lyons et al. 2007) means that the rail is a less expensive mode of transport. It is also considered to provide a high level of service, as an individual can easily engage in work-related actions on his laptop while riding rail, and making the commute-trip a part of the work day.

Our research examines the way rail affects the core-periphery reliance in Israel. It can be viewed as a case study for the peripheral development and its dependence on the core in small countries. The research examines two peripheral cities: Nahariya and Karmiel. Nahariya has a direct railway to both Haifa and Tel Aviv, which are core cities; Karmiel, on the other hand, has no railway at the present, but a railway line is already planned. The objective of our research is to answer the question: To what extent does the peripheral city, connected to the rail service has a larger reliance on the core city? Our hypothesis is that rail increases the dependency of the periphery and it contributes to the local development of the periphery when its development is integrated with the development of other elements of the periphery. This is examined through an assessment of three sub-hypotheses: 1. Rail transport encourages migration of new populations to the periphery. These populations commute from the periphery, while commuting to the periphery (which is encouraged by rail) is negligible; 2. Rail transport induces the creation of peripheral workplaces in a limited way; 3. Development of railway infrastructure might increase accessibility and the service level, compared to the further development of other transport modes.

### **Methodology**

This section will outline the conceptual framework of the study. Afterwards, the research area will be discussed by describing the selected cities and the region in which they are situated. A description of the data acquisition will conclude this section.

#### *Conceptual framework*

This section will first summarize the research framework by using a conceptual model to understand the contribution of rail to the development of the periphery (Fig. 1). The conceptual model demonstrates that enhancing accessibility is the immediate effect of adding rail service to the periphery. Nevertheless, accessibility improvements do not have a direct effect on components promoting periphery development. Better accessibility affects commuting, rather than migration. This study hypothesizes that the nature of commuting, i.e., commuting direction, may affect the nature of periphery development, thus making accessibility improvement only a mediator in this process. The study hypothesizes that better accessibility increase core-periphery reliance. This means that factors such as jobs and relative wage may increase, but probably not due to local regional growth, namely, as rail infrastructure cannot induce local development by itself. Periphery development may very well be stimulated by growth in population (migration) and it involves municipality investments (as well as national/private) directed towards housing, education, welfare, employment, and others, in conjunction with promoting accessibility.

It is also suggested that rail is perceived as a mode of public transport that provides improved level of service (LOS). Consequently, accessibility and the improved LOS may enhance commuting. As indicated earlier, in small countries, commuting to the periphery may replace migration to the periphery. Furthermore, as a result of the attractiveness of core regions due to

the large variety of services, jobs, and wage levels, improvements in accessibility may even reduce multiplier effects in the periphery.

Finally, the conceptual model also illustrates the possible feedbacks that may occur under the changes that new rail infrastructure may initiate.

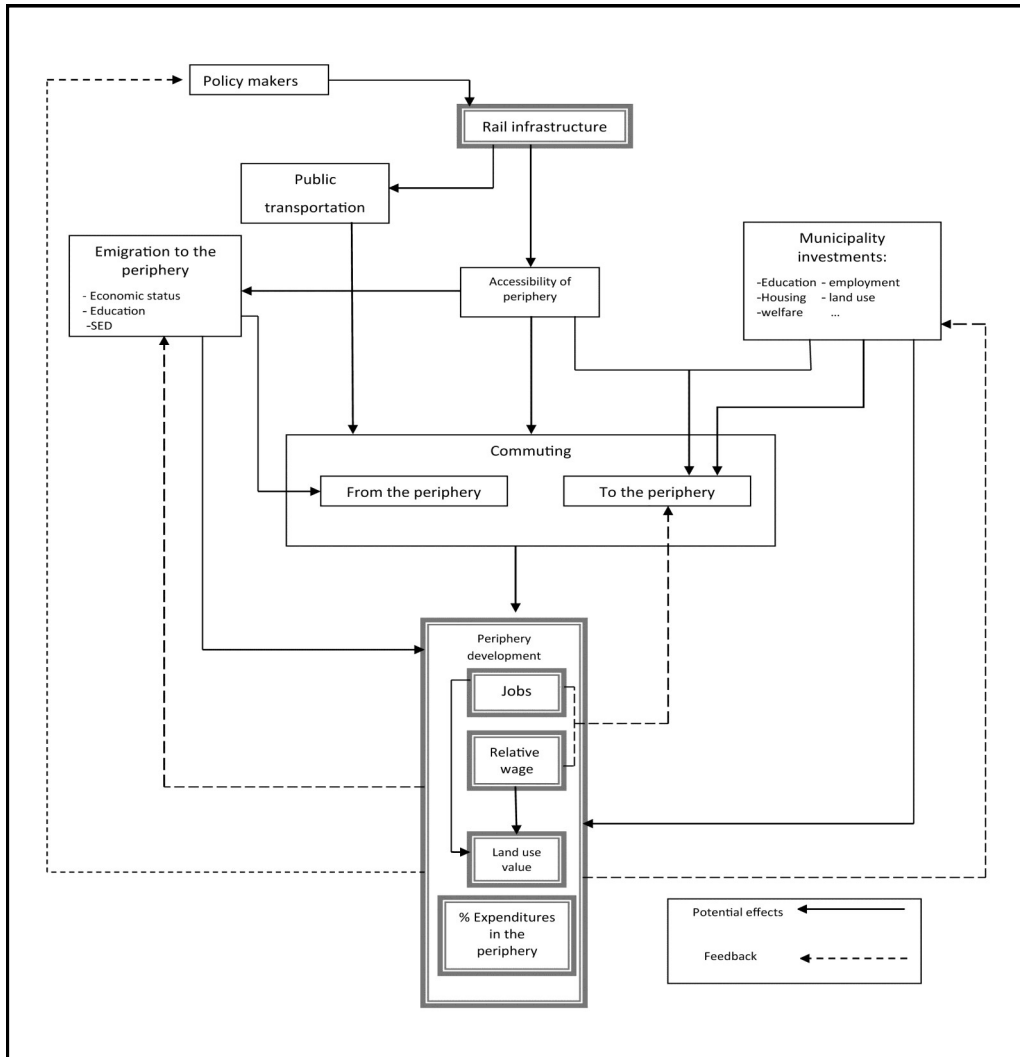


Fig. 1 – Conceptual model: Rail infrastructure and periphery development

Research area

The official administrative division of Israel includes six districts: Jerusalem (consisting mainly of the city of Jerusalem and its Hinterland), the north (the mainly agricultural region stretching from the upper Jordan valley to the Mediterranean coast), Haifa formed by the city of Haifa, its

close hinterland and the northern coastal plain), the central district (the coastal plane to the north and south of and excluding, metropolitan Tel Aviv), Tel Aviv (formed mainly by the Tel Aviv metropolitan region) and the south (the desert region stretching from the southern coastal plane to the Gulf of Eilat/Aqaba) districts (Portnov 1998, CBS Israel 2013b, Schwartz 2006). In the case of Israel, the common perception is that the core relates to Tel Aviv metropolitan area, with extensions to Haifa and Jerusalem, and that the remainder of the national space represents a set of peripheral regions (namely, the north and south; Felsenstein 2013, Bar-El and Parr 2003).

This research is a cross sectional one to evaluate the rail impact on the development of two cities in the northern periphery of Israel. These two cities are located at relatively similar distances from Haifa (the adjacent core city, approximately 42 km) as well as from Tel Aviv (approximately 136 km). Both cities are of similar size – Karmiel with 44.9 thousand inhabitants and Nahariya with 53 thousand inhabitants. Karmiel and Nahariya also have a similar peripheral Index (66, 67 respectively).

The peripheral Index calculates a combination of two components: the potential accessibility Index of the local authority, which combines the proximity of the local authority to all the local authorities in the country with the size of their population; the second is the proximity of the local authority to the boundary of the Tel Aviv District, which is called the “economic heart of the country” (CBS Israel 2008).

The social economic index also demonstrates similarity between the two localities. In 2011, for Karmiel, the index is 160 in cluster 5, while Nahariya, in the same cluster, is positioned at 158 (CBS Israel 2013a). However, despite these similarities, there is a major distinction between the two cities. In Nahariya, an active rail station existed for more than six decades with direct lines reaching Haifa and Tel Aviv. On the other hand, in Karmiel, there are plans for the construction of a rail station to serve Karmiel and its environs. It is important to stress that, unlike the southern district in Israel, the Nahariya rail station operates as the only active station in the northern district in Israel. This implies a lesser probability for competitive effects from other rail stations in the same district as in the southern Israeli periphery. The new railway to Karmiel was declared a national infrastructure project and construction began after a governmental decision from April 2010. Figure 2 shows the Israeli northern district including Haifa, and it demonstrates the relative position of Nahariya and Karmiel (Nahariya is connected to the rail network through Akko and Haifa; the same connection to the network is planned for Karmiel).

Karmiel serves as an important case study in this research since it does not have an operative railroad station; however, there are already expectations for the new mode of transport by the local inhabitants. For the purpose of this research, we assume that the existing local businesses in Karmiel are currently not affected (or the effect is negligible) by the future development of the railroad. Nahariya’s local businesses are already affected by the train, since the rail infrastructure already functioned constantly for more than 60 years. Apart from the rail, other public modes of transport to Haifa and Tel Aviv are reasonably frequent. Both localities are also positioned on the main roads with good accessibility for the private car.

#### *Data collection*

Part of the study data was obtained from secondary data sources such as the Israeli Central Bureau of Statistics, Israeli Railways Company and data obtained from local municipalities. A



Fig. 2 – Israel's northern district

major part of study was based on primary data that was collected via questionnaires (2011-2012). The sample population for this research consisted of the residents of Nahariya and Karmiel, as well as residents of other localities that work in either Nahariya or Karmiel. The sample population included the labour force, working at least at a part time job, and being between the ages of 18 to 65. The survey consisted of a total of 172 questionnaires: 54 respondents living or working in Karmiel and 118 respondents working or living in Nahariya (66% female, 34% male; 36% age 18-44, 58% age 44-65, 6% 65+). The questionnaires were distributed online via email for both localities. However, in Nahariya, questionnaires were also conducted face to face at the train station. The face-to-face questionnaires were co-ordinated with rail management and they were conducted during commuting peak hours (06:15-09:40 and 16:20-18:00). This was done in order to trace commuters with longer commuting travel time to both Haifa and Tel-Aviv. The online questionnaires were distributed to a diverse population, for example: students, lecturers, teachers, municipality workers, from the industrial sector as well as the service sector. The questionnaires for Karmiel and Nahariya differ slightly, since in Karmiel, rail transportation is not available yet. Therefore, the questionnaire for Karmiel respondents focused on attitudes, perceptions and assessment of the future available service in a scenario where Karmiel is added to the railroad network. For example: *When a railroad service to Karmiel exists, to what extent will the following situations affect the frequency you will use the train: lower prices, reduced travel time in comparison to private car, in comparison to bus, etc.?* However, for individuals from Nahariya, the distributed questionnaires were mostly based on stated-behaviour questions.

## Results and Discussion

This section attempts to evaluate the linkage between rail and periphery development. To that end, we will discuss rail as a mode of choice and its contribution to the periphery development by comparing Karmiel and Nahariya according to the indicators defining periphery development discussed in the introduction and demonstrated in the conceptual model. The section will start by examining residents' migration rates and reasons; related-commuting patterns will follow. Next, parameters defining periphery development, such as employment, and land use values, will be discussed.

As discussed earlier, migration to the periphery is considered a main feature of periphery development. Therefore, the analysis starts by examining if and how rail effects migration to the periphery. To understand whether rail encourages migration to the periphery, the Nahariya's respondents were asked to mark the relevance of that factor as influencing migration to Nahariya on a scale from one to four (1 - not important; 4 - very important). Table 1<sup>1)</sup> demonstrates the average score for each factor, according to the period of residence in Nahariya (Native – born in Nahariya, 40%; Migrants – migrated to Nahariya 0-10 years, 60%).

It is interesting to see that for the new residents in Nahariya, those who migrated, the rail station was not selected as a major pull factor. Actually, it was selected to be the fifth relevant reason (from seven reasons given) for migrating to Nahariya. The option of tranquillity and a more rural way of living was selected by the migrants, as the most important reason to migrate to Nahariya. The second main reason was good education. Moreover, housing prices, representing economic reasoning, was selected only as the fourth main reason. That said, the native residents of Nahariya, perceive the rail station and the option to use it as a main asset of the city. They believe that an option to use the train from Nahariya serves as the main reason to attract migration there.

It is important to stress that, in the past five years, the migration rate to Karmiel and Nahariya was negative with an average rate of -10.4 migrants/1000 inhabitants in Karmiel and -3.9 migrants/1000 inhabitants in Nahariya. During 2012, there were higher negative rates: -13.9 migrants/1000 inhabitants, in Karmiel; and -7.3 migrants/1000 inhabitants, in Nahariya. Although migration rates largely differ between the two cities, both demonstrate negative migration. Combining this data with the explanation given in the survey emphasizes that migration to the periphery in general and migration induced by rail is negligible.

To evaluate the local employment conditions in Nahariya and Karmiel, we analysed and compared several related parameters. To compare the average salary rates, we chose to examine the salary per non-residential square meter (Table 2). The size of the non-residential land use was obtained from each municipality according to the local taxes paid per m<sup>2</sup> for employment purposes. Therefore, when focusing on the size of land use for employment, it appears that in Karmiel, the employment area is larger by 2.5 than in Nahariya. Since the size of the employment area is an indication for the potential employment, it seems that Karmiel, without the rail infrastructure, potentially offers more employment. However, the salary per m<sup>2</sup> is 2.8 times larger in Nahariya than in Karmiel. According to the Israeli Central Bureau of Statistics (2009), 60% of the population from the area of Nahariya commutes for work outside

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1) Equal variances assumption is assumed. The Sig. (2-Tailed) value for all reasons (excluding short time trance to Haifa) in this analysis received a value less than .05. Therefore it is concluded that there is a statistically significant difference between the mean of reasons for migrants and natives in Nahariya.



Table 1

Reasons for migration to Nahariya

Nahariya	Mean		Order	
	Migrants	Native	Migrants	Native
Work place in Nahariya or in proximity	1.69	2.87	7	2
Std. Deviation	0.92	1.13		
N	67	46		
Low housing prices	2.51	2.38	4	7
Std. Deviation	1.19	1.15		
N	65	16		
High level of education	3.02	2.40	2	6
Std. Deviation	1.07	0.98		
N	65	65		
Relatives reside nearby	2.07	2.81	6	3
Std. Deviation	1.02	0.93		
N	67	43		
Short travel time to Haifa	2.61	2.50	3	5
Std. Deviation	1.05	1.19		
N	64	42		
Tranquillity and a more rural way of living	3.48	2.61	1	4
Std. Deviation	0.85	1.02		
N	65	44		
Rail station in Nahariya	2.08	3.02	5	1
Std. Deviation	0.98	1.09		
N	64	44		

Table 2

Employment parameters

	Karmiel	Nahariya
Total non-residential area (x1000)	661.6	296.4
Size of population (x1000)	44	50.4
Non-residential area for residents	15.1	5.9
Average salary	6613	8419
Self employed	7779	8564
Average salary (normalized CBS)	7682.6	8524.5
Salary per m <sup>2</sup>	519.1	1495.5

Source: CBS Israel 2009

the natural activity area of Nahariya, while in Karmiel only 46% people do so. According to the Israeli national census conducted in 2008 (Table 3), both Nahariya and Karmiel, as explained earlier, are peripheral urban areas with a large proportion of employment in the manufacturing industry (27.1%; 33.1% respectively).

Table 3

**Distribution of Economic Activity (Age >15) 2008**

Economic Activity	Nahariya	Karmiel	D(Nahariya-Karmiel)
Agriculture	0.9	0.3	0.6
Manufacturing (mining and industry)	27.1	33.1	-6.0
Electricity and water supply	0.7	0.6	0.1
Construction (building and civil engineering projects)	2.1	2.3	-0.2
Wholesale and retail trade, and repairs	10.7	11.5	-0.8
Accommodation services and restaurants	4.2	3.4	0.8
Transport, storage and communications	6.3	4.5	1.8
Banking, insurance and other financial institutions	3.1	1.2	1.9
Business activities	10	12.2	-2.2
Public administration	4.9	2.9	2.0
Education	9.5	10	-0.5
Health, welfare and social work services	13.5	9.2	4.3
Community, social, personal and other services	3.9	4.1	-0.2
Services for households by domestic personnel	1	1.2	-0.2
Other	2.2	3.4	-1.2

Source: CBS Israel 2009

To further understand the role of the rail, commuters' mode choice was examined. For Nahariya, the respondents were asked to report the mode of transport and the number of commuting days using the relevant mode of transport used for commuting purposes. Respondents from Karmiel were asked to state their choice on the mode of transport and frequency according to the scenario of introducing rail service in Karmiel. Table 4 shows commuters' mode of choice and the frequency of travel according to the level of accessibility to the private car (Nahariya n=47, Karmiel n=30). For example, households that have two or more private cars were recorded as having a high access to a private car, and households that do not have a car were recorded as having a low access to a private car. For both Nahariya and Karmiel, the high access to a private car increases the commuting frequency using the car. Bus service receives a low average for both localities. However, while for Nahariya, the average number of days for using the train is 1.4, while respondents from Karmiel estimate an average of almost 3 times per week. This probably results from it being the respondents' stated preference, rather than their actual behaviour. It is important to stress that due to the small size of the sample, the results may only show a tentative trend for the preference of the mode of choice.

This may point to Karmiel's respondents' perceptions on the importance and potential of the train impact. Comparing the high access to the private car also reveals a difference between the choices for the two locations. While in Nahariya those with medium accessibility to the private car commute, on average, about once a week by private car, respondents from Karmiel estimate that they will use the private car about four days per week on average, with the understanding that train is an available potential mode of transport.

Table 4

**Mode of choice for commuting purposes**

	Private car availability for commuting	Commuting days per week		
		Private car	Bus	Train
Nahariya	High	3.65	0	1.4
	Medium	1.21	0.43	3.21
	Low	0.67	0	3.44
Karmiel	High	3.67	0.29	2.89
	Medium	4	1	2.75
	Low	1	1.67	2.33

Another way to aid in evaluating the periphery development is to explore the changes in housing prices. Table 5 reveals the housing prices during 2008-2013 for Nahariya, Karmiel and the national average price. For each location, Table 5 depicts the total average housing prices and the average prices for three, four and five room dwelling units. Although the housing prices are lower in Karmiel, for each category, Karmiel demonstrates to have the largest rate of increase in the aforementioned six years. Karmiel had the largest rate of real change for all categories of dwellings in comparison to both Nahariya and the national level.

**Conclusion**

The study shows that rail does not distinctly function as an encouragement-inducer towards migration to the periphery. Although it is perceived as such, silence and "rurality" are much more important for attracting migrants to the periphery. Generally speaking, the study shows that the main factors for the encouragement of migration are probably not of an economic nature. In this sense, one might look at the rail as an assisting factor for the development of the periphery, though being not the main one. For the people who are not used to commuting, it is most likely that the need to commute, even by rail, constitutes a repelling factor for migration. This makes the rail irrelevant in attracting such migrants.

Moreover, due to the relative short distances in Israel, rail reinforces the commuting patterns towards the core and it increases the core-periphery dependence. Consequently, rail assists the improvement of the local population's conditions – via rail, residents of the peripheral cities are able to profit from more diverse, higher-paid employment opportunities in the core. However, when the periphery is viewed as a region and as a group of municipalities, rather than as a group of individuals, it seems that rail does not, in fact, provide any unique elements (advantages). It makes the local less relevant and it makes the inter-local and the national, the essence. As such, rail acts as an anti-local development mechanism (on the regional – local level), since regional development includes an increase of the *local* expertise and capital, and an increase of the *local* employment, trade and finance. Regional development does, indeed, consider the needs and character of the local population, but this is done by using the *local resources*, creating *local initiatives* and encouraging *local leadership*. The rail indeed induces all that, but on the inter-regional level, rather than on the local level.

In addition, there is a possibility that investments in rail infrastructure to the periphery may represent an ineffective effort. The rail does indeed have the *potential* for development, but

Table 5

## Housing prices 2008-2013

			2008	2009	2010	2011	2012	2013
Average	National	Prices in NIS	831,708	942,503	1,080,677	1,147,037	1,180,057	1,260,733
		Rate of real change		9.7%	11.6%	2.6%	1.2%	5.2%
		Index 2008=100	100.0	113.3	129.9	137.9	141.9	151.6
	Karmiel	Prices in NIS	445,413	495,195	594,547	692,336	779,031	916,461
		Rate of real change		7.6%	16.9%	12.5%	10.7%	15.8%
		Index 2008=100	100.0	111.2	133.5	155.4	174.9	205.8
	Nahariya	Prices in NIS	617,779	624,158	691,628	788,977	876,937	943,963
		Rate of real change		-2.2%	7.9%	10.2%	9.4%	5.9%
		Index 2008=100	100.0	101.0	112.0	127.7	141.9	152.8
3 rooms	National	Prices in NIS	543,912	610,055	682,646	743,438	794,157	842,028
		Rate of real change		8.6%	8.9%	5.2%	5.1%	4.4%
		Index 2008=100	100.0	112.2	125.5	136.7	146.0	154.8
	Karmiel	Prices in NIS	289,137	320,048	375,149	454,295	525,678	610,817
		Rate of real change		7.2%	14.1%	17.0%	13.8%	14.4%
		Index 2008=100	100.0	110.7	129.7	157.1	181.8	211.3
	Nahariya	Prices in NIS	362,376	421,303	463,328	508,899	578,070	616,334
		Rate of real change		12.5%	7.1%	6.1%	11.8%	4.9%
		Index 2008=100	100.0	116.3	127.9	140.4	159.5	170.1
4 rooms	National	Prices in NIS	840,720	963,823	1,094,742	1,173,145	1,193,167	1,240,597
		Rate of real change		11.0%	10.6%	3.5%	0.1%	2.3%
		Index 2008=100	100.0	114.6	130.2	139.5	141.9	147.6
	Karmiel	Prices in NIS	448,245	514,839	592,880	685,588	749,740	870,777
		Rate of real change		11.2%	12.1%	11.7%	7.6%	14.3%
		Index 2008=100	100.0	114.9	132.3	152.9	167.3	194.3
	Nahariya	Prices in NIS	631,784	649,655	770,670	829,087	928,422	977,629
		Rate of real change		-0.5%	15.5%	3.9%	10.2%	3.6%
		Index 2008=100	100.0	102.8	122.0	131.2	147.0	154.7

See the next page

Table 5

Housing prices 2008-2013

			2008	2009	2010	2011	2012	2013
5 r o o m s	National	Prices in NIS	1,217,542	1,361,186	1,538,765	1,643,029	1,651,003	1,687,491
		Rate of real change		8.2%	10.1%	3.2%	-1.1%	0.6%
		Index 2008=100	100.0	111.8	126.4	134.9	135.6	138.6
	Karmiel	Prices in NIS	667,382	701,558	876,518	990,793	1,069,685	1,201,256
		Rate of real change		1.8%	21.6%	9.2%	6.2%	10.5%
		Index 2008=100	100.0	105.1	131.3	148.5	160.3	180.0
	Nahariya	Prices in NIS	916,166	988,594	1,085,359	1,204,339	1,253,344	1,299,553
		Rate of real change		4.5%	6.9%	7.2%	2.4%	2.1%
		Index 2008=100	100.0	107.9	118.5	131.5	136.8	141.8

Source: Ministry of Construction and Housing (Israel), 2014

perhaps public and political debates should be shifted from discussing the rail as an instrument for "making the periphery closer to the core" to discussing the "development of the periphery", and consider the rail as a factor which could, under the right circumstances, boost such development. This could be carried out by "making the core closer to the periphery". Perhaps first and foremost, local development, based upon local elements and characteristics, should be implemented in the peripheral regions – and after this has been accomplished, there should be carried out the integration at inter-regional and national levels. This kind of integration is, as shown by this study, best made by rail. Perhaps one should consider the rail not as an instrument for development, but rather as an instrument for binding different regions. One must remember, however, that such binding may assist the development of the core – while harming the development of the periphery. A suitable development policy (for example, emphasizing the relative advantages of the periphery, like quietness and "rurality"; giving financial incentives to peripheral entrepreneurs to employ local residents; improving quality of education, etc.) could provide advantages for the periphery once such binding is made. However, these advantages are not to be expected without such a policy.

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